



# Sustaining Agriculture in Urbanizing Counties

Insights from 15 Coordinated Case Studies

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## Executive Summary

**Purpose:** Funded by a National Research Initiative grant from USDA's Cooperative State Research, Education, and Extension Service, our study sought to identify conditions under which farming may remain viable in agriculturally important areas that are subject to substantial development pressures.

Given this principal objective, we selected to study 15 such metro-area counties: three on the Pacific Coast (King County, WA, which includes Seattle; Sonoma, CA, north of the San Francisco Bay Area; and Ventura, northwest of Los Angeles), five Corn Belt counties (Lancaster home to Nebraska's state capital, Lincoln); Dakota County, just south of the Twin Cities in Minnesota; Dane, home of Wisconsin's capital, Madison; DeKalb, IL, west of the Chicago; and Madison, west of Columbus, Ohio ); four Mid-Atlantic counties (Carroll, MD, northwest of Baltimore; Berks, PA, northwest of Philadelphia; Burlington, NJ, east of Philadelphia; and Orange, NY, northwest of New York City); and three unusually scenic counties (Larimer, CO, on the Front Range north of Denver; Fayette, KY, in that state's Blue Grass region; and Palm Beach County, FL, along that state's Atlantic Coast). For each studied county, we aimed to determine:

- what kinds of agricultural products were being successfully raised there (discussed in Chapter 2);
- the adequacy of marketing outlets for crops and livestock products (also Chapter 2);
- the supply and affordability of land for farming and ranching (Chapter 3);
- the adequacy of other major inputs of production: field labor, new farmers, veterinarians, credit, and agri-service businesses that supply equipment, repair services, chemicals, water, etc. (Chapter 4), and
- the future outlook for agriculture in those counties, including agland owners' plans for converting any of their land to non-farm uses, current operators' expectations about continuing to farm there, both surveyed agland owners' and interviewed local experts' prediction about the status of agriculture in their counties in 2016 and also in 2026, and whether the experts would encourage young people with agricultural backgrounds to farm or ranch there (Chapter 5).

**Timing:** The majority of our research efforts took place in 2005 through mid-2007, when development pressures were high or just beginning to decline. During most of that period, also, market prices were mediocre for grains, milk, and certain other types of major products raised in the studied counties. Therefore, since we studied the viability of urban-edge farming under difficult conditions, many of the successes we found are models of achievement against considerable odds. If they worked in 2005 to 2007, they may be feasible in less challenging situations. At the least, the positive and negative outcomes we identified in those years may serve as bases of comparison for viability evaluations conducted in the same or similar counties in future years.

**Sources for the Study:** We used three major kinds of sources. The first was the Federal Government’s every five-year Census of Agriculture. From the four most recent census years (1987, 1992, 1997, and 2002), we obtained data on groups of farmers, their agricultural products, and other county-wide measures. Second, since published data from the ag census consist of information only at the county level (e.g., there were 345 farms producing grains in 2002) rather than about individual farmers or agland owners, we developed a mailed questionnaire for each of the 15 counties. During 2006, from public lists of owners, we developed random samples and then received usable survey returns from 100 to 174 respondents per county. Of the total of 1,922 owners who participated across the 15 counties, 64% were also the operators of farms or ranches on the land they owned. We focused on owners, including owner-operators, because we sought to learn about a number of their attitudes that would likely shape the future viability of agriculture in their counties—including whether they expected to develop any of their agland in the next ten years or to make any investments in its productivity for agricultural use over the following five years.

Our third source consisted of interviews with knowledgeable observers and participants in the ag sectors of the 15 studied counties. From late 2004 to February 2008 there were phone or in-person interviews with 15 to 36 such persons per county, totaling to 357 across all counties. The interviewees fell into four broad categories:

(1) a group that we classified as “*generalists*” because their jobs gave them broad knowledge of their counties’ agricultural sectors—such as by being a senior Cooperative Extension adviser, the County Executive Director of USDA’s Farm Service Agency, the District Conservationist of USDA’s Natural Resources Conservation Service, Manager of the Soil and Water Conservation District, Executive Director or Manager of the county Farm Bureau, the county planning director or the senior planner, farmer members of the county legislature, and the county Agricultural Commissioner, among others;

(2) *private-sector professionals with more specialized assignments*, such as bankers who handled agricultural loans, managers of farm equipment dealerships and other ag input services, and realtors and attorneys specializing in rural land;

(3) *staff members of public and non-for-profit agencies who led programs designed to assist farmers and ranchers*, such as Extension educators working with livestock or vegetable farmers, administrators of farmland preservation programs or of agricultural protection zoning, managers of farmers’ markets, leaders of programs for young or new farmers, and officers of environmental groups that supported local agriculture;

(4) *farmers or ranchers producing specialty products* such as vegetables for direct marketing, flowers, wine grapes, and agri-tourism, among other kinds of products about which our survey and census sources did not provide sufficient information.

**Findings—Markets:** Chapter 2 presents our findings about the nature and adequacy of markets for agricultural goods raised in the 15 counties. Among the owner-operators whom we surveyed and who reported on their marketing outlets, the average percentages of total sales sold wholesale ranged from 24.1% (in Fayette County) to 85.7% (Madison County), with a median across the 15 counties of 58.2%. The corresponding range of

county averages for direct marketing was lower—from 8.7% (in Dane and Palm Beach counties) to 47.2% in Larimer, with a median of 17.1%.

Among the owner-operators in our 2006 survey who answered questions about satisfaction with market outlets, from 38% of the respondents in King County to 84% in Madison County were “very” or at least “moderately satisfied” with their outlets’ accessibility. The median value was 63%. The corresponding percentages regarding “profitability” were lower—from 14% for King to 51% among the Dane County respondents; and the median was 33%. Interviews with experts yielded these causal factors, among others: geographic proximity to crop and livestock buyers and/or processing facilities varied (e.g., very good in Fayette County for horses, but problematic for hog farmers such as in Dane and DeKalb), good local consumer support of direct marketing in some counties (e.g., King, Orange, and Fayette), but insufficient in others (like Carroll), and profitable markets for some niche products (e.g., organic milk and cheeses, specialty vegetables, and wine grapes).

Among the operators who answered questions about the kinds of marketing assistance programs that should be available in their counties, from 31% (in Ventura County) to 70% (in both Berks and Fayette) endorsed programs for helping farmers with marketing directly to consumers; the median was 47%. The highest levels of support were for assistance for “diversifying or adding new products.” In 13 of the 15 county samples, at least 40% of the respondents chose the “yes” answer for that kind of program, and the overall median was 49%.

***Farmland Protection:*** Chapter 3 discusses land-use policies applied in the 15 counties that shaped the supply of farmland and profitability of farming. Our interview data indicated that *agricultural protection zoning* worked effectively in seven of the counties. A dramatic example was Sonoma County. Its required minimum lot sizes helped grape-growing to compete with residential uses. In the time period of our study, buyers were willing to pay \$60,000 to \$100,000 per acre for land suitable for vineyards. There were many prospective buyers from the San Francisco Bay Area able to buy rural home sites in Sonoma, but not in a zoning district with a 20- or 60-acre minimum lot size and land capable of growing grapes. By the per-acre prices just cited, the estate buyer would need at least \$1.2 million to \$2 million total to compete with someone wanting 20 acres to farm the parcel for grapes. Fayette County, Kentucky, was similar in four important respects: good money could be earned from farming (i.e., thoroughbred horses), a large minimum lot size (40 acres) discouraged buyers not interested in farming, an urban growth boundary limited the expansion of city services into agricultural areas, and very attractive rural scenery helped convince many farmer and non-farmer residents to be politically active to protect their life styles in Fayette, rather than make money from selling their land and moving elsewhere. Combinations of large minimum lot sizes and urban services boundaries helped also in King, Ventura, Dakota, and DeKalb counties, as well as in Sonoma. Three other counties—Lancaster, Larimer, and Palm Beach--used cluster zoning to restrict housing densities in rural areas. Applications for relatively small-lot subdivisions were approved if the developer agreed to protect (with development-restricting easements) most of the total land for agriculture or other open-

space purposes. Large-minimum lot sizes may cut up land into uneconomic parcels for farming, as well as waste space such as in the forms of long separate driveways and overly ambitious lawns.

Ten of our studied counties had programs of purchase of development rights (PDR). Under them, landowners voluntarily agreed to easements that limited non-agricultural uses on their land, usually in perpetuity, in exchange for monetary compensation for the development rights thus surrendered. By the end of 2007 or mid-2008 the programs in two of the counties—Berks and Carroll—had used this tool to protect more than 50,000 acres each. Another five had preserved about 13,000 to 28,000 acres (King, Sonoma, Burlington, Larimer, and Fayette counties). The totals in the remaining three ranged from around 2,200 to 5,400 acres.

Very helpful to the agricultural success of preservation efforts was the extent to which the protected lands formed sizable contiguous areas for farming, rather than being isolated parcels with non-farm neighbors living on one or more sides and complaining about farm-derived dust, odors, and other byproducts of normal agricultural operations. In fact, four of the largest PDR programs achieved considerable success in clustering protected parcels. In Carroll, Berks, and Fayette counties, 91% to 96% of the parcels under PDR easements had at least one other preserved farm adjacent to them. In Burlington County's program the corresponding measure was 69%.

Also important was the extent to which new homes could be built on land subject to easements. In two counties (King and Fayette) the easement land could be cut up into buildable parcels as small as the zoning ordinances permitted (i.e., 35 and 40 acres) and therefore risk being less viable for commercial farming. In two other cases, any new parcels with homes had to be at least 52 acres (Berks County) or 100 acres on average (Burlington). Also of concern was the placement of new residences built on farms subject to easement agreements. Some of the studied PDR programs succeeded in requiring locations that should have reduced the disruption of farming, such as along public roads or in wooded areas, rather than in the middle of fields.

***Agricultural Use-value Assessment for Property-Tax Purposes:*** All the state governments for the studied counties authorized property-tax assessments based on the land's *agricultural* use rather than on its usually much higher *market* value in those metro-area counties. The owners whom we surveyed in 2006 tended to believe that these state laws “worked” in the sense of keeping “property taxes on agland in . . . County at acceptable levels.” And statistical analysis showed that respondents with positive evaluations of these assessment policies were *more* likely to be optimistic about agriculture's future in the county. However, several of the states had lenient definitions as to what constituted bona fide agricultural uses. They allowed low minimum numbers of acres (e.g., five acres) and/or levels of annual sales that could encourage non-farmers to buy up agland for estate living and meet those requirements with minimal levels of farming.

***Right-to-farm Protections:*** A potentially serious problem for farmers in urbanizing areas has been the tendency of non-farmer neighbors to lodge formal and informal complaints of the types mentioned two paragraphs above. Encountering or anticipating such complaints, farm operators may feel compelled to make decisions that reduce profitability (such as by choosing not to expand the size of a livestock enterprise or not to engage in on-farm direct sales). All the sites in our study had “right-to-farm” laws that promised protection for commonly used farming practices. In the 2006 survey we asked the participants, “How helpful has the law been in protecting farmers [or ranchers] against unfair nuisance complaints?” Their evaluations were not as positive as those for use-value assessment. But those opinions helped to shape two other important attitudes. In six counties, the owners who believed local government was sympathetic or “even-handed” towards them in conflicts with non-farmer neighbor were *more* likely to be optimistic about agriculture’s future in their county. And in four counties, owners with positive assessments of their local authorities’ record in such conflicts were *less* likely to expect any of their land to be developed in the next 10 years (other predictor conditions held constant).

***Adequacy of the Supply of Hand Labor and Other Human Inputs of Production:***

Virtually none of our interviewed local experts complained about the supply of *family labor*, and our survey data also suggested adequate inputs of that type. However, the findings for *non-family labor* (including seasonal workers) indicated problems. Interviewees reported difficulty meeting the needs of dairy, vegetable farming, and other sectors requiring considerable hand labor. They frequently or mostly used immigrant workers. Local residents, as well as some migrants, tended to shun agricultural labor because they could earn more money in construction or suburban jobs. Interviewed farmers in counties from both coasts testified to lenient or selective enforcement of federal immigration laws through at least 2006 or 2007. Local interviewees criticized the federal government’s legal guest worker program, “H-2A,” for what they regarded as its burdensome paper work, excessive pay levels, high worker transportation and housing costs, and uncertainty as to whether workers would arrive at the farms when needed.

In none of our 15 counties, except perhaps for Larimer, did interview sources report a serious scarcity of *replacement farmers*. However, almost all the successors being mentioned were children or other relatives of the retiring farmers. Potential newcomers faced the usually formidable obstacle of farmland being too expensive to buy. The modest numbers of operators who established new farm businesses typically leased parcels; or they bought small ones, doing either hobby farming or raising high-value crop or livestock products on their few acres

Both our survey respondents and local interviewees found the supplies of *large animal veterinarians* to be adequate. However, in some counties we found Vets’ traditional customers—cattle and dairy farmers—facing competition from horse operations, hobby farms, and/or pet owners. However, where the traditional patrons were declining in numbers, the newer types of customers could help to keep up the supply of Vets by compensating for the loss of the previously dominant clients.

***Bank Credit and Manufactured or Processed Inputs (ag chemicals, implements, and seeds):***

Many of our surveyed owner-operators did not use bank credit. The percent of users ranged from 27% in King County to 76% in Dakota County; the median value across all 15 counties was 45%. Interviewed local experts explained that the non-users tended to finance their operations from current or saved income from farm and off-farm work.

Among the users, the adequacy-of-supply ratings were rather high.

Compared to bank credit, proportionally many more surveyed farmers reported using three types of processed inputs of production. The median percentages were: 85% for farm chemicals, 82% for goods and services from implement dealers, and 82% also for goods and services from seed dealers. Opinions about the adequacy of supplies for these kinds of inputs were generally positive. However, satisfactory levels often depended on adaptations made by both dealers and their farmer customers. When dealers closed local retail outlets for insufficiency of local customers or other reasons, operators found at least three alternative channels for obtaining needed inputs: (1) driving the extra distance to dealers still functioning in near-by counties that typically had experienced less urbanization, (2) placing orders by mail, phone, or the Internet; and (3) benefitting from dealer trucks stopping at individual farms or using regional “drop-boxes” from which equipment to repair was picked up and goods were delivered.

***Outlook for the Future:*** Across the 15 counties, the percentage of surveyed agland owners who expected at least some of their land to be developed in the next ten years ranged from 21% in Fayette County to 52% in Larimer. Statistical analysis suggested that development was *more* likely (in five counties) if owners had to use seasonal labor or if (in four counties) they believed that local government sided with non-farmers in conflicts with farmers. It was *less* likely (in six counties) if they believed local zoning helped to maintain an adequate supply of land for agriculture or if (in four county samples) respondents approved of the purchase-of-development-rights programs functioning in their counties or proposed for there.

A question directed exclusively to owner-operators asked if they expected to be farming in the county ten years from the time of the survey. Among the respondents who were less than 55 years old, the percentage of “yeses” varied from only 35% in Larimer County to a high of 85% in Sonoma. In more than half the counties, respondents who had sons, daughters, or grandchildren lined up to succeed them as farm operators were *more* likely to keep on farming. Also, such successors increased the likelihood (in six counties’ samples) of investments being made on the land (e.g., buildings, fences, irrigation, or conservation facilities) over the following five years.

All surveyed owners were asked: “Thinking ahead 20 years, what kind of future do you see for agriculture in .... County”? We found a lot of pessimism. The combined percentages of “bright” and “modest” future responses (rather than “dim” or “none at all”) reached a majority in only three of the 15 counties. Who were the optimists? They were *more* likely to be positive about the future: if they regarded local government as sympathetic or at least even-handed in resolving conflicts between farmers and non-

farmers (a finding from statistical analysis in six counties), if they were satisfied with the profitability of markets for ag goods raised on their land (four counties), if they believed that agricultural use-value assessment was effective in keeping property taxes “at acceptable levels” (six counties), and if they found local government zoning to be helpful in protecting the supply of agricultural land (also six counties).

The local experts we interviewed were asked: “Would you recommend that a smart, hard-working young person with an agricultural background be a farm operator in . . . County?” In all except one county majorities of respondents—67% to 100%--gave conditional answers, amounting to “yes, if they do this” or “no, unless they have this trait.” In each county the causal condition most frequently mentioned was the lack of affordable land. Besides arguing that farmland tended to be too expensive, they recommended that the young persons belong to a local farm family. Their reasons included: Family membership could qualify the young persons for gifts of land or discounted prices for purchase or leasing, and they could share the “insider” or “pecking order” status of their relatives. We were told that frequently land did not go on the open market, but the successor owner or tenant had been pre-determined.

The report’s final chapter closed with seven policy recommendations derived from our research findings for promoting viable farming in metro areas:

1. Local governments should aim to prevent conflicts between farmers and non-farmer neighbors and to resolve those that arise in ways sympathetic to farmers’ interests.
2. Local governments should apply zoning policies (e.g., large minimum-lot requirements, cluster zoning, urban growth boundaries) that help to preserve an adequate land base for agriculture.
3. State governments should enable, and local authorities operate, effective programs for purchasing development rights to farmland, thereby either adding to the land base that agricultural protection zoning supports or achieving what zoning fails to realize.
4. Public and private agencies should encourage farm families to plan for the transfer of ownership and management to their children or other relatives. We found that with family successors lined up, the future of individual farms could look much brighter (e.g., current owners more likely to invest in their land and operators less likely to quit farming in the county prematurely).
5. The same agencies should encourage the launching and sustaining of farm enterprises likely to be profitable on the urban edge. Given the pervasive land constraint, consideration should be given to relatively smaller acreage operations, such as those raising high-value products including specialty crops and livestock. Direct marketing can also add revenue, and assistance programs for it were the second most popular type of help requested by our surveyed farmers—second after the purpose of “diversifying or adding new products.”

6. In geographic areas lacking sufficient farmers to sustain agri-service businesses, policy makers may need to encourage adaptations by both farm operators and suppliers, such as Internet purchasing and “drop-off boxes” for equipment repair.
7. Policy makers should consider ways to provide for adequate numbers of farm workers. One tool urged by interviewed farm operators was to reform the federal government’s guest worker program for migrant labor.

# Chapter 1: Research Objectives and Methods<sup>1</sup>

## 1. Introduction: Time Context

The credit crisis that seriously discouraged housing and other developments on agricultural land began in 2007, by some people's calculations in August of that year. Under a grant provided by the National Research Initiative Program of USDA's Cooperative State Research, Education, and Extension Service in the fall of 2004, we studied the conditions shaping the viability of farming in 15 metro-area counties in 14 states. Each selected county was both agriculturally still important and then subject to substantial development pressures. The majority of our research efforts took place in 2005 through mid-2007, when those pressures were high or just beginning to diminish. Also during most of that period, market prices were mediocre for grains, milk, and certain other types of major products raised in the studied counties. Therefore, since we studied the viability of urban-edge farming under difficult conditions, many of the successes we found are models of achievements against considerable odds. If they worked in 2005 to 2007, they may be feasible in future challenging situations. At the least, the positive and negative outcomes we identified in those years may serve as bases of comparison for viability evaluations conducted in the same or similar counties in later years.

Adding to the future relevance of our findings, we believe, is our emphasis on causal relationships. We used regression analysis of survey findings and thematic analysis of interview data to get at the conditions that shaped agriculture's viability in our sample of urbanizing metro-area counties. For example, rather than only reporting that zoning worked well in protecting agricultural land in this or that county, we used in-depth interviews with local experts to discover explanations for such success. And, rather than just offering the percentages of agland owners, by county, who planned to develop their land, we used statistical analysis to identify traits of the owners and their farm operations that, other things being equal, predicted who expected to convert land out of agricultural use. In another two examples, we studied (1) why so many farmers in the sampled counties were able to rely heavily on foreign migrant laborers and (2) how farm operators adapted to the closure of local implement dealers and other agri-service businesses.

## 2. Motivation for the Research

Beginning at least with Donald Bogue's study "The Spread of Cities" (1956), researchers concerned about the survival of agriculture on the urban edge tended to emphasize the loss of agricultural land and/or policy efforts to prevent it (e.g., Coughlin, Keene, Esseks, Toner, and Rosenberger, 1981). In 1982 Roger Blobaum pointed out that "efforts to preserve agricultural land on the urban fringe put little emphasis on making farms more profitable" (Blobaum, 1982). Five years later, Johnston and Bryant (1987) asked the important question of why there were still so many farms in urban areas across the United

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<sup>1</sup> The principal authors of this chapter were Dick Esseks and Kate Clancy.

States and Canada, and proposed that it was due to the positive adaptation that farmers had exercised to suit prevailing conditions, demonstrating that many farms could remain viable despite strong development pressure. The authors argued that farmers did this by exploiting opportunities “characteristic of rural urban fringe environments” (p. 10).

In the past decade there has been more attention paid to the need to simultaneously improve the markets and incomes of farms on the urban edge because, among other reasons, so much food is produced there. Using 1997 Census of Agriculture data, the American Farmland Trust calculated that 86% of all the country’s fruits and nuts, 86% also of its vegetables production, and 63% of dairy products were produced in “urban-influenced counties” (American Farmland Trust, 2003). The Economic Research Service (ERS), also working from 1997 ag census data, estimated that 61% of vegetable acres were in metro areas (Heimlich and Anderson, 2001). From the 2002 census, Douglas Jackson-Smith and Jeff Sharp (2008) calculated that “55 percent of all farm sales in the United States were from farms located at the rural-urban interface” (p. 1).

However, even recently, authors of this research report have found it difficult to convince some advocates of farmland protection and smart growth that preventing the conversion of agland is not enough. To realize the full agricultural benefits of restrictive zoning, purchase of development rights, or urban growth boundaries depends on “whether farmland remains in an active agriculture use” (Nickerson, 2001, p. 27). The alternatives can include “farmettes” that have just enough production to qualify for agricultural-use tax assessment or larger parcels that seriously underperform for lack of good markets or effective management.

Researchers have compiled a long list of the potential benefits to farmers and urban dwellers of the presence of farms near metropolitan areas. Farmers may be able to access a larger pool of seasonal labor to harvest high-value crops; there should be greater off-farm employment opportunities; and there are probably opportunities for marketing to urban populations, such as restaurants and farmers’ markets, and for products new to the farmer such as nursery plants and Christmas trees, as well as agritourism (see, for example, Maryland-National Capital Park and Planning Commission, 2005). There tends also to be a greater variety of socioeconomic production types such as part-time farmers and more family members working off the farm. Among other things is a greater diversity of financing mechanisms (including for leasing land) and a larger variety of production intensities (especially with regard to fruits and vegetables; Bryant and Johnston, 1992).

A dictionary definition of “viability” is “capable of working, functioning, or developing adequately”; and a more specific one for business enterprises is the state of being “financially sustainable” (Merriam-Webster, 2006). *Farm* viability has been defined as (1) “a state where a farm may continue to operate, expand, and meet the goals of the farm owner” (Heinrich-Schiller Joint Venture, 2004, p. 210), and (2) as “a quality that includes ‘longevity, respect, a positive working environment, encouragement to innovate, and a belief in an agricultural future’” (Somerset County, 2001, in Heinrich-Schiller Joint Venture, 2004, p. 211). The continuation of viable farming near or in metropolitan areas

may require effective farmland preservation programs: e.g., restrictive zoning, cluster zoning, urban growth boundaries, purchase of development rights, and/or transfer of development rights—topics covered in Chapter 3 of this report. Also needed may be programs designed to keep preserved land in active agricultural use, such as encouraging consumers to purchase locally grown food, educating farmers about diversifying or switching into value-added or other new products, providing financing for beginning farmers, recruiting sufficient migrant workers, and helping with the intergenerational transfer of management and ownership—topics discussed in Chapters 2 and 4 of this report.

### **3. Research Objectives**

As stated in our application for the National Research Initiative Grant that made this study possible, our *main objective* has been “to identify conditions under which farming may remain viable as important agricultural counties transition to become mostly urban and suburban in land use.” Given this principal objective, we selected 15 such areas to study and pursued the subsidiary objectives of determining

- the kinds of agricultural products that were being successfully raised there (discussed in Chapter 2);
- the adequacy of marketing outlets for crops and livestock products (also discussed in Chapter 2);
- the supply and affordability of land for farming and ranching (Chapter 3);
- the adequacy of other major inputs of production—hand labor, new farmers, veterinarians, credit, and agri-service businesses that supply equipment, repair services, chemicals, water, etc. (Chapter 4); and
- the future outlook for agriculture, including agland owners’ plans for converting any of their land to nonfarm uses, current operators’ expectations about continuing to farm there, both surveyed agland owners’ and interviewed local leaders’ predictions about the status of agriculture in their counties in the future, and whether the leaders would encourage young people with agricultural backgrounds to farm or ranch there (Chapter 5).

For each of the major kinds of marketing outlets and inputs of production, we inquired about the existence and effectiveness of government or private programs to help with the quantity or quality of supply. We aimed to report on the degree of success (and causes of the observed effectiveness) of such programs as preserving farmland, promoting the direct marketing of locally grown food, recruiting seasonal workers, linking new farmers with retiring operators, and protecting water supplies needed for agriculture.

### **4. Justification for Our Research Focus**

Before asking the reader to wade into our discussion of research methods, we must first justify the choice of research focus. Is protecting farmland and otherwise nurturing viable agriculture on the urban edge an important enough goal for local communities or the country as a whole?

As mentioned earlier, the counties in metro areas or otherwise subject to urban influence have been producing most of the nation’s fruits, nuts, vegetables, and dairy goods.

However, scholars like John Fraser Hart (2002) argue that the same types of products can be grown more efficiently outside urbanizing areas, as farmers (or their successors) sell their urban-edge land and reinvest the capital gains in better-sized and -equipped farms one or more counties away from metro areas. On the other hand, farmers' markets are proliferating in urban and suburban areas. A USDA survey counted 4,385 farmers' markets operating in 2006, a 150% increase over 1994 (Brown, 2001). Although many vendor-growers from nonmetro-area farms can successfully transport their produce to those markets, local producers have the advantage of inviting customers to visit their farms to see where and how food is produced and—if they (the consumers) are inclined—to pick what they buy and take it home to eat.

Proximity to urban or suburban customers is also an advantage to other farms that sell directly to customers. The latter may visit on-farm stores and stands or temporary tailgate points of sale alongside roads in towns. Another direct-making outlet facilitated by geographic proximity is the Community-Supported Agriculture (CSA) channel, whereby groups of clients pay subscriptions for regular supplies of food through the harvesting season (Strochlic and Shelley, 2004).

Our focus on urban-edge agriculture has a strong policy purpose. Individually or together, members of the research team have worked on both the farmland preservation side of promoting peri-urban agriculture (Daniels and Lapping, 2005; Esseks, Nelson, and Stroe, 2006; Sokolow and Zurbrugg, 2003) and on the farm-business viability side (Clancy, Higgins, and Oberholtzer, 2001). This research project was a marriage of scholars with varying expertise but a common interest in understanding what conditions promote and hinder the success of urban-edge agriculture.

As with any field study, we authors identify, from our period of interviews and surveys, key causal conditions (of farm viability on the urban edge) that we believe are likely to persist for some or many years. In subsequent chapters we discuss such factors as the difficulty of agricultural uses (even with improved market prices) to compete for land against housing and other developed uses, the strengths and limitations of farmland preservation tools, the threats to farm viability resulting from nuisance complaints and suits raised by nonfarmer neighbors, the shortages of labor and water for agriculture, and the skill and time demands of direct marketing. Moreover, we intend to update our report, particularly following release of data from the 2007 Census of Agriculture, following new telephone and e-mail communications with local stakeholders, and through our own visits to at least some sites. Consequently, we welcome comments on this research report—criticisms or confirmations of our findings and suggestions for improvement—from every reader. We plan to set up a project blog site. Before then, please send your input by e-mail to [jesseks@msn.com](mailto:jesseks@msn.com).

### ***Public Funds Expended on Farmland Preservation***

Another justification for our research is that governing authorities in many metro-area counties have committed themselves to preserving farmland and agriculture. Table 1.1 has relevant excerpts from the formally adopted growth plans for the 15 counties chosen for this study.

Governmental interest in farmland preservation has consisted of more than words. A lot of money has been spent. From August 1989 to August 2008, the government of Berks County, Pennsylvania, contributed \$52 million to preserve 509 farms with a total of 54,191 acres. Helping to protect those acres (through purchase of their development rights) were \$61.6 million in state funds and \$806,100 in federal money.<sup>2</sup> Maryland’s Carroll County preserved 52,196 acres of farmland between 1980 and 2007, using \$83.6 million of county funds, \$43.4 million from state sources, and \$1 million from the federal government.<sup>3</sup> Between April 1997 and March 2004 Larimer County’s Open Lands program protected 28,233 acres of agricultural land, using \$11.1 million of their own money and \$16.3 million from state and private sources, including \$2.5 million in landowner donations of parts of the value of their development rights.<sup>4</sup>

**Table 1.1. Excerpts from Growth Plans for the 15 Counties in This Study**

Studied County	Agricultural Preservation Objectives in the County’s Comprehensive or Land-use Plan	Selected Policies Found in the Plan to Achieve Those Objectives
<b>Pacific Coast</b>		
King County, WA	“Agricultural and forest lands are protected primarily for their long-term productive resource value. However, these lands also provide secondary benefits such as open space, scenic views and wildlife habitat.” (p. 14)	“Designated Agricultural Production District lands shall not be annexed by cities.” (p. 15) “King County shall identify appropriate districts within the Rural Area where farming and forestry are to be encouraged and expanded.” (p. 17)
Sonoma County, CA	“Protect lands currently in agricultural production and lands with soils and other characteristics which make them potentially suitable for agricultural use.” (Goal LU 8)	“Avoid conversion of lands currently used for agricultural production to non-agricultural use. . . . Discourage uses in agricultural areas that are not compatible with long term agricultural production.” (Goal LU-8-1)
Ventura County, CA	“1. Preserve and protect irrigated agricultural lands as a nonrenewable resource to assure the continued availability of such lands for the production of food, fiber and ornamentals. “2. Encourage the continuation and development of facilities and programs that enhance the marketing of County grown agricultural products.” (pp. 19-20)	“ <i>Discretionary development</i> located on land designated . . . as <i>Prime Farmland</i> or <i>Farmland of Statewide Importance</i> . . . shall be planned and designed to remove as little land as possible from potential agricultural production and to minimize impacts on topsoil. . . .” “The Public Works Agency shall plan transportation capital improvements so as to mitigate impacts to important farmlands to the extent feasible. “The County shall preserve agricultural land by retaining and expanding the existing <i>Greenbelt Agreements</i> and encouraging the formation of additional <i>Greenbelt Agreements</i> .” (p. 20)
<b>Corn Belt</b>		
Lancaster County, NE	“An important relationship exists between the urban, rural, and natural landscapes. Urban and rural development maximizes the use of land in order to preserve agriculture and natural resources.” (p. 5)	“Acknowledge the fundamental Right to Farm. Preserve areas throughout the county for agricultural production by designating areas for rural residential development—thus limiting potential conflicts between farms and acreages.” (pp. 8-9)

<sup>2</sup> The Government of the County of Berks [PA], Agricultural Land Preservation, “Statistics,” <http://www.co.berks.pa.us/alp/cwp/view.asp?a=1333&Q=453995&alpNav=1> [(accessed October 1, 2008).

<sup>3</sup> E-mail communication from the Carroll County Agricultural Land Preservation Program, January 17, 2008.

<sup>4</sup> E-mail communication from the Larimer County Parks and Open Lands Department, August 5, 2008.

Dakota County, MN	"Goal 2: Preserve agricultural land and farming." (p. 16)	"While the county cannot preserve farmland through the use of zoning authority [which is vested in the townships], it . . . could assist township government in the use of purchase of development rights (PDR), transfer of development rights (TDR), conservation easements or clustering techniques . . . and help townships identify areas of prime agricultural land . . . for preservation." (p. 16)
Dane County, WI	"1. Identify areas of Dane County suitable for long-term preservation and viability of diverse agricultural enterprises and resources. Protect or encourage protection of those areas for the benefit and use of current and future generations. "2. Maintain Dane County's status as one of the nation's most productive and economically viable agricultural areas. Keep farming economically viable in Dane County through the 21st century." (p. 34)	"Develop and implement new tools, such as Purchase of Agricultural Conservation Easements (PACE), Transfer of Development Rights (TDR) and conservation subdivisions to meet agricultural resource goals. . . . Ordinances and regulations, which restrict noise, odors, keeping of animals or other activities that could inhibit typical farm operations, should not apply in locally designated agricultural areas. . . . Actively promote and develop direct-marketing alternatives for all agricultural foods and products." (p. 35)
DeKalb County, IL	"One of the County's goals is to protect the County's agricultural heritage and prevent the conversion of prime farm land [98% of the total land in the county] to non-agricultural uses." (p. 41)	"Expansion of existing isolated subdivisions and development of new isolated subdivisions and non-farm single-family residences is strongly discouraged in this Plan. . . . Economic conditions favor clustering of farm activities without urban intrusion for successful agriculture. The Plan shows adequate opportunities for development of housing and employment in the County while preserving the rural integrity of the County." (p. 41)
Madison County, OH	"Madison County puts a high value on its agriculture land, agriculture heritage, and its agriculture values. This is evident in the countryside and also in the Farmland Preservation Plan adopted by Madison County." (p. 12)	"Madison County will discourage the conversion of prime agriculture lands to nonagricultural uses. The County will guide land development to those areas that are shown as urban services areas on the Land Use Plan Map. . . . Existing agricultural uses shall be protected from conflicting development." (p. 55)
<b>Mid-Atlantic</b>		
Carroll County, MD	"[T]he [Agricultural] District is primarily composed of lands which, by virtue of their highly productive soils, rolling topography and natural beauty, are the very essence of the County's farming heritage and character." (Article 6)	"The intent of this article is to recognize the need for and appropriateness of very limited residential development in the Agricultural District, but to prohibit residential development of a more extensive nature. It is the further purpose of this district to maintain and promote the open character of this land as well as to promote the continuance and viability of the farming and agribusiness uses." (Article 6)
Berks County, PA	"Goal: To preserve and promote the agribusiness system, agricultural community, and rural character of Berks County: Agriculture plays a major role in the economy of Berks County. Quality soils, a favorable climate, and close proximity to major markets make Berks an ideal location for the agricultural industry." (p. II-2)	"The County will identify, maintain, and preserve the most viable agricultural land for agricultural use, and support agriculture as a primary land use and a valued element of the County's economy. While respecting individual property rights, the overriding consideration is to maintain the agricultural economy and to conserve farmland for future agricultural use." (p. II-3)
Burlington County, NJ	"A major aspect of preserving this significant past [the county's ] is an acknowledgement of the importance of the country's farming industry. Considered a leading agricultural county in the United States, Burlington has more acres devoted to farming than any other county in the state." (6)	"The county has a comprehensive land preservation program designed to ensure that 25,000 acres of vital farmlands and 3,480 acres of open space are protected." (p. 8)

Orange County, NY	"The Future of Agriculture—The need for direct efforts to help reduce the costs and provide incentives to help overcome market forces that encourage the conversion of farms to residential and commercial development." (p. 6)	"Orange County has been a leader in agricultural preservation efforts as shown by adoption of New York State's first Agriculture and Farmland Protection Plan, and active participation in purchase of development rights programs. Yet the continued viability of farming remains a challenge. Through the leadership of the County's Agriculture and Farmland Protection Board, the County will move to update its Agriculture Plan to address ways to improve the economic vitality and diversity of agricultural pursuits in the County." (p. 16)
<b>Highly Scenic and Recreational</b>		
Larimer County, CO	"Faced with a state law permitting 35-acre splits "without any county land use review," and with many people willing to create home sites meeting that minimum lot size, Larimer County instituted "the Rural Land Use Process [that] uses incentives to encourage alternative developments to help retain the rural and agricultural lands of Larimer County." (Website, p. 1)	"Up-zoning to increase residential density in rural areas shall not be approved. Extension of higher density development patterns approved prior to adoption of this Master Plan shall not be used as justification for approval of new rezoning or lot size variance requests which result in higher density." (Website, p. 1)
Fayette County, KY	"Maintain and enhance the agricultural economy, horse farms, general agricultural farms, and rural character in the Rural Service Area." (p. 18)	"Preserve adequate land for the equine industry; protect equine operations from encroachment; and promote future equine industry growth in the region. . . . Support and encourage existing horse breeding and racing operations and encourage expanded capital investment and new farm development as tools for local and international investment and economic development." (p. 18)
Palm Beach County, FL	"Prevent urban sprawl through establishment of urban development areas, and encourage urban revitalization and redevelopment programs. . . . [P]rotect agricultural land and equestrian based industries." (FLUE-1, p. 3)	"The County shall designate properties with one of the three agricultural categories to ensure compatibility with surrounding future land uses, and to prevent encroachment of incompatible uses into agricultural areas. . . . The County shall not violate the Right-to-Farm Act." (FLUE-27, p. 56)

Sources: King County [WA] Department of Development and Environmental Services, 2005, *King County Countywide Planning Policies*; Sonoma County [CA] Permit and Resource Management Department, *Sonoma County General Plan—Land Use Element*; County of Ventura [CA], Resource Management Agency, Planning Division, 2005, *Ventura County Comprehensive Plan: Goals, Policies and Program*; City of Lincoln and Lancaster County [NE], 2006, *2030 Lincoln/Lancaster County Comprehensive Plan*; Dakota County, Minnesota, 1999, *Dakota County 2020 Land Use Policy Plan*; Dane County Department of Planning and Development, 2007, *Dane County, Wisconsin, Comprehensive Plan*, Chapter 5; DeKalb County, Illinois, 2003, *DeKalb County Unified Comprehensive Plan*; Madison County Commissioners, 2005, *Madison County, Ohio, Comprehensive Plan*; Carroll County, Maryland, no date, *Zoning Ordinances*, Article 6; Berks County, Pennsylvania, 2008, *Berks Vision 2020: A Comprehensive Plan for the County of Berks*; Burlington County, 2008, *Burlington County, New Jersey: An Economic Resource Guide: Balanced, Beautiful Burlington, New Jersey*; Orange County, New York, 2003, *Orange County Comprehensive Plan: Strategies for Quality Communities, Executive Summary*; Larimer County [CO] Planning Division, 1997, *Larimer County Land Use Plan: 3.2 Rural Land Use*; Lexington-Fayette Urban County Government, *The 2007 Comprehensive Plan for Lexington-Fayette County, Kentucky*; Palm Beach County, 2005, "Future Land Use Element," 1989 *Comprehensive Plan: Revised 11-26-07*.

## 5. Research Methods

This discussion of the project's research methods addresses the following questions:

- In our study of farm viability in growing metro areas, why did we focus on counties rather than on some other geographic unit(s)?

- How did we choose the particular 15 counties that comprise our sample?
- How did we gather data on those counties?
- In addition to seeking information to describe the major products, land, and other inputs of the agricultural sector in each county, we were particularly interested in the behavior and attitudes of agricultural landowners. During 2006 a total of 1,922 such owners across the 15 counties participated in our mailed survey. Sixty-four percent of them (1,237) were also farm operators. Why did we focus on the owners rather than just farm operators?
- How were the surveys conducted?
- To supplement data gathered from the surveyed landowners, we also interviewed a total of 357 leaders of the agricultural sectors in the 15 counties. How were they selected?
- How were the interview data gathered?
- And, in trying to make sense of the collected survey, interview, and other data (such as data from printed or online documents), what types of analysis and general rules of evidence did we follow?

#### ***A. Focusing on Agriculturally Important Counties in Growing Metro-Area Counties***

First we need to justify our choice of “unit of analysis,” which Russell Schutt (1999: 618) has defined as “the level of social life on which a research question focused.” Our unit of analysis is the county, for the following reasons:

- In agriculturally important areas, the county is often the framework for many actors relevant to the continued viability of agriculture: the Farm Bureau and other farmer organizations with county-level offices and memberships, the county Soil and Water Conservation District, and county offices of USDA’s Farm Service Agency, its Natural Resources Conservation Service, and the land-grant university’s Cooperative Extension Service.
- The countywide landscape tends to be large enough to be the loci of conflicts critical to the survival of agriculture, including municipalities competing with each other and county governments over control of undeveloped land, and also, exurbanite households fighting with nearby farmers over what are acceptable farming practices.
- A very rich source of data on agriculture in the United States, the federal government’s Census of Agriculture, provides information (for public use) on farming and ranching at the national, state, and county level, but not on individual farms or ranches. Conducted every fifth year, this census allowed us to compare a large variety of measures of agricultural activity per county across its 1987, 1992, 1997, and 2002 editions.

#### ***B. Our Sample of 15 Counties***

We sampled counties in two stages:

**1. In the first stage**, we identified 181 metro-area counties across the country that met these four criteria and related standards:

- They had significant agricultural sectors as of the beginning of the 15-year comparison period for ag census data, with “significant” defined as reporting at least \$50 million in gross farm sales for the 1987 census.

- Each county’s land in agricultural use in the 1987 census was not trivial in size, which we defined as covering the equivalent of at least one full “township,” a geographic unit used by the Public Lands Survey for most of the country, consisting of 36 square miles of land (or 23,040 acres).
- Between 1990 and 2000 each county’s population increased by a significant amount—at least 5%.
- That increase occurred from a substantial base of urbanization or urban influence. We were interested in counties in which, toward the beginning of the comparison period, development already was likely to have posed a substantial risk to agriculture’s viability. Otherwise, sustaining agriculture with public and private actions might justifiably have been on no one’s agenda in the early 1990s. We defined a “significant base” as at least 33% of the county’s total land surface being subject to what researchers at the USDA Economic Research Service (ERS) measured as “urban influence.”<sup>5</sup>

**2. In the second stage,** we used telephone and e-mail contacts with scholars and practitioners to obtain their recommendations as to which counties should be studied from the list of 181 selected in the first stage. The particular 15 were chosen for their diversity—in geographic features, major agricultural products raised, and land-use tools to promote viable agricultural sectors.

- **Regional diversity:** As Table 1.2 indicates, the 15 counties consist of three metro-area counties from the Pacific Coast, four from the Mid-Atlantic region, five from the Corn Belt, and three from diverse parts of the country (Colorado, Kentucky, and Florida) whose important agricultural sectors were threatened by a special set of development pressures—first- and second-home buyers, as well as tourism entrepreneurs, who were attracted to extraordinarily scenic landscapes and related recreational opportunities. Larimer County’s main agricultural areas sit at the edge of the Rocky Mountains’ Front Range; Fayette County is situated in Kentucky’s Bluegrass region with its many scenic horse farms; and Palm Beach County in Florida has been an oceanside playground and retirement destination for generations.
- **Size of metro areas:** Besides regional diversity, the selected counties varied also in the size of their metro areas and the extent of urban influence within their boundaries: eight of the 15 counties belonged to metropolitan areas with fewer than 1 million total residents, while the other seven (King, Dakota, DeKalb, Madison, Carroll, Burlington, and Palm Beach) had at least 1 million residents (Table 1.2). In five of the latter seven—Dakota, Madison, Burlington,

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<sup>5</sup> Using Natural Resources Inventory data, the ERS study developed an index of “urban influence” that measured, for each 1990 census block, its accessibility to the populations in other blocks within a 50-mile radius. The more people in those blocks and the closer the blocks with numerous residents, the higher the measure of urban influence for the block being classified. A census block is a “subdivision of a [census tract](#) (or, prior to 2000, a block numbering area); a block is the smallest geographic unit for which the Census Bureau tabulates 100% data. Many blocks correspond to individual city blocks bounded by streets, but blocks—especially in rural areas—may include many square miles and may have some boundaries that are not streets. . . . Over 8 million blocks are identified for Census 2000” (taken from the “Glossary” of the US Census Bureau’s American FactFinder: [http://factfinder.census.gov/home/en/epss/glossary\\_c.html](http://factfinder.census.gov/home/en/epss/glossary_c.html)).

Orange, and Fayette—the county’s own population and commuting patterns caused more than half its total land to be considered under “high urban influence” as of 1990 (Table 1.2).<sup>6</sup>

This geographic diversity translates into considerable variation in traits critical to agriculture’s viability—traits such as population growth, land still being farmed, rate of loss of farmland, demand for housing, frost-free days, and average annual rainfall. Table 1.2’s entries present this diversity. Readers who review this table may find counties that are similar to where they live or to areas of interest to them for other reasons.

**Population growth:** The residential populations of the three highly scenic and recreational counties increased during the 1990s by 16% to 35%, while the three Pacific Coast counties grew by 13% to 18%, the five Corn Belt study sites expanded by 9% to 29%, and the four Mid-Atlantic counties added 7% to 22% (Table 1.2).

**Land still being farmed:** Total acres in farms or ranches (as of the 2002 census) also varied considerably—from a low of 41,769 acres (or about 65 square miles) recorded by the 2002 census for King County to over a half million acres (or 781 square miles) in Sonoma, Dane, Larimer, and Palm Beach counties (Table 1.2). Overall farm acreage in the four Mid-Atlantic counties varied in the rather narrow range of 107,977 (Orange) to 215,679 acres (Carroll), while the Corn Belt group of counties ranged from 235,763 acres in Dakota County and to 515,475 in Dane.

**Loss of farmland:** Between 1987 and 2002 agriculture’s share of the county’s total land declined in 10 of the counties by 0.8 percentage points (Orange County) to 20 percentage points (Fayette County; see Table 1.2). Five counties recorded percentage-point *increases*, ranging from 0.1 (Lancaster) to 7.7 (Sonoma). However, for those counties—Sonoma, Ventura, Lancaster, Dakota, and Burlington—portions of the increases may have been due to changes between the 1997 and 2002 censuses in how farms were surveyed. USDA’s National Agricultural Statistics Service (NASS) took over full responsibility for the census<sup>7</sup> and reported using more comprehensive lists of farms and ranches to which to send the census forms (Sumner, Brunke, and Bervejillo, 2004). Because the *2002 Census of Agriculture* contains both data for that year and entries that represent adjustments for 1997 based on the new sampling procedures, we could compare the adjusted 1997 figures for total acres in farms to those of the originally published 1997 census. For 13 of our 15 counties, the 1997 land totals increased by 0.8% to 25.5% (with a median of 4.1%), while in the remaining two cases there were small decreases—of 0.04%

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<sup>6</sup> For a definition of “urban influence,” see footnote 5 just above.

<sup>7</sup> The U.S. Census Bureau began preparations for the 1997 ag census, and then NASS completed it. The 2002 census was the first one that NASS “conducted . . . from start to finish” (Allen, 2004).

(Burlington) and 1.4% (Larimer). The wider sampling nets may have obscured losses of farmland and overstated gains since 1987.<sup>8</sup>

***The relative demand for housing:*** As a rough measure of the demand for housing, we used each county's 2006 median value for owner-occupied homes and compared it to the median for the *country as a whole*, which in the 2006 American Community Survey was estimated to be \$185,200 (U.S. Census Bureau, 2007). The medians for our three West Coast counties range from \$394,100 (King) to \$648,000 (Ventura) and exceeded that national median by 112.8% to 249.9% (Table 1.2). For the five Corn Belt counties, the differences ranged from minus 22.5% (Lancaster County) to plus 33.9% (Dakota), while in the four Mid-Atlantic counties it went from minus 19.2% (Berks) to plus 96.4% (Carroll), and for the three scenic counties, minus 15.6% (Fayette) to plus 77.4% (Palm Beach).

***Frost-free days and annual rainfall:*** In Table 1.2, the differences in frost-free days and inches of annual rainfall reflect the geographic locations of the studied counties. Ventura County in southern California and Palm Beach in Florida avoid frost for nearly the entire year. King County in western Washington State, Sonoma County on the northern California coast, and Carroll County in eastern Maryland, tend to enjoy more than 200 days frost free. Parts of Berks County usually get above 200 days, while the other nine counties usually record fewer than 200. The measures for normal rainfall are also very diverse, extending from as few as 15.6 inches in southern California's Ventura County and 15.8 inches in a "rain shadow" area of Larimer County to 59.4 inches in Palm Beach County, where agriculture benefits from a moist Atlantic Coast climate. The differences in rainfall are related to the percentages of harvested cropland that were irrigated (Table 1.2). That is, the less rainfall, the higher the irrigation percentages tended to be.<sup>9</sup>

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<sup>8</sup> The problem is that we lack estimates for 1987 that are consistent with the new sampling frame for 2002. Therefore, we compared the unadjusted 1987 totals for land in farms with those for 10 years later (1997) that also did not take into account the new sampling techniques. In these comparisons, the losses "originally" measured for eight of our counties were 0.7 to 19.6 percentage points *higher* relative to the 1987-to-1997 comparisons using the adjusted figures for 1997. The median increase was 5.4 points. In three other counties, the *gains* (1987–97) found with the initially published 1997 figures were 2.5 to 9.6 points *less* when we used the adjusted 1997 data. Moreover, in another two counties, losses recorded under the older sampling regime changed to gains under the new. However, in one additional case the acres lost were greater, while in a second the difference was tiny.

<sup>9</sup> The Pearson correlation coefficient for these two variables across the 13 counties for which we had data on irrigated harvested cropland was a statistically insignificant -.148. However, when the outlier percentage for Palm Beach County was omitted, the correlation rose to -.711 (significant at the 0.01 level in a 2-tailed test).

<b>Table 1.2 Geographic Traits of Studied Counties</b>			
<b>Pacific Coast</b>	<b>King County, WA</b>	<b>Sonoma County, CA</b>	<b>Ventura County, CA</b>
2006 population <sup>1</sup>	1,826,732	466,891	799,720
Population growth, 2000–2006 <sup>1</sup>	5.2%	1.8%	6.2%
Population growth, 1990–2000 <sup>1</sup>	15.2%	18.1%	12.6%
All land in county (acres) <sup>2</sup>	1,360,668	1,008,562	1,180,991
Total acres in farms or ranches, 2002 <sup>2</sup>	41,769	627,227	332,371
Total acres as percentage of all land, 2002 <sup>2</sup>	3.1%	62.2%	28.1%
Farmed or ranched land as percentage of all land, 1987 <sup>3</sup>	4.0%	54.5%	27.9%
<i>Percentage-point difference, 2002 versus 1987 level</i>	-0.9	+7.7	+0.2
Percentage subject to “high urban influence” as of 1990 <sup>4</sup>	32.0%	19.6%	35.4%
Percentage subject to “medium” or “medium-low urban influence” <sup>4</sup>	19.6%	28.2%	25.4%
As of 2003, located in a Metropolitan Statistical Area with a population of:	At least 1 million	Fewer than 1 million	Fewer than 1 million
Name of metro area	Seattle-Tacoma-Bellevue	Santa Rosa-Petaluma	Oxnard-Thousand Oaks
Median value of owner-occupied homes, 2006 <sup>1</sup>	\$394,100	\$618,500	\$648,000
Percentage difference between county’s median and national median for owner-occupied homes, 2006 <sup>1</sup>	+112.8%	+234.0%	+249.9%
Median household income, 2006 <sup>1</sup>	\$63,489	\$60,821	\$72,107
Frost-free days	253 (Seattle)	206 (Santa Rosa)	359 (Los Angeles)
Average annual rainfall (inches)	36.2 (Seattle)	31.0 (Santa Rosa)	15.6 (Oxnard)
Percentage of total harvested cropland that was irrigated, 2002 <sup>2</sup>	28.8%	76.1%	69.5%
Total harvested cropland acres, 2002 <sup>2</sup>	10,165	91,537	102,262
Total number of separate farm operations, 2002 <sup>2</sup>	1,548	3,447	2,318

<sup>1</sup>US. Census Bureau, American FactFinder: [http://factfinder.census.gov/home/saff/main.html?\\_lang=en](http://factfinder.census.gov/home/saff/main.html?_lang=en)

<sup>2</sup>USDA National Agricultural Statistics Service, 2002 Census of Agriculture:

<http://www.agcensus.usda.gov/Publications/2002/index.asp>

<sup>3</sup>USDA Economics & Statistics Systems, Ag Census: The US Census of Agriculture, 1987, 1992, 1997:

<http://agcensus.mannlib.cornell.edu/>

<sup>4</sup>USDA Economic Research Service

<b>Corn Belt</b>	<b>Lancaster County, NE</b>	<b>Dakota County, MN</b>	<b>Dane County, WI</b>	<b>DeKalb County, IL</b>	<b>Madison County, OH</b>
2006 population	267,135	388,001	463,826	100,139	41,496
Population growth, 2000–2006	6.7%	9.0%	8.7%	12.6%	3.2%
Population growth, 1990–2000	17.2%	29.3%	16.2%	14.2%	8.5%
All land in county (acres)	536,884	364,544	769,213	405,860	297,880
Total acres in farms or ranches, 2002	448,600	235,763	515,475	359,352	245,886
Total acres as percentage of all land, 2002	83.6%	64.7%	67.0%	88.5%	82.5%
Farmed or ranched land as percentage of all land, 1987	83.5%	60.3%	74.1%	94.7%	89.7%
<i>Percentage-point difference, 2002 versus 1987 level</i>	+0.1	+4.4	-7.1	-6.2	-7.2
Percentage subject to “high urban influence” as of 1990	29.5%	67.2%	28.7%	27.4%	52.2%
Percentage subject to “medium” or “medium-low urban influence”	37.5%	32.8%	41.8%	62.9%	47.8%

As of 2003, located in a Metropolitan Statistical Area with a population of:	Fewer than 1 million	At least 1 million	Fewer than 1 million	At least 1 million	At least 1 million
Name of metro area	Lincoln	Minneapolis-St. Paul-Bloomington	Madison	Chicago-Naperville-Joliet	Columbus
Median value of owner-occupied homes, 2006	\$143,500	\$247,900	\$225,700	\$189,000	\$104,300*
Percentage difference between county's median and national median for owner-occupied homes, 2006	-22.5%	+33.9%	+21.9%	+2.1%	-43.7
Median household income, 2006	\$48,564	\$70,502	\$57,693	\$51,055	\$46,252 (2004)*
Frost-free days	160 to 175	About 166	147 to 159	165 to 170	About 165
Average annual rainfall (inches)	26.9	27.3	33.0	37.4	38.5
Percentage of total harvested cropland that was irrigated, 2002	5.4%	24.2%	3.7%	0.3%	NA
Total harvested cropland acres, 2002	314,148	191,924	360,910	340,614	214,411
Total number of separate farm operations, 2002	1,607	997	2,887	816	730

\*US Census Bureau, State and County QuickFacts: <http://quickfacts.census.gov/qfd/states/39/39097.html>

<b>Mid-Atlantic</b>	<b>Carroll County, MD</b>	<b>Berks County, PA</b>	<b>Burlington County, NJ</b>	<b>Orange County, NY</b>
2006 population	170,260	401,149	450,627	376,392
Population growth, 2000–2006	12.8%	7.4%	6.4%	10.3%
Population growth, 1990–2000	22.3%	11.0%	7.2%	11.0%
All land in county (acres)	287,440	549,683	514,927	522,456
Total acres in farms or ranches, 2002	147,252	215,679	111,237	107,977
Total acres as percentage of all land, 2002	51.2%	39.2%	21.6%	20.7%
Farmed or ranched land as percentage of all land, 1987	58%	44.3	20.0%	22.0%
<i>Percentage-point difference, 2002 versus 1987 level</i>	-6.8	-4.9	+1.6	-1.3
Percentage subject to "high urban influence" as of 1990	9.1%	25.0%	51.8%	81.8%
Percentage subject to "medium" or "medium-low urban influence"	90.9%	75.0%	48.2%	18.2%
As of 2003, located in a Metropolitan Statistical Area with a population of:	At least 1 million	Fewer than 1 million	At least 1 million	Fewer than 1 million
Name of metro area	Baltimore-Towson	Reading	Philadelphia-Camden-Wilmington	Poughkeepsie-Newburgh-Middletown
Median value of owner-occupied homes, 2006	\$363,800	\$149,700	\$259,300	\$319,300
Percentage difference between county's median and national median for owner-occupied homes, 2006	+96.4%	-19.2%	+40.0%	+72.4%
Median household income, 2006	\$74,106	\$50,039	\$68,090	\$64,947
Frost-free days	235 (Baltimore)	170–214	166–186	143–183
Average annual rainfall (inches)	44	41	44–46	41
Percentage of total harvested cropland that was irrigated, 2002	0.5%	0.8%	22.9%	NA
Total harvested cropland acres in 2002	99,790	154,108	154,108	54,654
Total number of separate farm operations, 2002	1,058	1,791	906	706

Three Highly Scenic and Recreational Counties	Larimer County, CO	Fayette County, KY	Palm Beach County, FL
2006 population	276,253	270,789	1,274,013
Population growth, 2000–2006	9.8%	3.9%	12.6%
Population growth, 1990–2000	35.1%	15.6%	31.0%
All land in county (acres)	1,664,832	182,090	1,263,428
Total acres in farms or ranches, 2002	521,599	119,098	535,965
Total acres as percentage of all land, 2002	31.3%	65.4%	42.4%
Farmed or ranched land as percentage of all land, 1987	34.5%	85.4%	52.2%
<i>Percentage-point difference, 2002 versus 1987 level</i>	-3.2	-20.0	-9.8
Percentage subject to “high urban influence” as of 1990	16.5%	79.3%	24.0%
Percentage subject to “medium” or “medium-low urban influence”	35.3%	20.6%	30.8%
As of 2003 located in a Metropolitan Statistical Area with a population of:	Fewer than 1 million	Fewer than 1 million	At least 1 million
Name of metro area	Fort Collins-Loveland	Lexington-Fayette	Miami-Fort Lauderdale-Miami Beach
Median value of owner-occupied homes in the county, 2006	\$244,000	\$156,400	\$328,500
Percentage difference between county’s median and national median for owner-occupied homes, 2006	+31.7%	- 15.6%	+ 77.4%
Median household income (2006)	\$53,745	\$44,211	\$51,677
Frost-free days	170 (Denver)	197	Below freezing days are rare
Average annual rainfall (inches)	15.8 (Fort Collins)	45.9 inches	59.4 inches
Percentage of total harvested cropland that was irrigated, 2002	77.2%	4.3%	97.5%
Total harvested cropland acres, 2002	64,332	26,264	428,683
Total number of separate farm operations, 2002	1,564	738	1,110

NA = Not applicable.

- Major crops:** In Table 1.3, the list of the three most important types of agricultural products per county by value of sales is relatively diverse, except that the 2002 census found the product category “Nursery, greenhouse, and floriculture” to rank among the top three kinds of products in 12 of the 15 counties, including at least two counties in all three regions and also in the special scenic group of counties. The new homes, schools, stores, offices, and other facilities constructed in the nearby urbanizing areas provided many customers for trees, shrubs, sod, bedding plants, etc. Also frequently found near large urban populations are dairy farms. In eight of our studied counties, the market value of dairy products ranked among the highest three types by sales. Other types of crops or livestock in the top three were as follows: vegetables in five counties, fruits (or fruits and berries) in four, cattle and calves in four, and grains (plus soybeans) in all five Corn Belt counties, plus Carroll County, and two counties each for poultry and hogs/pigs.
- Governmental programs:** Table 1.3 lists various land-use policies of state and local governments that affect the viability of agriculture in the studied counties. Of course, other types of governmental intervention are also relevant and will be discussed in later chapters. However, since the land constraint tends to be the

most serious for continued commercial farming in metro-area counties, our selection criteria included variety in land-use policies.

- Twelve of the 15 studied counties required large minimum lot sizes (e.g., 20 to 40 acres) both as a financial disincentive to building nonfarm homes on agriculturally zoned land and as a tool to keep overall density low. We label these policies “agricultural protection zoning.”
- In eight counties “urban growth boundaries” or “urban services areas” had been established to shape and phase the expansion of sewer, water, and other urban services.
- In 10 counties we found programs operating that purchased the development rights to farm or ranch land. That is, agland owners voluntarily sold to public or private agencies their rights to build homes, stores, etc., on their land.
- In one county (Burlington), there were programs at the state and town level that successfully engineered the transfer of development rights from agricultural parcels marked for preservation (“sending” areas) to other properties planned for relatively dense development (“receiving” areas). Developers working in the latter type of area paid owners of the agricultural parcels in “sending” areas for the value of the building rights they surrendered and that could be transferred to the developers’ properties. Transfers of this nature had taken place also in Palm Beach and Larimer counties. In a rural township of a third county, Orange, legislation authorizing such transfers was in place.
- All 14 states in which our 15 study sites are located had right-to-farm laws designed to give producers some protection from private nuisance complaints (e.g., against farm odors, dust, noise) or from regulations imposed by local government to prevent perceived nuisances.
- All states also had laws authorizing property-tax assessments on the basis of the land’s capability to generate income from agricultural use rather than on its often much higher market value that incorporates its development potential.

### ***C. How Were Data on the 15 Counties Collected?***

We used three main sources:

**1. The federal government’s every-five-year Census of Agriculture:** The census surveys as many of a county’s farm and ranch operations as possible, given the lists of farms and ranches that the enumerating agency has been able to compile for its census mailings and the willingness of addressees to cooperate. The census aims to survey the operators of “any place from which \$1,000 or more of agricultural products were produced and sold, or normally would have been sold, during the Census year” (USDA, 2008). Federal law (under Title 7 of the United States Code) requires participation. There have been both “long” and “short” forms of the census questionnaire. For example, the 2002 long form (which farmers were required to submit by February 3, 2003) comprised 24 pages, divided into 24 sections, with up to 26 questions per section, many consisting of multiple parts. For each of our 15

counties, Table 1.2 lists the total numbers of separate operations and the total acres in farms or ranches that the 2002 census estimated.

<b>Table 1.3</b>		
<b>Studied Counties</b>	<b>Top Three Types of Agricultural Products by Market Sales, 2002 Census of Agriculture*</b>	<b>Major Public Policies Affecting Agricultural Land Use</b>
<b>Pacific Coast</b>		
King County, WA	<ol style="list-style-type: none"> <li>1. Nursery, greenhouse, and floriculture</li> <li>2. Dairy products</li> <li>3. Vegetables</li> </ol>	<ul style="list-style-type: none"> <li>• Large minimum lot sizes to limit number of new homes built on agriculturally zoned land (a form of agricultural protection zoning, or APZ)</li> <li>• Urban growth boundaries (UGB) to shape and phase the extension of urban services</li> <li>• Purchase of development rights to agland (PDR) that limits its development</li> <li>• Right-to-farm (RTF) legislation that aims to protect against unfair nuisance complaints</li> <li>• Agricultural use value (rather than full market value) as the basis for property tax assessment (UVA)</li> </ul>
Sonoma County, CA	<ol style="list-style-type: none"> <li>1. Fruits</li> <li>2. Dairy products</li> <li>3. Nursery, greenhouse, and floriculture</li> </ol>	APZ, UGB, PDR, RTF, UVA
Ventura County, CA	<ol style="list-style-type: none"> <li>1. Fruits</li> <li>2. Nursery, greenhouse, and floriculture</li> <li>3. Vegetables</li> </ol>	APZ, UGB, RTF, UVA
<b>Corn Belt</b>		
Lancaster County, NE	<ol style="list-style-type: none"> <li>1. Corn, soybeans, sorghum, and wheat</li> <li>2. Cattle and calves</li> <li>3. Poultry</li> </ol>	APZ, cluster zoning (i.e., promotion of the clustering of rural residences and preservation of residual farmland), RTF, UVA
Dakota County, MN	<ol style="list-style-type: none"> <li>1. Corn, soybeans, wheat, and oats</li> <li>2. Nursery, greenhouse, floriculture and sod</li> <li>3. Cattle &amp; calves</li> </ol>	APZ, urban services area (imposed by the metropolitan wastewater treatment agency), PDR, RTF, UVA
Dane County, WI	<ol style="list-style-type: none"> <li>1. Dairy products</li> <li>2. Corn, soybeans, wheat, and oats</li> <li>3. Nursery, greenhouse, floriculture, and sod</li> </ol>	APZ, PDR, RTF, UVA
DeKalb County, IL	<ol style="list-style-type: none"> <li>1. Corn, soybeans, wheat, and oats</li> <li>2. Hogs and pigs</li> <li>3. Cattle and calves</li> </ol>	APZ, UGB, RTF, UVA
Madison County, OH	<ol style="list-style-type: none"> <li>1. Soybeans, corn, and wheat</li> <li>2. Hogs and pigs</li> <li>3. Dairy products</li> </ol>	APZ, PDR, Agricultural Districts to protect managerial freedom to farm, RTF, UVA
<b>Mid-Atlantic</b>		
Carroll County, MD	<ol style="list-style-type: none"> <li>1. Dairy products</li> <li>2. Nursery and greenhouse</li> <li>3. Corn, soybeans, wheat, and barley</li> </ol>	APZ, PDR, RTF, UVA
Berks County, PA	<ol style="list-style-type: none"> <li>1. Nursery, greenhouse, and floriculture</li> <li>2. Poultry</li> <li>3. Dairy products</li> </ol>	APZ, PDR, Agricultural Security Areas to protect managerial freedom to farm, RTF, UVA
Burlington County, NJ	<ol style="list-style-type: none"> <li>1. Nursery, greenhouse, floriculture, and sod</li> <li>2. Fruits and berries</li> <li>3. Vegetables, melons, and potatoes</li> </ol>	PDR, state and township transfer of development rights (TDR), RTF, UVA
Orange County, NY	<ol style="list-style-type: none"> <li>1. Nursery, greenhouse, floriculture, and sod</li> <li>2. Dairy products</li> <li>3. Vegetables and potatoes</li> </ol>	PDR, Agricultural Districts to protect managerial freedom to farm, TDR in one town, RTF, UVA

Highly Scenic and Recreational		
Larimer County, CO	1. Dairy products 2. Cattle and calves 3. Nursery and greenhouse products	APZ, cluster zoning, UGB, PDR, TDR, RTF, UVA
Fayette County, KY	1. Horses 2. Tobacco 3. Nursery, greenhouse, and sod	APZ, Consolidation of city and county government, UGB, PDR, RTF, UVA
Palm Beach County, FL	1. Vegetables and sugar cane 2. Nursery, greenhouse, and sod 3. Fruits	Cluster zoning, UGB, TDR, leasing more than 1,700 acres (in 2007) of county-owned land to farmers, RTF, UVA

\*The product types are based on the 2002 census's Table 2, "Market Value of Agricultural Products Sold." The categories were modified where necessary, such as when the full category bore the title "Nursery, greenhouse, floriculture, and sod," but our investigation of other tables in that year's census report found that no sod had been harvested in the particular county. Another example was where the full category read "Vegetables, melons, potatoes, and sweet potatoes," but the tables on crops harvested indicated that only vegetables had been produced.

**2. Survey of agricultural landowners:** Although the ag census provides a wealth of data per county about farms, ranches, and their operators, we were interested in learning also about the *owners* of agland. They are the ones who decide whether or not to accept developers' bids for their land or to act as land subdividers themselves. They can refuse to invest in maintaining or improving their cropland, pasture, farm buildings, fences, and other facilities. For lack of planning for retirement or death, they can jeopardize the continued viability of their farm operations. Without a family member or other successor lined up to farm the land, it might be sold, perhaps in pieces. Even with a successor in place, lack of effective estate planning might necessitate selling off at least part of the farm in order to pay off heirs or creditors.

The nine-page questionnaire that we mailed out in 2006 focused on:

- traits of the respondents' owned land, such as number of acres, what was being raised there in 2005 and what marketing outlets were used;
- the owners' assessments of the adequacy of agricultural labor, credit, water, other inputs of production, and of the markets for their land's products, including their satisfaction with the markets' profitability;
- traits of the owners, themselves—age, education, occupation, gross revenue from farming, and their farm revenue's share of total net household income; and
- a number of attitudes that could shape the future viability of agriculture in the county:
  - To what extent were they satisfied with the farmland preservation policies operating within their counties?
  - Over the 10 years following the survey, how much (if any) of their currently owned farmland in the county did they expect to be developed for residential, commercial, or industrial use?
  - In the five following years, was it likely that they or the farmers of their land (if they were not also the operators) would "make any agricultural investments" on the land, such as erecting, replacing, or enlarging buildings, fences, and conservation or irrigation facilities?
  - Was a succession plan for transfer of the ownership and management of the land already written or under consideration?

- Among the owners who were also operators, did they expect to farm in the county for at least another 10 years?
- And what kind of future did the owners expect for agriculture in the county 20 years into the future: “Bright, modest, dim, none at all, not sure”?

**Sampling procedures:** The sample of surveyed landowners for each county was randomly selected from a public list of owners of parcels that under state law qualified for property-tax assessment based on their agricultural use rather than on their full market value. In Chapter 3, Table 3.7 describes, by state, the main conditions for qualifying for agricultural-use assessment.

Because we were seeking to survey persons likely to know about agricultural operations on their land in the county, we removed from the computer-readable lists (that we purchased from assessment offices) all the owners whose home zip codes indicated they lived outside the studied county. From these adjusted lists we randomly selected about 300 owners per county.<sup>10</sup>

**Numbers and types of respondents:** Across the 15 studied counties, we received usable questionnaires back from 100 agland owners in Fayette County to 174 in Dane County (see Table 1.4). From 43.1% (Dane) to 89.3% (King) of the respondents identified themselves as farm operators as well as owners (Table 1.4). Another 7.0% (Fayette) to 36.4% (Madison) were not currently operators but classified themselves as nevertheless having “detailed information about how my farmland there [in the subject county] is operated.” Twenty-three percent of these well-informed non-operators were retired farmers, while another 25% were retired from other occupations and perhaps therefore had the time to observe carefully how their land was farmed.

**Response rates:** Following procedures recommended by the American Association for Public Opinion Research (AAPOR), we calculated the response rates by dividing the returned, usable questionnaires by the total number of owners *eligible* to participate in the survey.<sup>11</sup> The resulting rates ranged from 39.6% in Palm Beach

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<sup>10</sup>For Berks and King counties, there were so many nonfarm forestry parcels in the lists that drawing supplementary samples was necessary.

<sup>11</sup> Excluded from the total “eligibles” were the cases where sampled owners or relatives informed us that their land had not been farmed, they had sold the land, the owner had recently died or was too sick to participate, the cases where our mailings to them were returned as undeliverable (and we checked for any mistakes in our use of public files to obtain the addresses), and when one other adjustment was made. The American Association for Public Opinion Research (AAPOR) allows for estimating “what proportion of cases of unknown eligibility is actually eligible,” provided that we have persuasive evidence to support the estimate (AAPOR, 2004, p. 29). As suggested by AAPOR (p. 36), we assumed that, among the potential respondents with whom we had not had any communication, the percentage eligible for the survey was the same as the percentage we found among the owners who (1) were reached by mail and (2) indicated that they still owned land that had been farmed the previous year. For example, let us say that we heard from 150 sampled owners, of whom 135 (90%) filled out the questionnaires and 15 wrote that either their land had been sold or had not been farmed at all in 2005. Let us say further that we had not heard from another

County to 66.9% for Dane County, with the median being Madison County’s 51.2% (Table 1.4).<sup>12</sup> Given these modest (but not bad) levels of response, the report stresses where the survey findings are supported by our interviews with local experts. In the absence of corroboration, the questionnaire data can only suggest the conditions that prevailed in the studied counties’ agricultural sectors, 2005 to 2006.

Region or Type of County	County and State	Total Landowners Surveyed	Number (and Percentage) Who Were Owner-Operators	Number (and Percentage) Who Otherwise Were Well-informed <sup>1</sup> about Land’s Ag Operations	Response Rate (%)
<b>Pacific States</b>	King County, WA	103	92 (89.3)	8 (7.8)	41.2
	Sonoma County, CA	108	90 (83.3)	14 (13.0)	43.2
	Ventura County, CA	105	89 (84.8)	12 (11.4)	44.1
<b>Corn Belt</b>	Lancaster County, NE	157	81 (51.6)	54 (34.4)	57.9
	Dakota County, MN	136	88 (64.7)	30 (22.1)	63.6
	Dane County, WI	174	75 (43.1)	63 (36.2)	66.9
	DeKalb County, IL	171	82 (48.0)	52 (30.4)	65.3
	Madison County, OH	107	51 (47.7)	39 (36.4)	51.2
<b>Mid-Atlantic States</b>	Carroll County, MD	140	72 (51.4)	16 (11.4)	56.7
	Berks County, PA	123	62 (50.4)	41 (33.3)	42.9
	Burlington County, NJ	140	95 (67.9)	24 (17.1)	52.2
	Orange County, NY	133	93 (69.9)	25 (18.8)	47.5
<b>Highly Scenic Counties</b>	Larimer County, CO	117	88 (75.2)	17 (14.5)	58.5
	Fayette County, KY	100	89 (89.0)	7 (7.0)	49.5
	Palm Beach County, FL	108	90 (83.3)	12 (11.1)	39.6
<b>Totals</b>		1,922	1,237		

<sup>1</sup>They selected this response option: “I am not the operator of any of my land there [in the particular county], but I have detailed information about how my farmland there is operated.”

**3. Interviews with knowledgeable observers and participants in the county’s agricultural sector:** From late 2004 to February 2008 there were phone or in-person interviews with 16 to 36 knowledgeable observers of, or participants in, each county’s agricultural sector (Table 1.5). Across the 15 counties, the interviewees totaled 357, almost all of whom were spoken with by members of our research team. In eight of the 357 cases, we had access to sources that provided recorded or transcribed interviews with informants in three studied counties.

As indicated in Table 1.5, the interviewees fall into four broad categories:

- 1) a group we classified as *generalists* because their jobs gave them broad knowledge of their counties’ agricultural sectors—such as by being a senior Cooperative Extension adviser, the County Executive Director of USDA’s Farm

150 owners to whom we had mailed questionnaires. We assume that 90% of them (135) were similarly circumstanced, i.e., their land had been farmed, and they were eligible for the study. Their number (135) is added to the denominator of the response-rate ratio, along with the 135 cases whose questionnaires had been filled out. The response rate is therefore 135 divided by the sum of 135 plus 135, or 50%.

<sup>12</sup> Since we surveyed agland owners rather than farm and ranch operators, we could not assess the representativeness of our 15 samples by reference to the findings of the Census of Agriculture. Also, the lists of owners from which we drew the samples included too few traits to make satisfactory comparisons of the responding owners to all listed owners.

- Service Agency, the District Conservationist of USDA’s Natural Resources Conservation Service, manager of the Soil and Water Conservation District, executive director or manager of the county Farm Bureau, the county government’s planning director or the senior planner, farmer members of the county legislature, and the county agricultural commissioner, among others;
- 2) *private-sector professionals with more specialized assignments*, such as bankers who handled agricultural loans, managers of farm equipment dealerships and other ag input services, realtors and attorneys specializing in rural land, and leaders of crop or livestock associations;
  - 3) *staff members of public and not-for-profit agencies who led programs designed to assist farmers and ranchers*, such as extension educators working with livestock or vegetable farmers, administrators of farmland preservation programs and of agricultural protection zoning, managers of farmers’ markets, leaders of programs for young or new farmers, and officers of environmental groups that supported local agriculture;
  - 4) *farmers or ranchers producing specialty products* such as vegetables for direct marketing, flowers, wine grapes, and agritourism, among other kinds of products about which our survey and census sources did not provide sufficient information.
- In interviewing these informants, we were required to follow protocols that were reviewed and approved by university officers charged with protection of the privacy and other interests of human subjects.

<b>Table 1.5 Interviews with Local or State-Level Persons Well-Informed about Agriculture in the Studied Counties</b>					
<b>Region or Type of County</b>	<b>Generalists</b>	<b>Private-Sector Providers of Services to Farmers and Ranchers</b>	<b>Leaders of Assistance Programs for Farmers and Ranchers</b>	<b>Farmers and Ranchers of Specialty Products</b>	<b>Total</b>
<b>Pacific States</b>					
King County, WA	2	6	8	2	18
Sonoma County, CA	7	5	8	9	29
Ventura County, CA	5	4	4	3	16
<b>Corn Belt</b>					
Lancaster County, NE	6	8	9	4	27
Dakota County, MN	11	5	8	0	24
Dane County, WI	4	6	6	4	20
DeKalb County, IL	6	11	5	0	22
Madison County, OH	5	11	0	0	16
<b>Mid-Atlantic States</b>					
Carroll County, MD	7	5	7	1	20
Berks County, PA	2	10	8	1	21
Burlington County, NJ	5	6	14	5	30
Orange County, NY	4	8	13	8	33
<b>Scenic and Recreational Counties</b>					
Larimer County, CO	6	15	14	1	36
Fayette County, KY	7	11	9	2	29
Palm Beach County, FL	5	3	3	5	16
<b>Totals</b>	<b>82</b>	<b>114</b>	<b>116</b>	<b>45</b>	<b>357</b>

#### **4. “Rules of Evidence” for:**

##### ***A. Descriptions of features of the studied counties agricultural sectors***

- On the whole we felt confident about the usefulness of the county-level data found in the every-five-year Census of Agriculture. As discussed above, comparisons between findings for the 2002 census and previous ones must take into account the changes in sampling procedures between the 1997 and 2002 censuses.
- For describing features of the counties’ agricultural sectors not covered in these censuses, we used data from our agland owner surveys and/or the interviewed local experts. In these cases, when making a descriptive statement (such as “Credit was generally adequate for farm operations” or “Large-lot zoning was strictly enforced”), we required agreement among sources, such as at least two local experts, with no one or only a minority of interviewees contradicting them, and—even better—with corroboration from the surveyed owners.

##### ***B. Attitudes of county’s agland owners***

As discussed earlier, the survey questionnaire aimed to measure agland owners’ attitudes about the present and the future that would likely shape the continued viability of agriculture in the studied counties: their perceptions of the profitability of markets for the ag products raised on their land, their plans (if any) for developing their land over the following 10 years, whether the farm operators among them planned to continue farming in the county for at least another 10 years, whether they expected any agricultural investments on their land in the next five years, and their predictions about the health of farming in the county 20 years into the future.

##### ***Statistical tool for explaining agland owner attitudes***

The responses to the questions that sought to measure these attitudes lent themselves to being allocated to one of two categories—“yes” or “no”:

- “Yes, at least some development was expected in the next two years,” versus “no development” or “not sure”;
- “Yes,” respondent intended to continue farming for at least 10 years, versus “no,” or “not sure”;
- “Yes,” some investments in farm buildings likely, versus “no” or “not sure”;
- “Yes,” agriculture’s future would be “bright” or at least “modest,” versus “dim,” “none at all,” or “not sure.”

Given our interest in these attitudes with two levels of measure, we used logistic regression as an explanatory tool because it is especially suited for identifying predictors of one of two outcomes, such as “yes” versus “no” (Hosmer and Lemeshow, 1989; Menard, 2002). For example, this tool found that, in three counties, surveyed owners were *more* likely to plan to develop at least some of their land in the county if they believed the statement, “In controversies between farmers and nonfarmers . . . local government authorities tended to . . . side with the

nonfarmers.”<sup>13</sup> For six counties, the regression analyses indicated that development was *less* likely if the owners believed that local government zoning was “very helpful” or at least “modestly helpful” in maintaining an adequate supply of land for farming.<sup>14</sup>

***C. Formally authorized features of public programs (such as agricultural zoning, purchase of development rights, right-to-farm laws, and guest worker programs)***

For sources on formal program features, like the minimum parcel sizes required for building a new house in an agriculturally zoned area, we relied on:

- printed and online documents issued by the responsible public agency, or
- descriptions from at least two independent sources, including interviews with program administrators, program clients, or other knowledgeable observers (e.g., Cooperative Extension staff), again subject to the conditions (described above) for situations where such sources disagreed.

***D. Implementation and effectiveness of public programs***

For our assessments of the nature and effectiveness of program implementation, we relied also on a combination of two or more separate sources, including program documents; interviews with program administrators, clients, and/or knowledgeable observers; university studies; and a fourth type of source available only for certain public programs. For agricultural use-value assessment, right-to-farm, zoning, and purchase of development rights programs, we could use survey findings. Our 2006 surveys asked the responding agland owners to evaluate the effectiveness of those four kinds of programs in their counties.

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<sup>13</sup> These particular findings are discussed in Chapter 5. The degree of being more or less likely is measured by a coefficient called an “odds ratio,” which tells us, other predictor variables in the analysis held constant, how much does the likelihood (or odds) of a “yes” answer, such as about development, increase or decrease when the predictor measure (e.g., whether local government sides with nonfarmers) increases by one level (such as from “no,” non-farmers are not favored, to “yes,” they are favored). In our discussion of such logistic regression findings (in Chapters 2, 4, and 5), we report only statistically significant variables. Here, statistical significance deals with the issue of whether the findings of relationships are such that sampling error alone could account for them. In other words, if we somehow had been able to survey all agland owners in a county, would we have found the odds ratio for the hypothesized variable to be actually zero, indicating no relationship whatsoever? We regard as significant only predictors where (in a Wald test of statistical significance) there was less than a 12.5% chance that in the population as a whole their odds ratios would be zero.

<sup>14</sup> These findings are discussed in Chapter 5.

## Chapter 2: Markets<sup>15</sup>

### 1. Introduction

As we stated in the introduction to the report, it is because of the need to maintain preserved farmland as working, income-producing land that we have done this study. In this chapter, we present information on several different aspects of marketing and its contribution to the hoped- for improved vitality and viability of urban-edge farms across the country. These include data from the interviews and owner-operator surveys on:

- 1) 2005–2007 marketing systems,
- 2) the then-emerging marketing systems,
- 3) perceptions about market accessibility and profitability, and
- 4) the presence of major market assistance programs and respondents' knowledge and use of these programs.

### 2. Marketing in the 15 Counties

Although many results of the study are reported by region or amenity focus, when it comes to marketing there are other relevant groupings. From data on the 15 counties found in USDA's 2002 Census of Agriculture, we know that the greatest commonalities in top-ranking agricultural products across regions occur with grains and landscaping crops (Table 2.1). In Lancaster, Dakota, DeKalb, and Madison counties in the Corn Belt region, grains were the most important category of agricultural product in dollar value in 2002. In Berks, Burlington, and Orange counties in the Mid-Atlantic region, landscaping crops (such as sod, shrubs, and plants) had the largest percentage of total market value, as they also did in King County. In three counties, Dane, Carroll, and Larimer, dairy was the major product; fruit in the two California counties Ventura and Sonoma, horses in Fayette, and sugarcane and vegetables in Palm Beach County. The counties having the largest overall market value of agricultural crops in 2002 were Ventura (over \$1 billion), Palm Beach (\$760 million), and Sonoma (\$572 million) (Table 2.1). The county with the lowest market value of all farm products was Madison in Ohio (\$61 million). Sonoma and Palm Beach counties had the highest amount of land in farms—627,227 and 535,965 acres, respectively (as of the 2002 Census of Agriculture), followed by Sonoma County with 627,227 acres (Table 1.2). Ventura County was almost in the middle of the pack of counties regarding total acres, but produced high-value fruits and vegetables (Table 2.1).

Between the 1987 and 2002 censuses of agriculture, two counties recorded negative growth in the unadjusted market value of total production (Orange and Palm Beach), and seven others had increases that were less than the 57.3% increase in the Consumer Price Index (CPI) at the national level (Table 2.1).<sup>16</sup> That is, only six of the studied counties

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<sup>15</sup>The principal authors of this chapter are Kate Clancy and Lydia Oberholtzer.

<sup>16</sup> From December 1987 to December 2002, the Consumer Price Index (for "All Urban Consumers – (CPI-U), US city average: All Items, 1982-84=100") increased from 115.6 to 181.8, or by 57.3% percent (US

had growth in the current dollar values of their total sales that was greater than consumer price inflation. By far the biggest increase occurred in Sonoma County, with growth of 173%, followed by Ventura County, with a 90% rise between 1987 and 2002.

The 2002 Census of Agriculture found, in 12 of our 15 studied counties, that the product category “Nursery, greenhouse, floriculture, and sod” ranked in the top three groupings of products, comprising from just 2.4% in Fayette County to 48.2% in King County (Table 2.1). In nine counties during the 15-year period 1987 to 2002, this category saw the highest percentage increases in gross sales: Ventura (206%), Lancaster (123%), Dakota (230%), Dane (288%), DeKalb (135%), Carroll (215%), Orange (158%), Larimer (193%), and Fayette (76%).

Vegetable crops recorded impressive growth in five counties: King (510%), Sonoma (285%), Dakota (202%), Carroll (202%), and Burlington (90%), and ranked in the top three in six counties (Table 2.1). Both this category of products and landscaping materials tended to benefit from the nearby, then-growing urban and suburban populations.

Data from our informant interviews support these census findings about landscaping products and vegetables, as well as fruits:

- From three sources in *Burlington County* we learned: “Sod, nursery, and hay are among the best crops now in their financial returns.” “Fruits and vegetables have a competitive advantage here—near to a wealthy, concentrated population.” “Many growers are now producing Asian vegetables and fruits or products specific to the Hispanic population in the area. They’re up there with the nursery growers.”
- Interviews in *Orange County* yielded these observations: “Doing the best financially are sod growers. . . . Their success is directly related to the building boom. Towns have required lawns to be seeded or established.” “There are some sod farmers, and they are doing extremely well. Grass-growing is awesome. . . . They can harvest from February through December.” “We have the consumers [for vegetables] and a way for an extended season—through greenhouses.” “Orange County has an incredibly huge market (the New York City Metro Area just to the south) that is crying for fresh local stuff.”
- In *Carroll County* we were told: “Fruits and vegetables couldn’t ask for a better market. Washington, DC, and Baltimore are within an hour’s drive. If you are organic or unique, that is great. You can do direct marketing or market with other folks cooperatively.” “Smaller farmers and newer farmers come into the market having an idea of where they can market, whether it is [marketing to] farmers’ markets or restaurants, for example. They are OK.”
- From *Dakota County*: “One thing that seems to be gaining momentum is farmers’-market-type farms and organic farms. People really are

promoting organic beef, milk, and vegetables.” “There will be a trend towards truck farming . . . and local food supply.”

- From *King County*: “If you are in a segment of custom produce, it is very good to excellent. You have several organic grocers, [selling] locally grown. The thing is to create your own niche. It takes a lot of effort to do it. There is a very active farmers’ market.” “[Who is doing well?] Almost all are direct sales. . . . Many Microsoft folks<sup>17</sup> or retirees [farm] as second careers. Most commercial ag is veggie crops, fruits. Less eggs, and some micro-dairies such as with goats.”

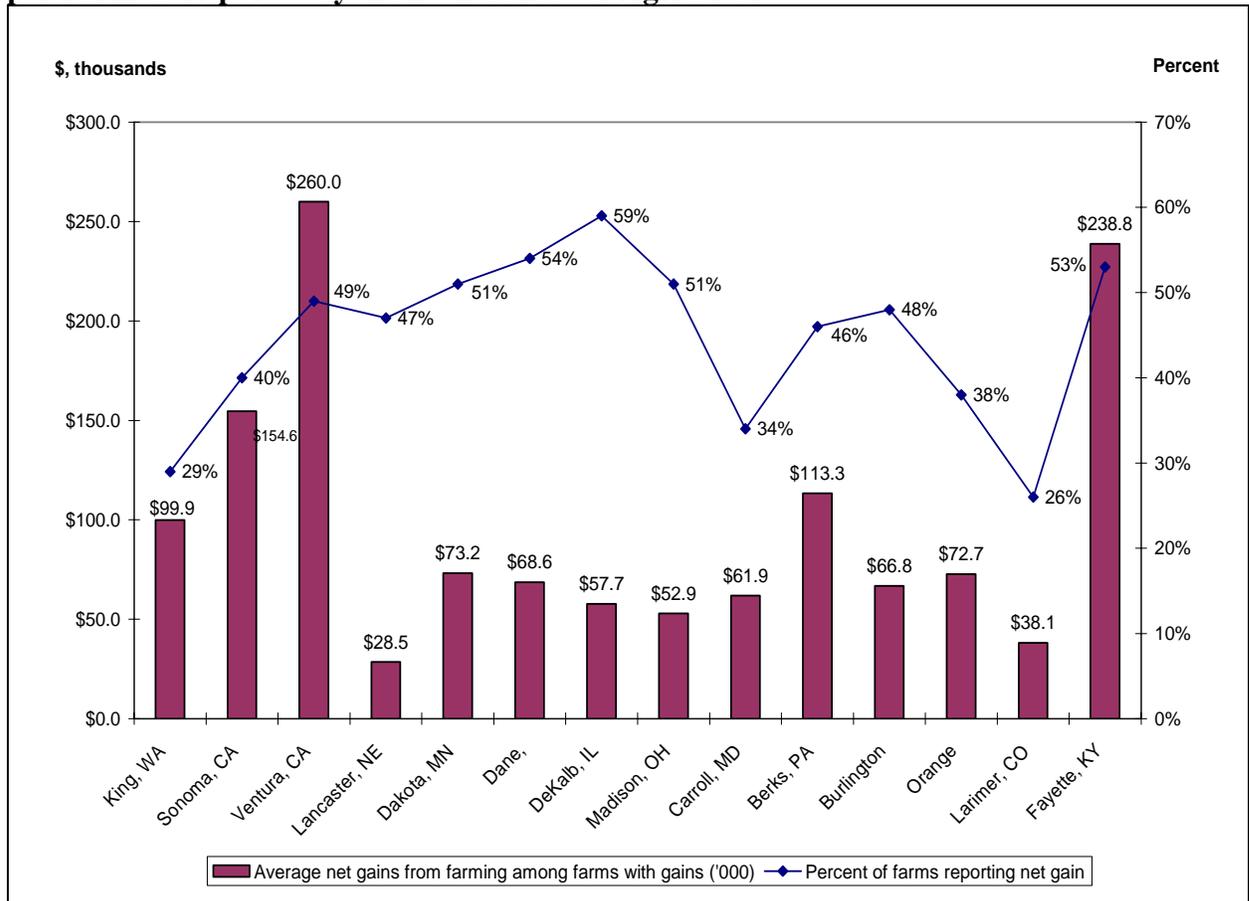
<b>Table 2.1: Top Three Agricultural Products and Their Overall Market Value in 2002 and Percentage Change in Value, 1987 to 2002, By County</b>		
<b>Studied Counties by Region</b>	<b>Top Three Agricultural Products by Market Sales (Percentage of Total 2002 Market Value)</b>	<b>Total Market Value of Agricultural Products (\$ millions) in 2002 and Percentage Change in Total Value (1987–2002)</b>
<b><i>Pacific Coast</i></b>		
King County, WA	1. Nursery, greenhouse, & floriculture (48.2%) 2. Dairy products (24.1%) 3. Vegetables (10.1%)	120.1 (+63%)
Sonoma County, CA	1. Fruits (64%) 2. Dairy products (13.5%) 3. Nursery, greenhouse, & floriculture (9.9%)	571.7 (+173%)
Ventura County, CA	1. Fruits (53.5%) 2. Nursery, greenhouse, & floriculture (27.5%) 3. Vegetables (17.5%)	1,018.9 (+90%)
<b><i>Corn Belt</i></b>		
Lancaster County, NE	1. Corn, soybeans, sorghum, & wheat (60.1%) 2. Cattle & calves (11%) 3. Poultry (8%)	71.3 (+28%)
Dakota County, MN	1. Corn, soybeans, wheat, & oats (37%) 2. Nursery, greenhouse, floriculture, & sod (19.8%) 3. Cattle & calves (17.8%)	112.0 (+74%)
Dane County, WI	1. Dairy products (36.3%) 2. Corn, soybeans, wheat, & oats (22.7%) 3. Nursery, greenhouse, floriculture, & sod (3.5%)	287.6 (+33%)
DeKalb County, IL	1. Corn, soybeans, wheat, & oats (49.4%) 2. Hogs & pigs (24.5%) 3. Cattle & calves (20.1%)	174.5 (+22%)
Madison County, OH	1. Soybeans, corn, & wheat (73.2%) 2. Hogs & pigs (9.3%) 3. Dairy products (4.8%)	60.8 (+8%)
<b><i>Mid-Atlantic</i></b>		
Carroll County, MD	1. Dairy products (31.4%) 2. Nursery & greenhouse (18.1%) 3. Corn, soybeans, wheat, & barley (15.5%)	69.0 (+23%)
Berks County, PA	1. Nursery, greenhouse, & floriculture (33.7%) 2. Poultry (24.7%) 3. Dairy products (20.9%)	287.0 (+71%)
Burlington County, NJ	1. Nursery, greenhouse, floriculture, & sod (46.0%) 2. Fruits & berries (20.3%) 3. Vegetables, melons, & potatoes (12.7%)	83.3 (+50%)
Orange County, NY	1. Nursery, greenhouse, floriculture, & sod (29.7%) 2. Dairy products (28.8%) 3. Vegetables & potatoes (25.8%)	66.2 (-10%)

<sup>17</sup> The Microsoft corporate headquarters are in Redmond, Washington, which is in King County and is about 13 miles from Seattle.

<b>Highly Scenic</b>		
Larimer County, CO	1. Dairy products (36.8%) 2. Cattle & calves (23.8%) 3. Nursery & greenhouse products (14.8%)	101.1 (+12%)
Fayette County, KY	1. Horses (87.7%) 2. Tobacco (4.4%) 3. Nursery, greenhouse, & sod (2.4%)	178.9 (+36%)
Palm Beach County, FL	1. Sugarcane & vegetables (27.3%) 2. Nursery, greenhouse, & sod (21.7%) 3. Fruits (3%)	759.9 (-11%)

According to the 2002 Census of Agriculture, from 26.1% of the farm operations in Larimer to 58.7% in DeKalb reported net gains from their agricultural sales (Figure 2.1). Comparisons between the 1987 and 2002 censuses showed that 14 of our 15 counties experienced increases (of 1.0 to 22.2 points) in the *percent* of total farms reporting gains. And all 15 saw improvements (of 14.3% to 276.3%) in the *dollar* profits per farm with a gain. Finally, all except three of those percentage increases in net gains were greater than the percentage rise in the general Consumer Price Index over the same 15 years. A metro-area location did not, therefore, preclude a significant increase in an agricultural sector's total net earnings.

**Figure 2.1: Percentage of Total Operations with Net Gains and Average Net Gain per Farm as Reported by the 2002 Census of Agriculture**



As we move from census data and start to look at data from our agland owner surveys, we point out again (see Chapter 1) that only landowners who lived in the county we were studying were contacted, that on average 55.2% of the owners were also operators (from 43.1% in Dane County to 89.3% in King County), and that most of our analyses included only owners who were operators and knowledgeable non-operator-owners, not those who reported that they lacked “detailed information” about how the farm was operated. Another caveat is that because we sampled from farmland owners, the percentage of our surveyed owners who reported being owner-operators and who said farming was their principal occupation was usually lower than the percentage for the operators surveyed by the 2002 census. This ranged from a +3 percentage-point difference in Dane County between our survey sample and the ag census to a –32 percentage-point difference in Fayette County, where only 29% of the sample were operators (see Table 2.2). The median percentage-point difference was –9.

<b>Table 2.2: Differences in Percentage of Farm Operators Reporting Farming as Principal Occupation: Farm Operators Enumerated by the 2002 Census of Agriculture Versus Those Surveyed by This Study in 2006, By County</b>			
<b>County</b>	<b>Percentage from 2002 Census of Agriculture</b>	<b>Percentage from 2006 Survey (Numbers in Parentheses)</b>	<b>Percentage-Point Difference: Survey versus Census</b>
King	53	20 (92)	-33
Sonoma	56	47 (90)	-9
Ventura	57	60 (89)	-17
Lancaster	53	42 (81)	-11
Dakota	60	58 (88)	-2
Dane	56	59 (75)	+3
DeKalb	77	67 (82)	-10
Madison	64	51 (51)	-13
Carroll	56	47 (72)	-9
Berks	64	37 (62)	-27
Burlington	56	37 (95)	-19
Orange	68	65 (93)	-3
Larimer	48	28 (88)	-20
Fayette	61	29 (89)	-32
Palm Beach	54	52 (90)	-2

Not surprisingly, our samples of agland owners yielded owner-operators who differed from the census’s findings about operators in other respects. For example, in 14 of the 15 counties we netted relatively fewer operators of very small farms—those recording less than \$10,000 in gross sales (Table 2.3). However, our main purpose in conducting the agland owner survey was not to compete with the every-five-year Census of Agriculture, but to learn landowners’ attitudes and other traits relevant to decisions they made affecting the viability of agriculture in their counties. As discussed in Chapter 1, such attitudes included their intentions (if any) to have their land developed, to make agricultural investments on their land, and to develop succession plans for ownership and

operating the farmland. A critical set of traits shaping such intentions are their experiences with, and opinions of, the adequacy of markets for the agricultural products raised on their land.

<b>Table 2.3: Differences in Percentage of Farm Operations with Gross Sales of Less Than \$10,000: Farm Operators Enumerated by the 2002 Census of Agriculture Versus Those Surveyed for This Study in 2006, By County</b>			
<b>County</b>	<b>Percentage Found in Census</b>	<b>Percentage Found by Survey</b>	<b>Percentage-Point Difference</b>
King	75.5	69.3	+6.2
Sonoma	50.1	30.1	+20.0
Ventura	39.0	14.6	+24.4
Lancaster	59.1	29.2	+29.9
Dakota	48.9	15.6	+33.3
Dane	54.6	16.7	+37.9
DeKalb	23.2	13.7	+9.5
Madison	44.8	24.4	+20.4
Carroll	62.9	46.6	+16.3
Berks	47.5	50.0	-2.5
Burlington	63.4	51.8	+11.6
Orange	47.3	6.3	+41.0
Larimer	75.4	67.1	+8.3
Fayette	45.8	43.0	+2.8
Palm Beach	57.4	29.5	+27.9

### **3. Market Outlets, Accessibility, and Profitability**

#### ***Wholesale Marketing***

Tables 2.4 and 2.5 present survey data on the types of market outlets used in 2005 by the responding owner-operators who chose to answer the questions about outlets. In each of 10 of the 15 counties, on average more than 50% of these respondents' total sales were made through wholesale outlets (Table 2.4). The top four counties by this measure were in the Corn Belt—Madison, Lancaster, DeKalb and Dakota—with 80.7% to 85.7% of total sales marketed wholesale. On average, their surveyed farmers sold most of their products through private grain elevators or growers' co-ops plus elevators (Table 2.4). Respondents from Ventura County marketed almost 80% of their crops through wholesale outlets (especially growers' co-ops). Dane County's wholesale percentage was at 79%, which included a substantial amount of milk processed by dairies. Respondents in four counties—Burlington, King, Larimer, and Fayette—sold less than 40% of their production wholesale. The other six counties averaged between 49% and 62% of their ag goods going to wholesale outlets.

**Table 2.4: Among Surveyed Owner-Operators Reporting on Market Outlets for Their Ag Products, Average Percentage of Total Sales in 2005 by Type of Wholesale Outlet**

County	N	All Wholesale Outlets	Private Grain Elevator	Processor (Cannery, Dairy, Winery)	Growers' Cooperative	Super-market or Chain Buyer	Livestock Feed Company	Distributor, Broker, or Handler	Other Wholesale Outlets
<b>Percentage</b>									
Madison	43	<b>85.7</b>	56.7	7.0	15.0	0.0	1.3	4.7	1.2
Lancaster	62	<b>84.7</b>	37.1	9.3	27.9	0.0	3.6	0.0	8.6
DeKalb	70	<b>83.8</b>	62.8	12.7	3.6	0.0	1.9	0.6	2.2
Dakota	80	<b>80.7</b>	50.7	17.7	2.9	0.2	2.4	1.6	6.1
Ventura	78	<b>79.6</b>	0.0	9.9	40.3	0.4	1.3	15.9	11.8
Dane	55	<b>79.0</b>	30.9	28.6	11.3	1.6	1.2	0.0	5.3
Berks	46	<b>61.6</b>	17.3	20.0	2.7	0.0	6.4	1.3	13.9
Sonoma	69	<b>58.2</b>	0.0	46.1	1.3	2.0	1.5	1.2	6.2
Carroll	53	<b>54.9</b>	23.3	12.7	0.2	0.5	3.9	0.0	16.1
Palm Beach	69	<b>54.8</b>	0.0	2.3	8.1	1.2	4.0	5.7	33.6
Orange	72	<b>48.5</b>	0.3	22.4	2.5	6.0	0.6	6.3	10.4
Burlington	82	<b>39.8</b>	9.4	3.1	3.7	0.1	0.6	4.6	18.3
King	55	<b>39.6</b>	0.0	7.2	14.7	0.0	8.4	3.7	5.0
Larimer	66	<b>30.4</b>	1.7	6.4	0.3	0.0	9.7	0.0	12.4
Fayette	51	<b>24.1</b>	2.9	3.9	1.1	0.0	4.7	0.0	12.8

**Table 2.5: Among Owner-Operators Reporting on Market Outlets for Their Ag Products, Average Percentage of Total Sales in 2005 by Type of Direct Marketing Outlet**

County	N	Total Consumer Direct	Direct On-Farm, Farm Stand, U-Pick	Farmers' Markets	CSAs	Mail Order	Other Consumer Direct	Total Direct to Retail	Other Ag Enterprises
Larimer	66	<b>47.2</b>	29.0	1.5	0.0	0.0	19.7	<b>2.7</b>	<b>12.6</b>
King	55	<b>40.1</b>	21.8	4.2	1.7	0.7	11.2	<b>2.1</b>	<b>12.0</b>
Orange	72	<b>34.2</b>	13.4	8.1	0.5	0.1	12.3	<b>4.6</b>	<b>12.3</b>
Carroll	53	<b>29.2</b>	14.5	5.7	0.0	0.0	9.1	<b>3.1</b>	<b>4.5</b>
Burlington	82	<b>29.1</b>	18.1	0.7	1.1	0.0	9.2	<b>5.1</b>	<b>21.9</b>
Fayette	51	<b>23.6</b>	5.0	2.4	0.0	0.0	16.3	<b>8.3</b>	<b>39.1</b>
Berks	46	<b>22.6</b>	12.7	0.1	2.2	0.0	7.6	<b>0.3</b>	<b>3.8</b>
Sonoma	69	<b>17.1</b>	6.0	6.0	0.0	0.1	5.0	<b>7.9</b>	<b>14.7</b>
Dakota	80	<b>11.3</b>	5.9	1.3	1.0	0.0	3.0	<b>1.1</b>	<b>8.5</b>
DeKalb	70	<b>11.2</b>	9.7	0.0	0.0	0.0	1.4	<b>0.0</b>	<b>1.5</b>
Ventura	78	<b>10.6</b>	4.0	3.5	0.0	0.1	3.0	<b>0.3</b>	<b>9.8</b>
Madison	43	<b>10.1</b>	7.8	2.3	0.0	0.0	0.0	<b>4.2</b>	<b>6.5</b>
Lancaster	62	<b>9.8</b>	7.9	0.02	0.0	0.0	1.9	<b>1.5</b>	<b>2.3</b>
Dane	55	<b>8.7</b>	3.1	0.3	0.1	0.0	5.3	<b>3.5</b>	<b>4.1</b>
Palm Beach	69	<b>8.7</b>	3.5	1.4	0.03	0.3	3.5	<b>7.5</b>	<b>27.0</b>

### *Direct Marketing*

Among the surveyed owner-operators who gave information about their marketing outlets, their average percentages of direct sales to consumers ranged from only 8.7% in Dane and Palm Beach counties to 47.2% in Larimer County (Table 2.5), with a median of 17.1%. All of the top five counties by this measure—Larimer, King, Orange, Carroll, and Burlington—had sizable populations of their own (170,260 to 1.8 million in 2006), belonged to metro areas with at least 1 million inhabitants (Table 1.2), or were positioned right next to such areas (Denver and New York City). The interview data presented on

the second page of this chapter supported our supposition that proximity to large population concentrations promoted relatively high levels of direct-to-consumer sales.

The leading (or tied-for-first) category of direct-to-consumer sales in 13 of the counties was on-farm marketing (e.g., farm stands and U-pick operations). This type of market outlet ranged from an average of 3.1% in Dane County to 29% in Larimer, and its median value was 7.9%. The share of farmers' markets averaged varied from zero among the relevant respondents in DeKalb County to an average of 8.1% in Orange County, with a median of just 1.5%. CSAs (Community Supported Agriculture) were less important—ranging from zero to 2.2%, with the median average being zero. The category “Direct to retail” (e.g., to stores rather than to wholesalers who supplied retail outlets) varied from zero in DeKalb County to 8.3% in Fayette County. Our final category, “Other agricultural enterprises,” accounted for relatively large percentages in Fayette (39.1%), Palm Beach (27%), and Burlington (21.9%) counties. In those three cases, virtually all the “other” enterprises were horse-related.

### ***Market Accessibility***

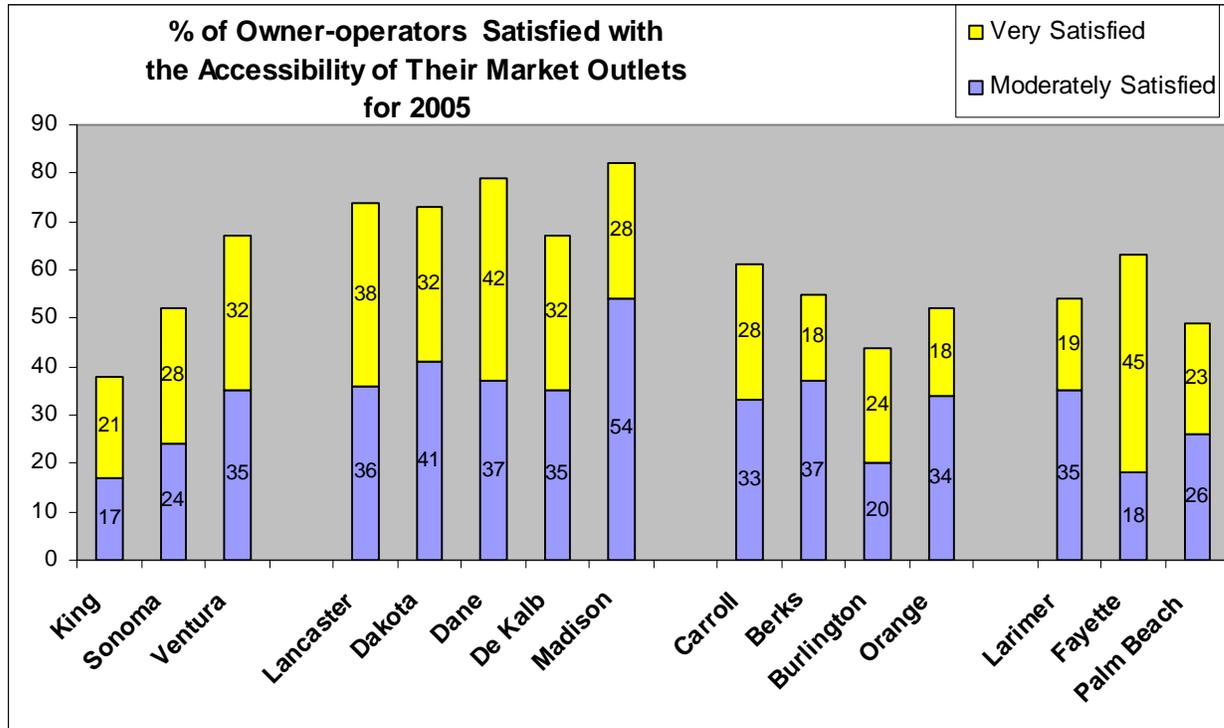
The surveyed owner-operators were asked about their satisfaction with the accessibility and profitability of their marketing outlets. Among those choosing to respond to these questions, the percentage selecting the “very satisfied” option for *access* varied from 18% in Berks and Orange counties to 45% in Fayette County (Figure 2.2). When we add the percentages of “moderately satisfied” farmers, the combined totals increase to a range of 38% in King County to 82% in Madison County, with a median of 63%. For 12 of the 15 counties, at least 52% of these respondents were either “very satisfied” or “moderately satisfied” with accessibility (Figure 2.2).

We had a separate measure of accessibility—a survey question that asked, “Please estimate the percentage of the farm operation’s total gross sales of agricultural products in 2005 that you . . . transported to points of sale that were: within a one-hour trip from your farm [and] more than one hour away from your farm.” Four Corn Belt counties—Lancaster, Madison, Dane, and Dakota—were among the top five by average percentage of total products (79.9% to 87.6%) sold no more than an hour away (Table 2.6). The same four were also among the first four in percentage of respondents being either “very satisfied” or at least “moderately satisfied” with accessibility (Figure 2.2). However, regression analysis found that percentage of sales conducted within an hour of the farm was a statistically significant predictor of satisfaction with market access in only five of the 15 counties: Ventura, Dakota, DeKalb, Carroll, and Berks counties (Table 2.7). For many of our surveyed farmers, “access” must have had more dimensions than distance to points of sale. Even if close-by buyers took most of their products, there were probably other potential customers—farther away or just as close—to whom many respondents would have liked to sell, but could not for product-quality, quantity, price, or other issues.

Type of marketing outlets qualified as predictors in more counties. In six cases, the higher the percentage of total sales marketed via wholesale outlets, the *more* likely the respondent was to be “very satisfied” or at least “moderately satisfied” with accessibility of markets (Table 2.7). Three counties recorded that same relationship with direct

marketing. However, in Ventura County's case, the greater the percentage from direct marketing, the *less* likely the farmer was pleased. Full-time farmers in Burlington and Palm Beach counties were *more* likely to be pleased, perhaps because they had more incentive to learn how to optimize their marketing choices. And in three counties, if the surveyed owner-operator raised one of the counties' top three ag products, his/her chances of being satisfied were higher. We hypothesized that, the more important the kind of product in that location, the better the marketing facilities were likely to be.

**Figure 2.2**



**Table 2.6: Among Owner-Operators Answering Question about Distance from Farm to Points of Sale for The Products They Raised, Average Percentage Sold within a One-Hour Trip and Average Percentage Sold More Than One Hour Away, By County**

County	Average for Sales within One-Hour Trip from Farm	Average for Sales More Than One Hour Away	N
<b>Percentage</b>			
Lancaster	87.6	11.4	66
Madison	85.2	11.3	45
Fayette	83.3	10.1	51
Dane	81.3	9.3	56
Dakota	79.9	16.5	73
Larimer	78.7	14.7	59
Berks	76.7	14.0	39
Carroll	77.3	11.8	48
Sonoma	73.3	22.4	71
Ventura	70.8	29.3	65
DeKalb	68.1	30.3	65
Burlington	67.7	18.9	60
Palm Beach	66.6	28.6	53

King	66.0	25.4	42
Orange	51.1	41.5	58

**Table 2.7: Predictors of Whether Owner-Operators Who Answered Questions about Adequacy of Markets Reported They Were “Very Satisfied” or at Least “Moderately Satisfied” with “Accessibility of . . . Marketing Outlets for Your Farm Goods,” by Predictor Trait**

Predictor Trait <sup>1</sup>	Counties in Which the Trait Qualified as a Predictor
Percentage of total gross sales in 2005 that was transported to points of sale within a one-hour trip from the farm	The higher that percentage, the <i>more</i> likely the farmer was satisfied with market access: <b>Ventura, Dakota, DeKalb, Carroll, Berks</b>
Percentage of total gross sales sold via wholesale outlets that year	The higher the percentage, the <i>more</i> likely the farmer was satisfied with market access: <b>King, Dane, DeKalb, Burlington, Larimer, Palm Beach</b>
Percentage of total gross sales sold via direct marketing	The higher the percentage, the <i>more</i> likely the farmer was satisfied: <b>Burlington, Orange,<sup>2</sup> Palm Beach</b> The higher the percentage, the <i>less</i> likely the farmer was satisfied: <b>Ventura</b>
Whether the respondent was a full-time farmer	Full-time farmers were <i>more</i> likely to be satisfied: <b>Burlington, Palm Beach</b>
Whether one of the top three ag products (according to 2002 Ag Census) was produced on respondent’s owned land	If one of these types was produced, the <i>more</i> likely the farmer was satisfied: <b>Dane</b> (grains), <b>Madison</b> (grains), <b>Orange</b> (landscaping, vegetables)
Value of gross sales	The higher the total value, the <i>more</i> likely the farmer was satisfied with market access: <b>Carroll, Berks, Fayette</b>

<sup>1</sup>These predictors were identified through logistic regression analysis. The models by county are presented in Appendix 1 to the report.

<sup>2</sup>Percentage of sales sold directly to consumers.

### ***Profitability***

We asked the surveyed owner-operators about satisfaction with the profitability of their markets (Figure 2.3). The highest percentage of respondents answering that they were “very satisfied” or “moderately satisfied” was recorded for Dane County (at 51%), followed by Fayette County (49%) and Madison County (48%). The owner-operators were most dissatisfied in King and Berks counties (14% and 25%, respectively).

The regression analysis on profitability found these predictors that were statistically significant in at least two county samples at a level of .10 or lower:<sup>18</sup>

- Respondents in Ventura, Berks, and Orange who raised vegetables on their land were (other things being equal) *more* likely to be satisfied.
- In five counties’ samples, satisfaction was *more* likely if the surveyed operators reported that at least one of the types of labor used on their land in 2005 had been available (when needed) “always” or “most of the time”: Ventura, Lancaster, Dane, and Burlington, and Palm Beach.<sup>19</sup>
- In three counties (DeKalb, Madison, and Carroll), the likelihood of satisfaction tended to *increase*, the higher the percentage of the operator’s total sales marketed through direct outlets, while in three others (King, Dane, and Palm Beach),

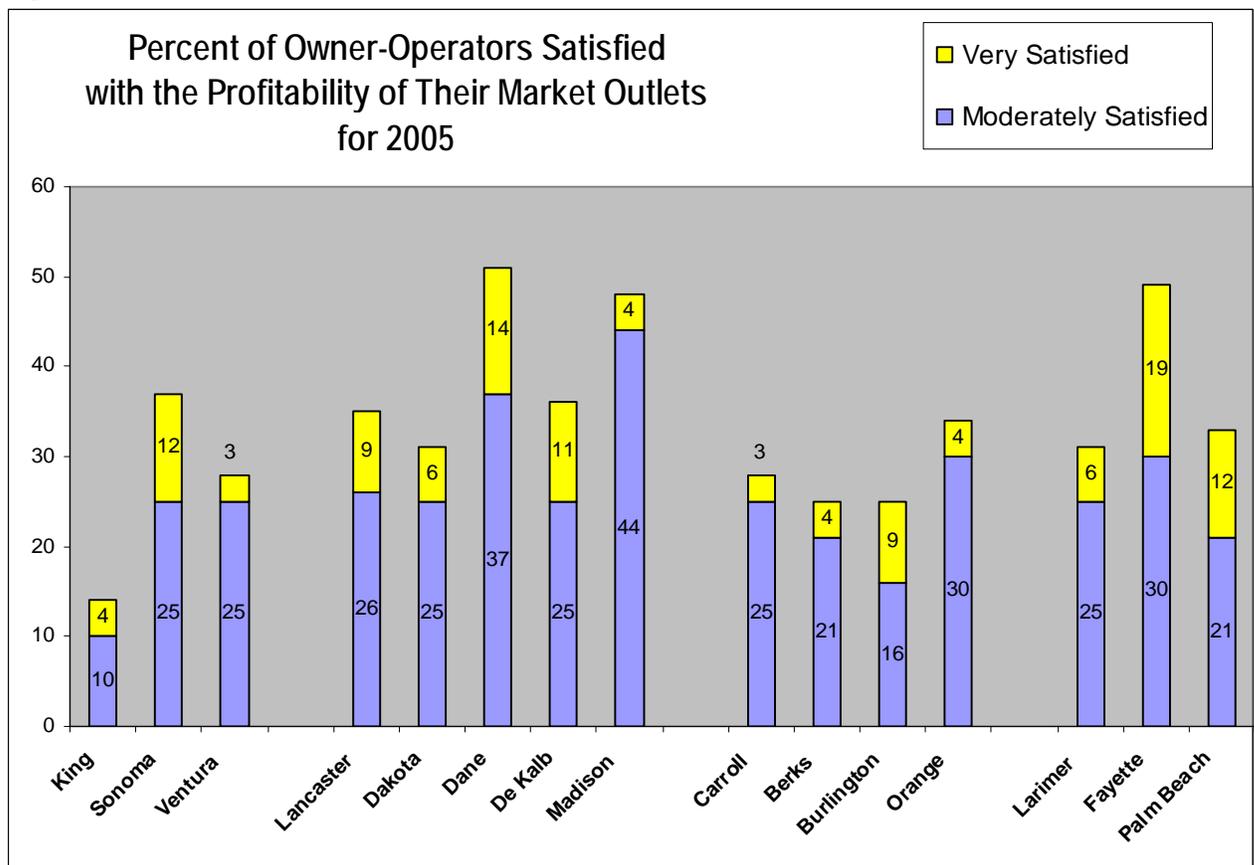
<sup>18</sup> That is, a Wald test estimated that there was no more than a 10 in 100 chance that in the population of all farm operators for that county the measure of association would be zero.

<sup>19</sup> The four types (not mutually exclusive) were: family labor, nonfamily labor, seasonal, and year-round.

relatively greater proportions of total sales through wholesale channels predicted profitability.

- Respondents in three counties (Ventura, Dane, and Orange) were *more* likely to be satisfied if they perceived their local governments to be “even-handed” when dealing with conflicts between farmers and non-farmer neighbors. In a fourth county, Palm Beach, the likelihood of being satisfied tended to *decrease* if the farmer believed local authorities sided with the neighbors. Presumably, farm operators in the three counties could apply profitable practices that, in less friendly political contexts (like the fourth), neighbors could block or restrict.
- In two counties each, satisfaction was predicted if operators had relatively high total gross sales (Sonoma and Fayette), were at least 55 years old (Berks and Fayette), believed that local government zoning was effective “in maintaining an adequate supply of land for farming” (King and Dakota), and among those who believed that their state’s right-to-farm legislation was “very” or at least “moderately helpful” in “protecting farmers against unfair nuisance complaints” (Sonoma and Dakota).

**Figure 2.3**



**Interview Findings**

Through the informant interviews, we were able to get a more extensive look at the issue of satisfaction with markets. However, some care should be taken in applying the results

of these interviews because the number of interviewees varied by county and not all interviews covered the same topics and products. For instance, in some counties the results could be based upon only two or three informants instead of a larger sample.

The counties include a range of marketing systems: from those counties that still primarily marketed traditional commodities such as grains (e.g., Lancaster, DeKalb, and Madison) to those that seem to be transitioning to marketing systems that feature alternative products, including landscaping crops such as in Berks and Burlington counties, wine grapes in Sonoma County, and thoroughbred horses in Fayette County. Between the 1987 and 2002 ag censuses, the total value of Berks County's nursery and other landscaping crops increased 67% to \$96.8 million. In the same period Sonoma County's fruit sales (mostly grapes) soared 400% to \$366 million, and Fayette County's equine sector grew 49% to \$156.8 million. There are also counties that seem to be in between these two extremes (e.g. Dane, Orange, and Larimer), with significant growth in newer crops, but not as great changes in dollar terms (compared to Berks County, etc.), while long-established products (dairy, beef cattle) remained important. Thus, we review the adequacy of markets across counties by type of agricultural product as described by the informants who discussed them.

### *Grains*

In those counties with substantial grain production, most of the informants in a county who discussed marketing outlets described their grain markets as still adequate for farmers; these include Lancaster, Dane, Dakota, DeKalb, and Madison counties. Farmers there had choices of marketing outlets, including local grain elevators, growers' co-ops, and buyers out-of-county. For example, two informants in Madison County told us:

- “More farmers are doing contracting, more out of grain storage. They use their own trucks to haul grain to the best buyer.”
- “Farmers deal directly with elevators. They seem to be satisfied—have ample outlets. They own their own semi-trucks, so have great mobility. If the price is better in Cincinnati, they sell there.”

Implied in this second quotation was that Madison County benefited from proximity to river barge shipping on the Ohio River. It was an advantage reported also for Dakota County (on the Mississippi River) and DeKalb County (near the Illinois River). Carroll County is close to Baltimore's harbor. However, informants mentioned both the closing of an important Cargill harbor facility there and increased consolidation of grain buying (to the advantage of one main buyer).

### *Livestock*

In terms of livestock, informants across counties were mixed in their review of these markets. Carroll County reported a decrease in traditional beef operations. A common problem was the lack of nearby slaughtering facilities. Beef farmers in Carroll County had to take their animals to market about 50 miles away. Hog producers could sell locally, but a buyer told us he was running out of farmers supplying him with cattle. By contrast, hog farmers in Dane County were compelled to ship to buyers out of state, 300 miles away by one estimate. Their counterparts in DeKalb County faced a trip of at

least 160 miles, unless they had contracted with a closer processor. DeKalb County cattle farmers sold in three markets, all out of county: “Distance is an issue. It is 225 to 400 miles to enter the next regional market. We have an isolated region around DeKalb County.” We were told that the last slaughtering facility in King County was scheduled to close, and the closest facility for Orange County farmers—“two hours north”—was also expected to be shutting its doors soon. An Extension adviser there told us: “Farmers are again calling me to see where they can take these animals. This is a major stumbling block for producers who want to venture into alternative livestock enterprises [e.g., goat meat for ethnic markets or fallow deer for venison meat].”

Larimer County had at least one slaughtering facility, but overall cattle production was trending down. Between the 1987 and 2002 ag censuses, the total sales of cattle and calves dropped by 50%. Informants in Fayette County, however, said that markets for cattle or other livestock (horses) were doing very well: “There is a very strong livestock stockyard—the largest east of the Mississippi.” There were positive assessments also for marketing certain livestock products in Berks County. One helpful condition was, “We do a lot of processing for out-of-state products,” including pork and dairy. Another informant was fairly upbeat about poultry marketing in Berks County except that the number of processors had declined from five to three.

Informants in King, Dakota, and Orange counties reported low profitability in markets for *milk*. Prices had not kept up with inflation. Buyers preferred to deal with members of producers’ cooperatives rather than with individual farmers because “of the greater flexibility in getting the supply.” Another dairyman (from Orange County) told us: “I am more likely to get a [dealer’s] truck since I belong to a marketing coop. I would not want to be sitting here as an independent looking for a dealer to come and get me.” The results were more mixed in Berks County, where some informants thought that dairy producers had a good choice of marketing outlets, while others raised concern about the excessive power of dairy cooperatives in the county. Opinions were also mixed in Carroll and Sonoma counties.

In some counties—including King, Sonoma, Dane, and Orange—dairy farmers were experimenting with the development of high-value niche products (like hormone-free milk and specialty cheeses), but few informants viewed this as a panacea for the profitability problem. Dane County was the only county in which informants evaluated the dairy markets as adequate; dairy was still a key agricultural sector for the county:

- “They have survived because they chose to specialize in dairy, and they hire quality consultants and have kept their operations modern.”
- “Dairy is the backbone of our ag economy. It has avoided corporations and is still family owned.”

### ***Fruits and Vegetables***

Informant opinions about the adequacy of wholesale markets for fruit and vegetables were mixed across counties. The most important studied county by far for this combination of types of crops was Ventura. In 2007 its ag sector’s top four products in market sales (each above \$100 million) were strawberries, nursery stock, lemons, and

celery. They were followed by tomatoes, raspberries, and avocados (\$53 million to \$86 million--Agricultural Commissioner, Sonoma County, 2008). Buyers for large retail chains needing sustained supplies of produce liked to do business with Ventura County farmers because of the county's Mediterranean climate, good soils, and normally adequate irrigation water: "Companies like Wal-Mart and Costco have figured out it's better to contract with large suppliers. . . . They set a reasonable price, and then push the production risk and inventory control back to the farmer." Irrigation supports vegetable production also in Larimer County, where at least one large producer and "some satellite farms" sold much of their output wholesale. Other vegetable growers tended to be small and produced for niche markets.

In Orange County, which has the huge New York City market close by, both fruit and vegetable sales declined significantly between the 1987 and 2002 ag censuses—by 38% and 74%, respectively. They had difficulty competing with production areas that could harvest year-round, although special greenhouses ("high tunnel") extended their growing seasons. The county still had packinghouses for vegetables to which producers could sell. However, several knowledgeable observers expected proportionally more sales via direct marketing—both to consumers within the county and to farmers' markets and restaurants in the greater New York City area. An Extension adviser estimated that 50% of her farmer clients were marketing directly and that their total dollar sales were about half direct.

In Sonoma County, apples used to be a major commodity but had declined 30% in "bearing" acres, to 2,901 acres, between 1998 and 2007; and by the latter year there was only one apple processor left in the county. However, in the same time period the total market value of the county's apple sales grew by 20% to \$7.1 million. The changes in the wine grape sector were more impressive. In the same 11-year time period, the total "bearing" acreage expanded by 55% to 54,862 acres and total sales by 80% to \$416.5 million (Sonoma County Agricultural Commissioner, 2000, 2008). Many growers had enlarged their planted acres of grapes over time, and numerous small "trophy" vineyards had been started. Grapes were produced mainly under contract, and there had been an oversupply earlier in the decade. Most informants thought the markets for grapes were adequate, although one informant described a consolidation in distributors and wholesalers for grapes, making it harder for smaller vineyards.

### ***Direct Marketing***

In most of the studied counties our informants reported recent increases in direct marketing. However, the importance of direct sales varied considerably. In 2008 Fayette County had six farmers' markets operating a total of seven separate sessions per week. Vendors there were blessed with customers "with good money to pay the premium prices." Direct sales of farm goods were substantial also in King County, where Seattle and other urbanized areas in the county supported 33 farmers' markets, and which comprised "a very wealthy area that will pay the price premium. You need that price to remain viable." However, a good climate for fruits and vegetables, a large population, and high disposable incomes did not necessarily translate into considerable direct marketing. Ventura County had those three positive features, but relatively few farmers'

markets (four markets open a total of four days in 2008); and informants told us that there was “very little direct marketing,” “very small community interest and support,” and “most producers look for buyers before they plant.” The explanations offered by two other informants suggest that local direct markets could not compete well against high-value products sold wholesale: “We have maintained a commodity agricultural sector.” “Ventura County is dominated by fresh, premium products,” such as strawberries, raspberries, and nursery goods.

Then there were counties like DeKalb and Madison, with populations too small (about 100,000 and 41,500, respectively, in 2006) to sustain much direct marketing to consumers, restaurants, or stores (Table 1.2). For example, in DeKalb County, “some producers have sweet corn and vegetable stands or take part at farmers’ markets. . . . [T]he total number of people who can do this is limited.” That county had one market, operating only on Thursdays. One or two farmers provided goods to local stores, like the one grower who contracted to supply Wal-Mart with sweet corn. Madison County in Ohio also appeared to have just a single farmers’ market. Of course, these numbers of separate markets per county are only suggestive of differences across counties, since a single market might have more total sales than several.

Larimer and Lancaster counties, both with about a quarter million in population (Table 1.2), reported higher levels of direct marketing compared to those for DeKalb and Madison counties. In 2008 Lancaster County’s farmers’ markets totaled six in number, each operating one day per week, while Larimer had two, one of which was open twice each week and the other, once. In 2005–2006 Lancaster County had four CSAs (subscription direct marketing), while 10 operated in Larimer County.

In 2008 Berks and Carroll counties had four and five separate markets, respectively, while 12 operated in Orange County. Information about on-farm marketing is harder to gather, as are those for CSAs and farm-to-school and farm-to-restaurant programs. We know that both of the latter two types of programs were functioning in Larimer and King counties. And farm-to-school programs were found in Dane, Carroll, and Orange counties. In Fayette County, however, both farm-to-school and farm-to-hospital initiatives were tried, “but they did not go very well; they were not successful” (as of 2005).

During 2005–2007 what kinds of ag products were being sold via direct marketing in the counties we studied? Vegetables and fruits were reported for every county, including Ventura, where informants reported sales of herbs, specialty vegetables, flowers, and heritage varieties of oranges. DeKalb County, with its 2006 estimated population of 100,139, had an estimated 30 farmers then selling fruit and vegetables “out of their yards.” In Burlington County, part-time farmers used an “honor system” to sell from their front yards while they and their spouses worked off-farm. The stands were restocked every day, and customers placed their payments in a box. Lancaster County had a limited number of u-pick operations for strawberries and apples, while Fayette County farmers were switching from growing tobacco to raising wine grapes, goats, llamas, and alpacas, among other goods. Other niche livestock products we encountered included: lean beef, no hormone meat, raw milk eggs, and horses for recreation and competition.

Many, if not most, of the direct-marketing and/or niche producers appeared to be small in overall sales and be part-time farmers. In Fayette County these types of operators were described as having “more the small farm acreages,” in Larimer County as being “small acreage farmers,” in King County as “small diverse agriculture,” in Dane County as “smaller farmers selling fruits and vegetables,” and so on. The survey data support these perceptions. Among the 267 owner-operators in our sample who reported at least 10% of gross sales being directly marketed, a total of 76% grossed less than \$50,000, and 45% grossed less than \$10,000. Moreover, 61% of the total classified themselves as part-time farmers.

Some of the local experts whom we interviewed were hesitant about these markets. Their products might have been bringing high-value crops to the county, but informants questioned the overall potential of these products to preserve a viable agricultural sector (Berks and Dane counties) and/or noted that direct marketing still accounted for small proportions of total sales (Berks, Dane, and Fayette counties). In Carroll County, relatively few of the county’s farmers were taking advantage of the direct-to-consumer markets. One explanation was the lack of customers willing or able to support the prices needed to cover local producers’ costs: “There are four farmers’ markets in Carroll County [as of 2005], but they are not doing very well. People in this county expect things like big beets for cheap prices. . . . So, the concept of the new customer has not arrived yet.” In another studied county, a representative of a group that teaches “low-income families how to shop for food to get the most nutrition for their money” admitted, “[We] do not advise them to go to the farmers’ markets. They can get much more for their money at the grocery store.”

Fayette County is unique in our sample in that the county is transitioning from tobacco, historically a very important and well-paying commodity, to other products. With funding assistance available from Kentucky’s share of the National Tobacco Settlement (Hall, Snell and Infanger, 2000), these farmers tend to move into specialty crops like those discussed a little earlier (e.g., goats, llamas, etc.). Informants viewed the markets (including direct and niche outlets) for these products to be satisfactory.

A number of informants in different counties reported other important alternative marketing opportunities related to suburban development. These include *hay* (often for equine operations) in Burlington, Orange, Carroll, and Larimer counties and *nursery* products in Ventura, Carroll, Burlington, Orange, Larimer, and Fayette counties. For both of these two types of products in almost all the relevant counties, we gathered informant opinions that markets were satisfactory.

Finally, *equine* operations were also noted as increasing in importance in King, Sonoma, Carroll, and Fayette counties.

#### **4. Programs to Improve Marketing**

If farming is to be viable in the future, there must be a good deal of help for new and beginning farmers, as well as resources for planning, training, and value-added

infrastructure. Our interviews with agricultural leaders in all 15 counties detailed a number of programs that were attempting to do this. Note that we are not presenting an exhaustive list since it was developed from the interviews and not from a census of these programs.

Informants in several counties mentioned the availability of loans from the USDA's Farm Service Administration (FSA) to *beginning farmers*. However, interviewees in Dane, Madison, and Larimer counties said that few people were taking advantage of the program. One program officer explained: "Nobody really uses it because it would be ineffective due to the price of the land. . . . No feasible way to buy the land." A knowledgeable observer in the same county said, "There is a federal program [through] FSA, but people don't really use it. This is mostly because farming is shrinking." There were FarmLink programs in King and Sonoma counties, among others, that aimed to match persons interested in farming with current operators looking for help, if not successors. In Dane County there was the Grow Wisconsin Initiative (GWI) for beginning dairy farming. New York State has a Small Farm and Beginning Farmer program in which some farmers from Orange County participated.

*Diversifying farm production and operations* is an obvious path to increasing income through multiple income streams. Perhaps Fayette County is the epitome of this, as it and much of the rest of Kentucky is changing from tobacco into many other crops and enterprises. The tobacco settlement had funded the state's Agricultural Development Fund to provide technical assistance, research, and other assistance to tobacco growers intending to switch to different crops. A New Crop Opportunity Center in the county was also trying to help farmers diversify. In Wisconsin the GWI offered grants to help dairy farmers add value to their milk production, and the Center for Integrated Agricultural Systems at the University of Wisconsin provided education and technical assistance to many dairy farmers (new and established). However, a knowledgeable observer cautioned that this grant program had "minimal impact . . . [in Dane County] because of the urbanization." With land prices so high, many potential clients for this program chose "to sell their land and move their farming operation to a more rural area." In Burlington County the Cooperative Extension service had programs to help farmers diversify vegetable production, and in Lancaster County USDA Rural Development grants helped with choices for alternative crops and value-added activities.

Among the programs to help farmers with *processing their ag products* was the University of Kentucky's "training and outreach programs [that aimed to] introduce [farmers] to good practice rules, to teach farmers about using cost-effective equipment and how to use their equipment to be in compliance with public safety regulations." In Lancaster County operators could benefit from the University of Nebraska's Center for Food Processing that assisted food companies and individuals with manufacturing and marketing of products. Dane County used funds from the GWI to help dairy farmers to modernize their operations, introduce new products, and implement innovations in their supply chains. Orange County producers tapped into the State Department of Agriculture and Markets' Agricultural Development grants to build on- and off-farm processing infrastructure. From the Rural Development Center in Larimer County, "the most

frequent use of credit or loans” was for processing “a raw product—let’s say cherries, raspberries.” The Agricultural Enhancement Council in Palm Beach County advised the county commissioners on grant requests for new agricultural projects such as assistance with diversification.

The type of assistance programs most frequently mentioned in the interviews related to *marketing*. Informants talked about state- or county-supported programs to *encourage purchase of locally grown food*: “Puget Sound Fresh (western Washington State), “Buy Fresh, Buy Local” (Nebraska), “Minnesota Grown,” “Jersey Fresh,” and “Pride of New York.” These efforts included media advertising, placing labels on participants’ food, and signs on roads alongside their farms. Other state government efforts to promote marketing included financial aid from the Kentucky Governor’s Office for Agricultural Policy (using tobacco settlement money), from the Pennsylvania Department of Agriculture’s Center for Dairy Excellence, and from the Washington State Department of Agriculture’s Agricultural Marketing Grant program. Related programs were “Farm to Table” (King County), as well as “Farm to Restaurants” and “Farm-to-Schools” (e.g., “New York Harvest for New York Kids.”). There were also informational programs like the Mid-Atlantic Direct Marketing Conference: “We go every year and gain a lot out of that. That is a great educational program. And we think the marketing and educational programming coming out of Cooperative Extension [in Berks County] are also helpful and timely.” Orange County Extension had a program of “business management and production education to commercial vegetables growers” that could help diversify their products.

According to our informants, Cooperative Extension at the county and state level was a prominent player in at least half of the counties in providing technical assistance, business training, research, and overall moral support for *alternative markets* and *value-added activities*. County-level economic development agencies were another useful source of assistance in several places, including Fayette and Carroll counties. Nonprofits were mentioned in four counties as providing needed assistance (Larimer, Lancaster, Berks, and Carroll). USDA’s Natural Resources and Conservation Service helped livestock farmers to cope with water-quality regulations in King, Dane, Orange, and Larimer counties, among presumably others.

The types of program that the largest number of informants listed as providing marketing assistance were those that promoted *farmers’ markets*. As mentioned earlier, although these outlets represented a very small percentage of total sales for our surveyed owner-operators, they were—according to our informants—of growing importance in some counties.

### ***Use and Usefulness of Programs***

Toward the end of the survey, we asked respondents about the existence and usefulness of, in each of their counties, any of seven types of farmer assistance programs: for marketing directly to consumers, to retail, or to wholesale markets; developing alternative agricultural enterprises (e.g., ag tourism or horseback riding); diversifying or adding new products; developing value-added products; and processing their crops or livestock. Most

impressive in the answers is that across all counties, large percentages of responding operators were unaware of, or had no opinions about, assistance programs that informants had described to us as functioning in the county. For example, 55% of the farm operators surveyed in King County answered that either no programs for “marketing directly to consumers” were functioning in the county or that they were “not sure” of their usefulness. The corresponding combined percentage in Fayette County regarding programs for “diversifying or adding new products” was 45%. That is, they did not know or offer an opinion of the help available to diversify away from tobacco production. Knowledge of the processing programs in Orange County was more widespread; only 35% of the owner-operators responded “not operating in the county” or “not sure.” Nevertheless, there seemed to be a dearth of awareness of, or interest in, these programs. More informed outreach should help.

Among the respondents who had opinions about assistance programs in their counties, the type they found most useful across the 15 counties were those focusing on marketing directly to consumers. From 39% of the Dakota County sample to 77% in King County found it “very useful” or at least “moderately useful,” and the median value was 59% (Table 2.8). Ranking second was assistance for wholesale marketing—with a range of 21% to 82% and a median of 52%. The least appreciated were programs for developing value-added products, where the approval rate ranged from 13% to 79%, and the median was just 33%.

When looking at ratings by owner-operators in the same county across the seven different types of aid, the most positive evaluations were in Ventura County. More than half (51% to 82%) of the farmers there who gave opinions found six of the seven types to be either “very useful” or “moderately useful” (Table 2.8), and the median value for all seven categories was 57%. The second-most positive set of ratings was recorded for Carroll County, with a median of 55%.

Table 2.9 presents the opinions of surveyed farmers about the kinds of assistance that “should be in [the county] to assist farmers.” Programs for “diversifying or adding new products” earned the highest percentages of “yeses”—at least 40% in 13 of the 15 counties, with an overall median of 49% and an average of 48.3%. Second was “marketing directly to retail markets” (stores, restaurants, etc.), with a median of 47% and a mean of 45.8%. Assistance for “direct-to-consumers” was very close behind, with a 46% median. The least-supported type was “developing value-added products (bagging, packaging, bundling, precutting, etc.)” Across the 15 counties, it attracted “yeses” from 16% to 55% of the farmers answering this set of questions, and the median was 30%.

<b>Table 2.8: Among Surveyed Owner-Operators Who Gave Opinions about Usefulness of Assistance Programs They Knew to Be Operating in Their County, Combined Percentage Finding Each Type “Very Useful” or At Least “Moderately Useful,” By County</b>							
<b>County and Number of Owner-Operators</b>	<b>Direct-to-Consumers</b>	<b>Direct-to-Retail</b>	<b>Wholesale</b>	<b>Develop New Ag Enterprises</b>	<b>Diversify and Add New Products</b>	<b>Develop Value-Added Products</b>	<b>Processing Products</b>
<b>Percentage of Surveyed Owner-Operators</b>							
<b><i>Pacific Coast</i></b>							
King County, WA	77% (31)	21% (14)	21% (14)	21% (28)	19% (21)	19% (16)	18% (22)
Sonoma County, CA	69% (42)	53% (34)	67% (43)	51% (37)	33% (24)	36% (25)	70% (27)
Ventura County, CA	51% (45)	56% (36)	82% (44)	31% (35)	57% (47)	79% (38)	60% (26)
<b><i>Corn Belt</i></b>							
Lancaster County, NE	42% (60)	36% (59)	35% (57)	29% (62)	31% (61)	33% (61)	33% (57)
Dakota County, MN	39% (28)	31% (26)	56% (34)	36% (25)	31% (29)	19% (21)	50% (36)
Dane County, WI	48% (31)	37% (27)	52% (27)	41% (22)	39% (26)	26% (19)	42% (31)
DeKalb County, IL	44% (36)	28% (25)	59% (32)	29% (35)	41% (29)	35% (26)	29% (31)
Madison County, OH	44% (18)	31% (13)	46% (13)	31% (13)	23% (13)	17% (12)	39% (13)
<b><i>Mid-Atlantic</i></b>							
Carroll County, MD	59% (32)	43% (21)	55% (20)	67% (21)	39% (18)	23% (13)	62% (26)
Berks County, PA	74% (27)	38% (24)	63% (27)	44% (18)	38% (21)	13% (15)	52% (21)
Burlington County, NJ	67% (36)	57% (30)	49% (35)	60% (30)	40% (30)	33% (18)	22% (18)
Orange County, NY	63% (56)	51% (41)	51% (45)	42% (53)	54% (50)	55% (44)	35% (43)
<b><i>Highly Scenic</i></b>							
Larimer County, CO	56% (39)	32% (25)	44% (25)	47% (32)	52% (25)	40% (20)	50% (24)
Fayette County, KY	71% (38)	50% (24)	44% (27)	38% (32)	49% (33)	32% (19)	46% (26)
Palm Beach County, FL	62% (26)	52% (23)	76% (25)	43% (30)	56% (25)	42% (24)	40% (20)

<b>Table 2.9: Among Surveyed Owner-Operators Who Answered Questions about Which Assistance Programs “Should Be in [the County] to Assist Farmers,” Percentage Who Answered “Yes,” By Type of Program and County</b>							
<b>County and Number of Owner-Operators</b>	<b>Direct-to-consumers</b>	<b>Direct-to-retail</b>	<b>Wholesale</b>	<b>Develop new ag enterprises</b>	<b>Diversify and add new products</b>	<b>Develop value-added products</b>	<b>Processing products</b>
<b>Percentage of Surveyed Owner-Operators</b>							
<b><i>Pacific Coast</i></b>							
King County, WA (n = 84)	40	33	30	31	31	16	32
Sonoma County, CA (n = 88)	49	48	48	40	42	28	44
Ventura County, CA (n = 82)	31	34	44	29	52	43	32
<b><i>Corn Belt</i></b>							
Lancaster County, NE (n = 74)	42	42	38	35	53	37	50
Dakota County, MN (n = 86)	35	36	41	21	35	24	38
Dane County, WI (n = 71)	48	47	49	25	42	28	41
DeKalb County, IL (n = 78)	47	49	49	39	49	41	55
Madison County, OH (n = 48)	33	29	33	23	46	25	42
<b><i>Mid-Atlantic</i></b>							
Carroll County, MD (n = 63)	64	52	49	40	52	27	54
Berks County, PA (n = 59)	70	63	56	48	53	39	64
Burlington County, NJ (n = 90)	46	49	44	44	44	36	39
Orange County, NY (n = 88)	68	64	57	57	63	55	55
<b><i>Highly Scenic</i></b>							
Larimer County, CO (n = 84)	42	37	35	44	51	29	39
Fayette County, KY (n = 80)	70	64	68	58	69	45	60
Palm Beach County, FL (n = 83)	43	40	40	43	42	30	30

## 5. Comments

Some of the benefits of farming close to urban areas were mentioned at the beginning of the report. One is access to larger populations of consumers/eaters. By our choice, all the studied counties were in areas belonging to one of two classes: metro areas with more than 1 million people or metro areas with fewer than 1 million people. And according to a USDA Economic Research Service study of 1990 census data, the 15 counties were subject to “medium urban influence” or “high urban influence” for 48% (Sonoma County) to 100% of their land surface (Dakota, Madison, Carroll, Berks, Burlington, and Fayette counties—Table 1.2).

A second complementary benefit to a large population base is the ability to do more direct marketing to consumers and institutions. In our survey of owner-operators, Larimer, King, Orange, Carroll, Burlington, and Fayette counties had the biggest percentages of respondents with relatively high average percentages of gross sales from direct marketing (32% to 50%). The other nine counties had 25% or less.<sup>20</sup> When key informants in the counties were asked whether they believed that direct marketing would increase significantly, those in the nine counties tended to say “yes.” However, some of them cautioned that the increases would be small and/or that direct marketing would continue to account for limited proportions of total farm sales. Among the five Corn Belt counties, the outlook for direct marketing was more optimistic in Lancaster and Dane counties.

### ***Small Farms***

Small farms (defined by USDA as having less than \$250,000 gross sales) are dominant in the US agricultural landscape. In the counties covered by this study, the percentages of small farms fell into three groups, as shown in Figure 2.4 and Table 2.10. According to the 2002 Census of Agriculture, Larimer, Lancaster, King, and Carroll counties (group A) had the largest percentages of small farms thus defined—an average of 95.5%, according to the 2002 Census of Agriculture (and a mean of 88.9% in our survey samples for the same counties). The census entries for eight other counties—Burlington, Dane, Orange, Madison, Dakota, Berks, Fayette, and Sonoma (group B)—averaged 90.3% small farms (81.1% in our samples). Palm Beach, Ventura, and DeKalb counties (group C) had the lowest percentage of small farms (averaging 81.356% in the census and 63% in our samples). Because we studied only peri-urban areas, we have a particular interest in the smallest farms. Those farms with less than \$10,000 gross sales averaged 68.3% of the farms in group A (53.1% in our samples), 50.6% of group B on average (29.7% in our samples), and 40% in group C (19.3% in our samples).

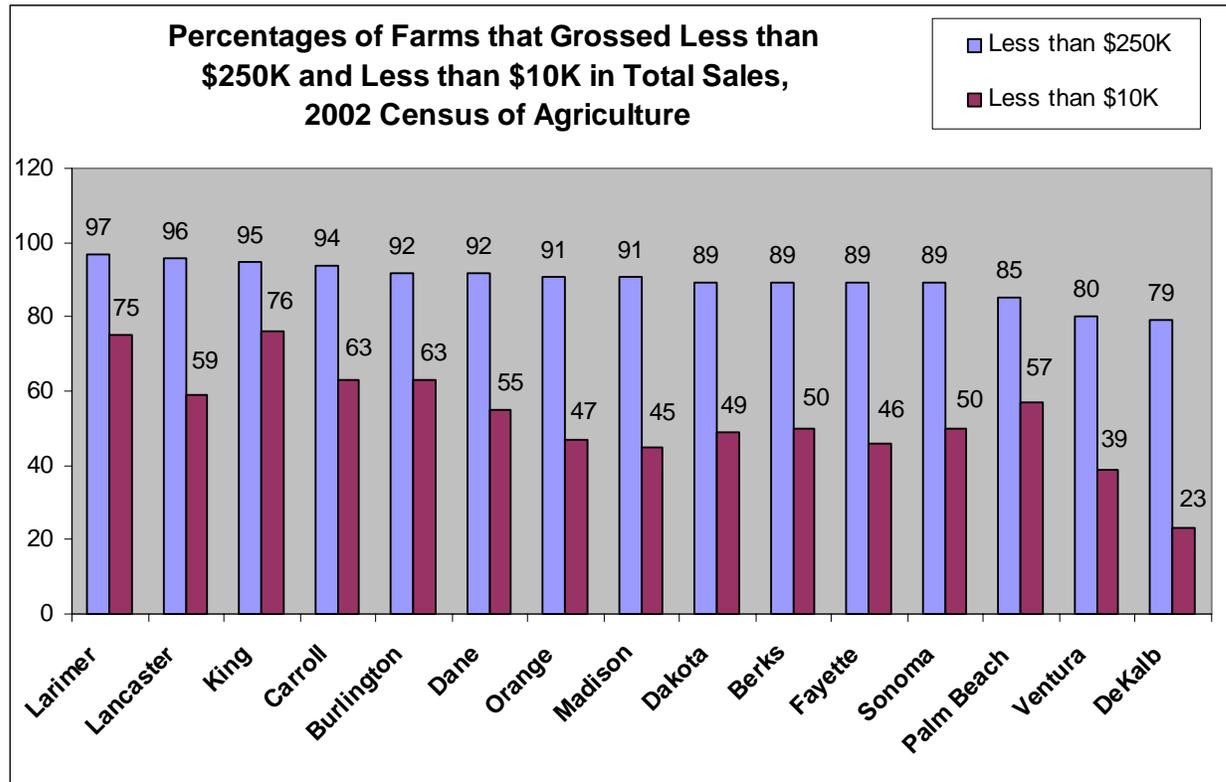
Among the total of 1,064 surveyed operators who provided information on gross sales and acres farmed, as their gross sales increased, the average number of acres (both owned and rented) tended to rise. For example, the average size of farms grossing less than \$10,000 in sales was 51 acres; for those earning \$50,000 to \$99,999, the mean acres in the farm were 254, and for operators reporting \$500,000 or more in sales, the average was 1,354 acres.<sup>21</sup> King, Burlington, and Palm Beach counties stand out for their small average acres until the gross sales reached \$250,000. Below that mark the average size in King County was 52 acres. Above it, the mean grew to 684 acres. The corresponding values for Burlington County were 54 and 681 acres, while for Palm Beach County they were 44 and 675. In all three counties high-valued crops could achieve good revenues on relatively small acreages.

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<sup>20</sup> The average percentages cited here are the sums of the entries for “Total Consumer Direct” and “Total Direct to Retail” found in Table 2.5 above.

<sup>21</sup> The Pearson correlation coefficient for these two measures of farm size was .369, with a significance level of .000 in a two-tailed test.

**Figure 2.4**



***Farm Revenue’s Share of Total Household Income***

There is a lot of missing data for the survey variable measuring percentage of household income supplied from farming. The most frequently chosen category for those owner-operators who did provide the information is 1% to 24%. Across the 15 counties, this response option accounted for 41.1% of the choices, and it ranged from 23.3% for Orange County to 68% in Larimer County. Across the 15 counties, 12.5% of respondents said that farming provided zero percent of their household income. The highest percentage for this response option was the King County sample’s 44.3%; and Madison County had the lowest at 2.3%. Not surprisingly, there was a rather strong, significant relationship between gross sales and the percentage of the operators’ household income derived from farming.<sup>22</sup>

<sup>22</sup> The Pearson correlations coefficient for these two measures of farm revenue was .601, with a significance level of .000 in a two-tailed test.

<b>Table 2.10: Gross Farm Sales of Surveyed Owner-Operators, By Ranges and By County</b>						
<b>Studied County</b>	<b>Less than \$10,000</b>	<b>\$10,000 to \$49,999</b>	<b>\$50,000 to \$99,999</b>	<b>\$100,000 to \$249,999</b>	<b>\$250,000 to \$499,999</b>	<b>\$500,000 and above</b>
	<b>Number (and Percentage) of Owner-Operators with Sales in the Indicated Range</b>					
King	52 (69.3%)	10 (13.3%)	1 (1.3%)	1 (1.3%)	2 (2.7%)	9 (12.0%)
Sonoma	25 (30.1%)	18 (21.7%)	12 (14.5%)	11 (13.3%)	5 (13.3%)	12 (14.5%)
Ventura	12 (14.6%)	14 (17.1%)	10 (12.2%)	13 (15.9%)	10 (12.2%)	23 (28.0%)
Lancaster	21 (29.2%)	18 (25.0%)	9 (12.5%)	16 (22.2%)	4 (5.6%)	4 (5.6%)
Dakota	12 (15.6%)	10 (13.0%)	9 (11.7%)	21 (27.3%)	11 (14.3%)	14 (18.2%)
Dane	11 (16.7%)	15 (22.7%)	8 (12.1%)	14 (21.2%)	12 (18.2%)	6 (9.1%)
DeKalb	10 (13.7%)	9 (12.3%)	9 (12.3%)	15 (20.5%)	15 (20.5%)	15 (20.5%)
Madison	10 (24.4%)	8 (19.5%)	6 (14.6%)	12 (29.3%)	4 (9.8%)	1 (2.4%)
Carroll	27 (46.6%)	16 (27.6%)	5 (8.6%)	4 (6.9%)	4 (6.9%)	2 (3.4%)
Berks	28 (50.0%)	14 (25.0%)	3 (5.4%)	7 (12.5%)	2 (3.6%)	2 (3.6%)
Burlington	44 (51.8%)	16 (18.8%)	9 (10.6%)	9 (10.6%)	2 (2.4%)	5 (5.9%)
Orange	5 (6.3%)	20 (25.3%)	3 (3.8%)	26 (32.9%)	7 (8.9%)	18 (22.8%)
Larimer	49 (67.1%)	13 (17.8%)	4 (5.5%)	1 (1.4%)	2 (2.7%)	4 (5.5%)
Fayette	34 (43.0%)	15 (19.0%)	12 (15.2%)	9 (11.4%)	4 (5.1%)	5 (6.3%)
Palm Beach	23 (29.5%)	15 (19.2%)	9 (11.5%)	8 (10.3%)	4 (5.1%)	19 (24.4%)
TOTAL	363 (33.7%)	211 (19.6%)	109 (10.1%)	167 (15.5%)	88 (8.2%)	139 (12.9%)

The final analysis we did was of the difference in use of market outlets between the smaller and larger farms. As expected, the ratios of average percent marketed wholesale to mean sold via direct outlets grew as gross sales increased. Across the studied counties, that ratio was 0.80 for farms with less than \$10,000 gross sales; 5.8 for farms with gross sales from \$50,000 to \$499,000; and 5.9 for farms selling more than \$500,000. Some counties had very small numbers of farms in the smaller gross sales categories. For counties that had at least 10 respondents with gross sales of under \$10,000, the mean of the county averages was 36.1% through wholesale and 41.5% through direct marketing. In contrast, for farms with gross sales between \$100,000 and \$249,999 (there had to be at least 10 farms in this category for a county to be included in the analysis), the mean percentages for wholesale averaged 78.9% while 13.3% on average went via direct outlets.

One of the places where small farms are likely to find useful outlets is in farmers' markets. However, in our 15 counties, the average percentages of operator sales through such markets in 2005 ranged from zero in DeKalb County to 8.1% in Orange County (Table 2.5). The mean of the 15 averages was 2.5%. As discussed earlier, several

interviews with local experts supported this finding of limited agricultural sales through farmers' markets. Another example was from an interviewee in Lancaster County who said that the largest market there had had 160 stalls in 2005, but that about half of them were occupied by non-farmer vendors (e.g., artists and artisans).

Our key informants were asked to look forward 10 years from the time of their interviews (2005–2007) and predict changes, if any, in the types of farm operations that would be found in their counties. An analysis of their responses is presented more fully in Chapter 5. In nine of the counties, at least a quarter of the informants who addressed this question expected more small operations (Table 5.9).

It is obvious that certain crops and livestock can achieve much more agricultural success than others: horses in Fayette County, wine grapes in Sonoma County, and high-value fruits and vegetables in Ventura. Horse-related enterprises were part of many counties' agricultural picture and will likely continue to be important unless the number of wealthy families declines in these communities. Hay was a good crop in many places, although it may be a small part of total farm income. If used for horses or other livestock it would be a viable crop; if used as straw for construction it will do fine as long as development is robust.

The future of the landscaping-products sectors of the studied counties will probably also be influenced greatly by the amount of new development. Among those categories of crops with at least \$1 million in sales per county in the 1987 ag census, this category of crops recorded the highest growth in market value between then and the 2002 census in nine of our studied counties—ranging from an increase of 76% in Fayette to 288% in Dane. In another four counties, it registered the second-highest growth rates—from 27% in Palm Beach to 194% in Burlington.

Dairy presented perhaps the most pessimistic sector in our study. In all of the six counties in which dairy recorded the first or second largest volume of sales in the 2002 Census of Agriculture (King, Sonoma, Dane, Carroll Orange, and Larimer counties), our key informants expected declines because of low profits, problems with succession (e.g., price of land too high for new entrants), and environmental conflicts (such as over manure odors and flies). For example, interviewees in King County told us, “We are losing dairy; [the farms] are smaller and smaller.” “There will be a decrease in dairy farms and a decrease in milk processing.” “Some dairy will stick around but will be mostly gone [in 10 years].” From Dane County we received these opinions: “There will be a continued loss of dairies; we need new strategies to deal with manure.” “Dairy is affected by manure ordinances that could eliminate dairies.” “With greater herd sizes, there is more manure; therefore, you need to lease more land.” “No new dairies because of price of land. You have to be in an established family, either via birth or marriage.”

For Sonoma, Dane, Carroll, Orange, and Larimer counties there were predictions of fewer but larger dairy operations and more specialty products like organic milk. One issue raised by many informants in regard to livestock in general was the impact of increasing suburbanization and urbanization; that is, as more people move to these agricultural areas, there seemed to be less toleration of large livestock operations, causing

many of their operators to be pessimistic about the future of livestock production in these areas. Of interest is that only one of the key informants in any county mentioned the presence or possibility of grass-fed animal production.

Overall, key informants were mixed with regard to their predictions regarding organic production in the future. Most said that because of high consumer demand, there would be continued growth of this sector in their counties (such as milk in Dane County and vegetables in Lancaster County). In Madison County, on the other hand, most of the interviewed experts did not see any or much increase in organic production.

For some time, one of the foci of agricultural development has been value-added food processing as a way for farmers to capture more of a commodity's food value (Cowan, 2001). In our interviews we were told that in most counties that there was not much processing infrastructure, except for traditional enterprises like dairies and slaughterhouses, and that these were declining. Berks County seemed to be an exception, with its sizable variety of locally processed farm goods, including mushrooms, flour, pretzels, and other baked goods, milk, meat and poultry, and jams and jellies (among others). In three counties—King, Sonoma, and Lancaster counties—nine to 15 experts believed that there would be increases in-county processing of locally grown ag products (and none or only one informant per county predicted declines or was unsure). Sonoma County interviewees anticipated more cheese from milk and wine from grapes. Informants in Lancaster County mentioned processing of corn and soybeans (for fuel) and milk into cheeses. In King County, more animal processing was expected, including through “a mobile slaughtering unit.” There were obstacles. In a county where farmers had multiple opportunities to increase their income from processing, an informant complained, “They [local farmers] are very slow to change.” Another reported that processing plants were not welcome because of expected nuisances (odors, noise, truck traffic). We do note that, across the 15 counties, from 30% of the surveyed owner-operators in Palm Beach County to 64% in Berks answered “yes” to the question of whether there should be programs to assist farmers with processing in their counties (Table 2.8).

In 2005-2007 a number of states (many of them in the Northeast) were addressing the economic security of farmers through a variety of agricultural viability efforts. For example, the New Jersey State Development and Redevelopment Plan included policy objectives for suburban and fringe areas designed to meet the needs of the agricultural industry “for intensive packaging, processing, value-added operations, marketing exporting and other shipping” (Heinrich-Schilling, 2004). Maryland, New York, and Virginia were in the forefront of supporting agricultural development specialists through Cooperative Extension to provide technical assistance for multiple value-added activities. The interest among those we surveyed in having these programs in their county was quite high, although it is clear that many farmers did not avail themselves of the assistance that was already in place. Given the marketing challenges we have described here, urban fringe counties need to increase their efforts to maintain a viable agricultural sector. This would include greater outreach to farmers, funding for programs, and, perhaps most importantly, a commitment of city, county, and state politicians and other leaders to keep their agricultural farms and related enterprises healthy.

## Chapter 3: Inputs of Agricultural Production—Land<sup>23</sup>

### 1. Introduction

In urbanizing but still agriculturally important areas, farmers and ranchers face obstacles to their use of land that tend to be more frequent or intense than in areas under less development pressure.<sup>24</sup> This chapter is arranged around four such threats and public policies to minimize the four:

1. A reduction in the physical supply of farmable land due to conversion to residential and other developed uses.
2. Very high purchase prices for much to almost all remaining farmable land—driven up by speculators, buyers of farmettes or estates intending to farm as a hobby, and commercial farmers moving their operations from more urbanized counties and using the proceeds from the sale of that more expensive land to outbid local farmers where they relocate.
3. With the land's rising market value, there is the potential for higher property-tax bills that threaten farm profitability.
4. Constraints on managerial freedom to farm imposed by local government ordinances or by private complainants who seek to prevent perceived agricultural nuisances like livestock smells, dust, farm machinery noises, and customer traffic to and from farm stands.

The policy tools that have been applied to these problems in two or more of our 15 counties include:

- for the first and second threats, agricultural protection zoning, urban growth boundaries, purchase of development rights, and transfer of development rights;
- for the third threat, agricultural use-value assessment for property-tax purposes; and
- for the fourth threat, state and local “right-to-farm” laws that instruct the courts (and potential complainants) as to what should and should not be considered an agricultural nuisance.

### 2. Conversion of Land Out of Agriculture

The population growth figures for the 15 counties (Table 1.1 in Chapter 1) suggest considerable land conversion, and our interviews with agricultural leaders indicated significant losses in farmable land. However, they could theoretically be offset by market prices and/or input-cost conditions that promote planting or pasturing additional ground. The data from Table 3.1 on land use as recorded by the Censuses of Agriculture illustrate

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<sup>23</sup> The principal authors of this chapter are: Dick Esseks, Mark Lapping, and Anita Zurbrugg.

<sup>24</sup> As explained in Chapter 1, besides employing data from the every-five-year federal Census of Agriculture, we surveyed by mail random samples of 100 to 174 agricultural landowners in each county, and we interviewed by phone or in person 15 to 36 local ag leaders. Given the sampling biases that may result from those modest numbers per county of the second and third type of source, the following discussion emphasizes points of agreement between the agland owners and leaders.

both types of changes—losses and gains in cropland and pastureland. However, before discussing them in detail, we must explain an element of complexity in this table. There are separate entries for the 1997-to-2002 comparisons and those for 1987 to 1997. After the National Agricultural Statistics Service took over responsibility for the Census of Agriculture in 1997, sampling procedures changed so that more farm operations were included than possible under previous procedures. However, the estimates initially published for 1997 were consistent with the earlier, smaller sampling frames. Consequently, for measuring possible losses or gains in farmland, we chose to search for changes between (1) the 1987 census entries and the initial 1997 figures and (2) the later-published, adjusted 1997 entries compared to the 2002 figures.

When applied to our 15 counties, these comparisons across time include cases of:

- countywide reductions in overall land in farms, as well as decreases in harvested cropland and pastureland, in both time periods—1987 to 1997 and 1997 to 2002 (as found in King, Dane, Berks, and Larimer counties—see Table 3.1);
- countywide reductions in total acres in farms in both period, but increases during one or more periods in either cropland or pastureland (DeKalb, Madison, Carroll, Fayette, and Palm Beach counties);
- decreases in overall acres in farms in one period but not the other, with growth in either cropland or pastureland in at least one time period (Ventura, Lancaster, and Orange counties); and
- increases in total acres for both periods (Sonoma, Dakota, and Burlington counties).

In summary, according to Table 3.1, there were nontrivial losses in recorded land in farms in 12 of the 15 studied counties. Some of the reductions were impressive in size—like Ventura County’s 45,344-acre drop between the 1997 and 2002 censuses, the 44,001-acre decrease for Dane County during the same period, and the 73,581-acre reduction estimated for Palm Beach County. Except for three counties, we lacked information on how much these changes were due to development rather than to such factors as converting farmland to hunting and other recreational uses. One of the exceptions is Dane County, where a study by the Regional Planning Commission found that “about half of the farmland lost comes from rural growth—including rezoning land in the towns; the other half comes from annexation by cities and villages” (Dane County Executive, 2000, p. 4). The second exception is Dakota County, where the Planning Department estimated, “Agricultural lands are being converted to residential and commercial areas at a rate of 2000–3000 acres per year” (Dakota County Office of Planning, 2002, p. 1). DeKalb County is the third. Its director of planning and zoning told us, “The reduction in total farm acreage is almost entirely the consequence of annexation to municipalities for the purpose of residential and commercial development.” As will be discussed later, DeKalb County’s zoning for unincorporated areas had effectively stopped the creation of rural subdivisions.

It seems likely that some significant parts of the farmland acreage loss in the other counties also derived from urban or suburban development. Data from Table 3.2 on the median price of owner-occupied homes suggest a strong demand for new housing units in

the 14 studied counties for which we have price figures for both 2000 and 2006. Between those two years, the estimated increases in countywide medians ranged from 35.5% (Lancaster) to 160.6% (Ventura). For eight of the counties, their growth in market value was greater than the increase for the nation as a whole, 54.9%.

County	Changes in Total Acres (1997 to 2002) <sup>1</sup> in:			Changes in Total Acres (1987 to 1997) <sup>2</sup> in:		
	All Land in Farms	Harvested Cropland	Pastureland (All types)	All Land in Farms	Harvested Cropland	Pastureland (All types)
<b>Pacific Coast</b>						
King County, WA	-10,488 <sup>25</sup>	-1,222	-5,318	-12,519	-1,682	-9,031
Sonoma County, CA	20,050	11,560	19,536	21,265	-5,924	-64,643
Ventura County, CA	-45,344	-11,826	-22,312	17,319	4,106	23,300
<b>Corn Belt</b>						
Lancaster County, NE	10,184	19,593	-1,069	-27,197	21,580	-4,544
Dakota County, MN	9,010	6,774	-1,957	1,396	27,324	-2,157
Dane County, WI	-44,001	-7,034	-13,794	-56,966	-16,523	-13,322
DeKalb County, IL	-15,980	-15,738	399	-16,201	58,848	-5,373
Madison County, OH	-23,565	-15,973	-1,327	-4,899	23,052	-8,308
<b>Mid-Atlantic</b>						
Carroll County, MD	-20,619	-4,726	-3,741	-6,565	42	-3,419
Berks County, PA	-24,131	-23,587	-2,805	-21,749	-6,507	-2,585
Burlington County, NJ	7,610	-1,274	-1,331	443	7,476	2,766
Orange County, NY	5,252	372	-8	-20,157	-5,582	-7,048
<b>Highly Scenic and Recreational</b>						
Larimer County, CO	-13,184	-20,656	-8,227	-32,543	-3,751	-24,195
Fayette County, KY	-19,508	-4,505	-15,945	-19,671	1,698	-14,737
Palm Beach County, FL	-73,581	-34,550	3,035	-54,735	-44,020	-38,430

<sup>1</sup>Source: U.S. Department of Agriculture, National Agricultural Statistics Service, *Census of Agriculture*, 1997 and 2002.

<sup>2</sup>Source: U.S. Bureau of the Census, *Census of Agriculture*, 1987 and 1997.

County	2000 <sup>1</sup> (\$)	2006 <sup>2</sup> (\$)	Percentage change	County	2000 <sup>1</sup> (\$)	2006 <sup>2</sup> (\$)	Percentage change
<b>Pacific Coast</b>				<b>Mid-Atlantic</b>			
King County, WA	236,900	394,100	66.4%	Carroll County, MD	162,500	363,800	123.9%
Sonoma County, CA	273,200	618,500	126.4%	Berks County, PA	104,900	149,700	42.7%
Ventura County, CA	248,700	648,000	160.6%	Burlington County, NJ	137,400	259,300	88.7%
<b>Corn Belt</b>				Orange County, NY	144,500	319,300	121.0%
Lancaster County, NE	105,900	143,500	35.5%	<b>Highly Scenic and Recreational</b>			
Dakota County, MN	152,400	247,900	62.7%	Larimer County, CO	172,000	244,000	41.9%
Dane County, WI	146,900	225,700	53.6%	Fayette County, KY	110,800	156,400	41.2%
DeKalb County, IL	135,900	189,000	39.1%	Palm Beach (FL)	135,200	328,500	143.0%
Madison County, OH	104,300	Not available	Not available	<b>United States as a whole</b>	119,600	185,200	<b>54.9%</b>

<sup>1</sup>Median value for "Single-family owner-occupied homes."

<sup>2</sup>Median value for "Owner-occupied homes." Since both the definition of who should answer the question ("Answer questions 19–23 ONLY IF you or someone else in this household OWNS or IS BUYING this

<sup>25</sup> The published 2002 figure for total land in farms, 41,769 acres was, according to a King County land-use expert, very close to her office's "relatively stable" (over time) measure of land designated for Agricultural Production Districts (APDs). As discussed later in this chapter, county policy was to preserve that land or, if any acres were converted, to require compensating acres from properties outside the APDs. The interview data suggest that policy was successful. Land outside the APDs may have been developed, but there was apparently little net loss of agricultural land inside them.

house, apartment, or mobile home”) and the wording of the question about estimating housing value were identical for 2000 and 2006, it seems likely that those two years’ median prices are comparable. Source: U.S. Census Bureau, *American FactFinder* ([http://factfinder.census.gov/home/saff/main.html?\\_lang=en](http://factfinder.census.gov/home/saff/main.html?_lang=en)).

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In doing the comparisons for Table 3.1, we noticed that countywide reductions in pastureland were proportionally greater<sup>26</sup> than the decreases in harvested cropland for all but two of the counties in the 1987-to-1997 comparisons and in 10 of the 15 cases for 1997 to 2002. Greene and Stager (2001) offer an explanation generally applicable to counties in the arid West. They found evidence in the 1997 Natural Resources Inventory data that, as cropland is converted to urban uses, farmers compensate by using former rangeland for their crops. This source of reduction would be in addition to any development of pastureland for housing and other urban-type uses.

### **3a. Affordability of Amland to Purchase**

**Survey Findings:** If not directly the beneficiaries of inherited farmland or other kinds of land gifts, new farmers typically seek to purchase land rather than be exclusively tenants and risk that the landlords might not renew leases or charge excessive rents. Established owner-operators often also want to buy additional land such as to achieve needed economies of scale. However, during the 2006 surveys we conducted in the 15 studied counties, most respondents did not find affordable the agland that came onto the market for sale. Across the 15 counties, from 30% (in Berks and Burlington) to 62% (DeKalb) of the respondents who assessed affordability<sup>27</sup> chose the response option “Not at all affordable” (Figure 3.1). And from 55% (Burlington) to 85% (DeKalb) selected either that most negative response or “Not very affordable.” Only from 3% (Carroll) to 14% (Burlington) considered the agland prices to be “On the whole very affordable” or “Affordable.”<sup>28</sup> When we limit the analysis to farm operators, the combined percentages of “very affordable” and “affordable” change only slightly.

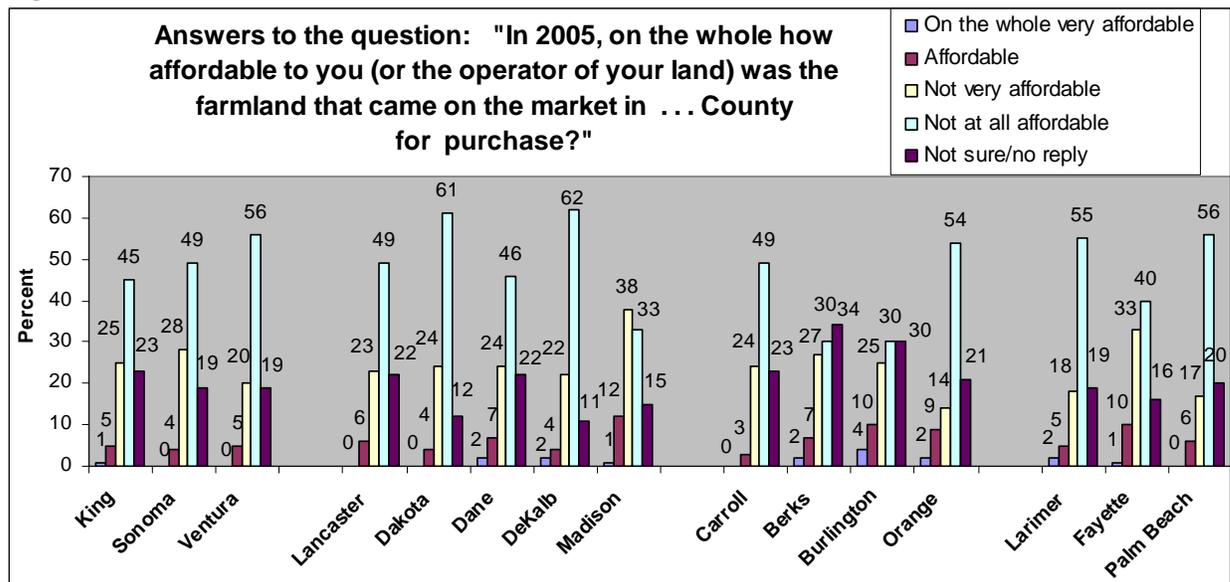
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<sup>26</sup> By “proportionally greater,” we mean, for example, that a county’s recorded decrease in acres in pastureland between 1987 and 1997 comprised a greater percentage of the total acres at the start of the comparison period (1987) than was the reduction in cropland as a percentage of the estimated 1987 total for that type of agland use.

<sup>27</sup> Included in this table are the surveyed agland owners who were either operators of at least some of the land they owned in the subject county or who reported that they had “detailed knowledge about how my farmland there [in the county] is operated.” See Table 1.4 for the numbers per county of operators and these self-classified well-informed non-operators.

<sup>28</sup> A reviewer of an earlier draft of this chapter objected to the finding that as many as 14% of the Burlington County respondents found agland affordable to purchase. “In my . . . years here I have never heard a farmer say anything but that the land is not affordable.” As discussed earlier, since our survey samples were modest in size, the particular percentages that we report here have nontrivial margins of sampling error, as well as suffering from nonresponse error (Table 1.4). Therefore, the survey findings are useful when their general patterns (e.g., relatively few respondents believing agricultural land to be affordable) are supported by the interview findings. Of course, both kinds of data could have the same biases, but the odds of that unhappy coincidence are hopefully small.

**Figure 3.1**



**Interview Findings:** Conducted mostly in 2005 and 2006, our interviews with local experts confirmed the survey respondents’ largely negative assessments of affordability. Here are examples of such opinions (each from a different county):

- “Prices have gone beyond what we can pay; it’s not a viable industry.” (King)
- “None of our farmland sells for its agricultural value because of too much speculation as to what it will be worth.” “I don’t think we sell any land less than \$15,000 to \$20,000 per acre on the low end.” (Burlington)
- “Land values are very high. They are way above its agricultural value. Therefore, when a farm goes on sale, there will not be any farmers that can buy it. It will be sold for recreational purposes—for hunting, horses, and estates.” (Larimer)
- “The climate and soils can sustain production of very high-valued crops, but net agricultural income from the land still falls short of servicing the full land value.” (Ventura)
- “We can’t pay for land from farm profits.” (Lancaster)
- “Because of proximity to urban areas, land sells for three times what it costs in other parts of the state.” (Dakota)
- “Today farmers are competing with developers . . . [who] offer \$20,000 an acre.” (Dane)
- “Because the land price increased to levels that are unprecedented, it’s impossible to buy land and become a farmer—over \$100,000 an acre.” (Palm Beach)

**Exceptions:** Berks County (northwest of Philadelphia) was an exception. Figure 3.1 shows it and nearby Burlington County (east of Philadelphia in New Jersey) having the smallest percentages of surveyed agland owners (30%) regarding farmland that came on the market in 2005 as “Not at all affordable.” The relevant interview responses for Berks County were mixed on this price issue. While some experts were pessimistic, two believed that purchasing land was still feasible. One of them attributed the relatively

affordable prices to the county's large conservation easement program (to be discussed later in this chapter) that protected very substantial amounts of farmland from development (54,191 acres as of August 2008) and also to the restrictive zoning that several townships practiced.

Geography caused another type of exception in three of the studied counties—land difficult or impossible to develop. The three had considerable acres that were either in the *floodplain* and/or had *soils too wet* for development using current technologies. A University of Nebraska study found that over 30,000 acres of the 100-year floodplain were being farmed in Lancaster County (MacDonald, 2007). If the county commissioners routinely permitted applicants to build on the floodplain, such as after using fill to raise the homes above that floodplain level, land might be almost as expensive there as in upland areas. However, commissioners in office from 2005 to at least mid-2008 have not approved such development, and a local expert estimated for us that floodplain land was going for \$2,750 an acre, while about \$6,000 was then representative of farmland prices outside the plain.

Madison County (west of Columbus, Ohio) has had serious drainage problems. A study by the Ohio Department of Natural Resources found that 40.9% of the county's total acres had "very poorly drained" soils (Madison County Commissioners, 2000, p. 36). In 2000 six communities in the county were "under development permit moratorium because of soil limitations for on-site septic systems" (Madison County Commissioners, 2000, p. 32). As of the 2005 Comprehensive Plan, "Several areas of Madison County . . . [were] under development restrictions because of soil limitation for on-site septic systems" (Madison County Commissioners, 2005, p. 34). Until sewer systems enter the county from the east (i.e., from the Columbus urbanized area), or until one or more of the county's own small cities develop the sewage treatment capacities for substantial expansion, these wet soils may effectively protect much of the county from urban and suburban housing densities.

Orange County (northwest of New York City) is our third studied county with substantial acres of soils considered unsuitable for development. In 2006 it had approximately 8,000 to 9,000 farmed acres of former glacial lakes that were called "muck land" or the "Black Dirt Region" of the county. State regulations protected the land. Moreover, then-current technology did not include economical ways to build houses on it. One local expert told us, "This land doesn't have the properties to support a home foundation unless they drove piles down to the mineral soils." Another specialist observed, "The Black Dirt can't be built on because the soil is too unstable. My dad tried it [many years ago]."

Burlington County had a large quantity of land protected for environmental purposes, but most of it was technically suitable for housing. The southeastern two-thirds of the county belong to the Pinelands National Reserve. A 1978 act of Congress created the reserve where "orderly development" is managed by the public Pinelands Commission "to preserve and protect the significant and unique natural, ecological, agricultural, archeological, historical, scenic, cultural and recreational resources of the Pinelands" (New Jersey Pinelands Commission, 2006). To achieve these purposes, the commission

designated “sensitive areas where the amount of development is limited and other areas where growth is encouraged” (New Jersey Department of Banking and Insurance, 2006).

***Factors besides Development Pressures that Inflate Agland Prices:*** Our interviews identified three additional factors that inflated agricultural land prices besides development pressures:

- **Competition from farmers of high-value products:** Wine-grape farmers in Sonoma County, breeders of thoroughbred horses in Fayette County, and growers of avocados, lemons, and strawberries in Ventura County tended to out-compete other farmers for land. On the one hand, many local ag leaders whom we interviewed were pleased that their agricultural sectors included these stellar products. On the other hand, many of their producers had “invaded” from other counties, states, or—in the case of Fayette County’s equine sector—from outside the United States.<sup>29</sup> Established local farmers of less profitable products were therefore put at a disadvantage when bidding on land both to purchase and to rent. For example, in Sonoma County two sources told us that vegetable farmers could not afford to buy any land, so dominant in the market were farmers and investors for wine grapes.
- **Competition from landowners buying land in the studied counties with untaxed proceeds from land they had sold in even higher-priced markets:** Section 1031 of the federal Internal Revenue Code provides, “Generally, if you exchange business or investment property solely for business or investment property of a like-kind, no gain or loss is recognized. . . . Real [estate] properties generally are of like-kind, regardless of whether the properties are improved or unimproved” (U.S. Department of the Treasury, 2008). At least two interviewed experts in each of three counties—Dakota, DeKalb, and Madison—complained about the effects of these Section 1031 exchanges on the local market for agland:
  - “Farmers who sell out near our major urban areas [i.e., Columbus] get as much as \$15,000 to \$30,000 an acre. Many look to avoid paying the 15% capital gains tax by coming out to buy in an area [e.g., Madison County] where \$3,500 an acre of farm ground is [common]. . . . These buyers drive up land prices.”
  - “Currently, 80% to 90% of sales [in DeKalb County] involve 1031 purchasers, so it is rare for a county farmer to purchase.”
  - “The 1031 exchanges are screwing up everything. Land should really sell for what the land can produce, but with the 1031 exchanges, this is not going to happen.” In that county, Dakota, farmers in the northern section near to the Twin Cities were selling their land for as much as three times the price they had to pay when relocating to the southern part of the county.
- **Competition from smaller farms:** In four studied county (Sonoma, Ventura, DeKalb, and Larimer), interviewed experts complained of a market trend toward cutting up agland into smaller-sized parcels that could therefore be priced higher

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<sup>29</sup> In describing the equine sector of Fayette County, one local expert told us, “There are Arab sheiks and influential people from Ireland, France, and other countries that own [horse] farms in Fayette.”

per acre. As one realtor put it, there were “fewer larger parcels and more small but expensive ones.” Another observed, “Prices are higher for smaller acreages, 40 acres and below.” A third expert complained, “It’s become an urbanized market; there is little left to buy larger than 80 acres.” A realtor in the fourth county reported, “It is hard to find a piece of 35 acres or more for sale.”

### 3b. Affordability of Rented Land

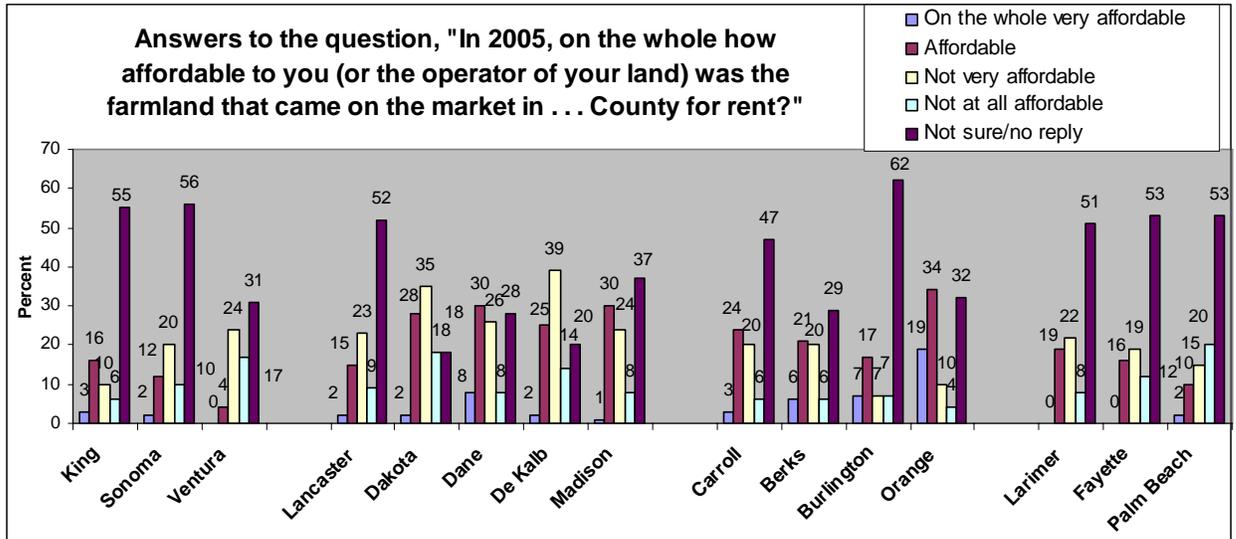
The 2002 Census of Agriculture found that rented farmland comprised important percentages of the 15 counties’ total land in farms—from 18% in Sonoma County to 67% in DeKalb County (Table 3.3). The median value was 40%. In nine of the 15 cases, the percentage declined from 1987 levels—by 2 to 19 percentage points. The 2002 values nevertheless beg the question, “If farmland to purchase tends not to be affordable, what about land to rent into an operation?”

County	1987 (%)	2002 (%)	Percentage-point change	County	1987 (%)	2002 (%)	Percentage-point change
<b>Pacific Coast</b>				<b>Mid-Atlantic</b>			
King County, WA	28	19	-9	Carroll County, MD	46	46	0
Sonoma County, CA	37	18	-19	Berks County, PA	44	40	-4
Ventura County, CA	54	43	-9	Burlington County, NJ	37	35	-2
<b>Corn Belt</b>				Orange County, NY	40	48	+8
Lancaster County, NE	59	51	-8	<b>Highly Scenic and Recreational</b>			
Dakota County, MN	39	44	+5	Larimer County, CO	40	31	-9
Dane County, WI	35	37	+2	Fayette County, KY	29	22	-7
DeKalb County, IL	63	67	+4	Palm Beach County, FL	28	26	-2
Madison County, OH	54	60	+6				

Sources: U.S. Bureau of the Census, *Census of Agriculture*, 1987; and USDA, National Agricultural Statistics Service, *Census of Agriculture*, 2002.

**Survey Findings:** The same survey respondents who were asked about the 2005 affordability of agland to purchase were given a parallel question about land to rent into farm operations. Comparisons between Figures 3.1 and 3.2 shows generally higher percentages of “very affordable” and “affordable” responses about rented land. Adding those two percentages together yielded sums ranging from 4% in Ventura County to 53% in Orange County, with a median of 24%. However, for all except four of the studied counties, the most common answer in Figure 3.2 is “not sure/no reply.” Therefore, we ran the numbers again, limiting the analysis to the nine to 49 surveyed owner-operators per county who rented at least some land into their farm operations. The responses were generally more optimistic, with at least a third of the tenants in eight counties considering rents to be affordable, and the median being at 33% (Table 3.4). Orange County stands out with 72% of the tenants falling in this combined category. The only other entry with more than half the respondents being that positive about rents was King County’s 65%.

**Figure 3.2:**



County	Combined (%)	Number of Renters Surveyed	County	Combined (%)	Number of Renters Surveyed
<b>Pacific Coast</b>			<b>Mid-Atlantic</b>		
King County, WA	65	17	Carroll County, MD	39	23
Sonoma County, CA	33	9	Berks County, PA	23	26
Ventura County, CA	0	12	Burlington County, NJ	38	21
<b>Corn Belt</b>			Orange County, NY	72	47
Lancaster County, NE	21	39	<b>Highly Scenic and Recreational</b>		
Dakota County, MN	31	49	Larimer County, CO	32	19
Dane County, WI	34	32	Fayette County, KY	36	11
DeKalb County, IL	17	46	Palm Beach County, FL	43	14
Madison County, OH	15	20			

**Interview Findings:** Although derived from mostly small numbers of cases per county, the pattern survey responses found in Table 3.4 received some support from the interviews with local experts. The zero percent “very affordable” measure for Ventura makes sense, given what we heard from three interviewees in 2006. One informant estimated yearly rents at \$2,500 to \$3,000 per acre; another put the range at \$900 to \$3,500; and the third reported rents for strawberry-producing land at \$3,100 and lamented that it was difficult to make money with vegetables on leased land.

Two common complaints in the Corn Belt counties were about the strong competition for rented land and the prevalence of short-term leases:

- “When land becomes available to rent, it’s a bidding war.” (Lancaster)
- “It used to be if you rented for 15 years, you’d keep the lease. Not today. If someone offers more, they will rent to them.” (Dakota)
- “Competition is hard. Most land is rented to established livestock farmers, so crop farmers have a more difficult time.” (Dane)

- “In our area, there is almost an unwritten . . . ‘pecking order’ that determines who the next successors are after the current farmer dies or gives up the lease. Farmers who ignore this are often shunned by the other farmers and considered ruthless and cutthroat.” (Burlington)
- “Farms are larger, so when they come up for rent, they will go to the highest cash rent. There is more of a bidding war than in the past, and the larger operators have an advantage.” (DeKalb)
- “Rents are high, crop shares are very uncommon, and this hurts the young or beginning farmer.” (Madison County)
- “No long-term leases, though some have options. Most are annual.” (Madison)

The explanation offered in the interviews regarding Orange County (where 72% of the surveyed renting operators were optimistic) was nonoperator-owners’ need to rent out their land in order to qualify for agricultural-use assessment for property-tax purposes. However, the supply of farmers willing to meet the need was apparently insufficient to sustain commercial rents. As will be discussed in this chapter’s fifth section, New York State requires relatively high gross agricultural sales in order to qualify for such preferential taxation.

- “Everyone who owns farmland wants to receive the agricultural assessment. It’s huge—about a 70% reduction in property taxes on your cropland. . . . Few of our dairy or crop farmers are paying rent. The land taxes are so high that the farmer rents it for free, unless the soils are really excellent.”
- “The owners will charge a nominal fee or charge no fee at all in order to get the tax break.”
- “We pay little or no rent for farms in this area. . . . We save them [the owners of Orange County farmland who are waiting for their land to be developed] a tremendous amount of taxes. The problem with that is we are like gypsies; we don’t know from year to year if we will have it [the lease].”<sup>30</sup>

#### **4. Zoning and Municipal Growth Policies to Prevent or Slow the Rate of Farmland Conversion**

As described in Table 3.5, 11 of our 15 counties had rural zoning policies designed—at least in part—to protect agricultural land from conversion out of farm or ranch use. We found also that eight of the 15 had either urban growth boundaries or urban service areas, one of whose purposes was to guide municipalities’ growth so as to minimize the harm to agriculture. Ideally, both kinds of tools are coordinated in their application, and they not only reduce the gross acres lost to agriculture but also maximize the number of contiguous acres still in farming, thus avoiding the situation of isolated or semi-isolated farm parcels having nonfarm neighbors on one or more sides. As discussed in this chapter’s sixth section, such juxtapositions often limit operators’ freedom to farm because they generate complaints from the neighbors about farm odors, dust, chemicals, noise, and other real or imagined nuisances.

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<sup>30</sup> These comments pertain to upland areas of the county. The highly productive 8,000 or more acres of “muck soils” (discussed above) “had higher rents of about \$100” per acre. Source: e-mail from a local expert (December 11, 2008).

**Summary of Land-Use Controls:** The summaries in Table 3.5 of the zoning and urban-growth policies operating in the 15 studied counties during 2005–7 derive from our reading of printed documents and Internet postings of the county and city governments, supplemented by interviews with local government planners and other administrators. The zoning programs of interest to us fall into the category of “agricultural protection zoning,” which the American Farmland Trust has defined as “county and municipal [including township] ordinances that support and protect farming by stabilizing the agricultural land base. APZ designates areas where farming is the desired land use, generally on the basis of soil quality as well as a variety of locational factors. Other land uses are discouraged” (American Farmland Trust, 1998).

<b>Table 3.5: Rural Zoning and Urban Growth Policies as of 2006–2007 to Protect Agricultural Land</b>		
<b>County and Locus of Zoning Authority</b>	<b>Rural Zoning Policies to Limit or Phase Residential Development in Agricultural Areas</b>	<b>Cities’ and Villages’ Policies to Limit or Phase Expansion into Agricultural Areas</b>
<b>Pacific Coast</b>		
<p><b>King County, WA</b></p> <p>County had zoning authority over unincorporated areas.</p>	<ul style="list-style-type: none"> <li>• Have Ag Production Districts (APDs) consisting of blocks of contiguous farmland and totaling about 42,000 acres. Land should not be removed from APD unless offset with farmland of equal or greater value: “No net loss of ag land.”<sup>31</sup> In APDs new homes are allowed at density of one dwelling unit (DU) per at least 35 acres.</li> </ul>	<ul style="list-style-type: none"> <li>• State law mandated King County government and the county’s municipalities to cooperate on growth management. In 1992 they agreed on a joint urban growth boundary (UGB) that directed new development to the west side of the line, where most urbanization had already occurred.</li> <li>• “[T]he urban boundary set in 1992 remain[ed] in place (with minor changes) in 2006.”</li> </ul>
<p><b>Sonoma County, CA</b></p> <p>County had zoning authority over unincorporated areas.</p>	<ul style="list-style-type: none"> <li>• County government identified areas “best suited for ag use” and limited new homes to densities of (a) from one per 60 or more acres to one per 320 in areas “capable of relatively low production per acre,” and (b) in areas of high production, the minimum lot size varied from 20 to 60 acres. These were exclusive ag-use districts, that is, except for DUs meeting minimum lot size, most non-ag uses were not allowed without rezoning.</li> <li>• Ag-zoned districts allowed a second dwelling unit per lot that could be occupied by owner’s family members or rented, but not separately sold.</li> </ul>	<ul style="list-style-type: none"> <li>• As of April 2008 eight of nine “larger cities” in county had voted for 20-year UGBs. Since they were voter-authorized, UGBs could not be changed without <i>voter approval</i>. Included in the eight was Petaluma, one of the pioneer U.S. cities in growth management.<sup>32</sup></li> <li>• Through September 2007, no city’s voters had approved changes in their UGB.</li> </ul>
<p><b>Ventura County, CA</b></p> <p>County had zoning authority over unincorporated areas.</p>	<ul style="list-style-type: none"> <li>• Exclusive ag zoning districts, with a 40-acre minimum lot size, “to preserve . . . commercial ag lands as a limited and irreplaceable resource, to preserve and maintain ag as a major industry in Ventura County, and to protect these areas from the encroachment of non-related uses which, by their nature, would have detrimental effects upon the ag industry.” Under county’s SOAR ordinance (Save Open-Space and Agricultural Resources), authorized in 1998 election, voter approval was needed for rezoning to other use categories of any land designated</li> </ul>	<ul style="list-style-type: none"> <li>• Eight of the county’s 10 cities adopted SOAR-like restrictions (see information in column to the left). <i>Voter approval</i> was needed for expanding sewer services or otherwise enabling urban densities beyond the city’s existing urban services boundary.</li> <li>• Elections held in 1999–2006 on such expansions had mixed results, with either “no” votes or minor extensions.</li> </ul>

<sup>31</sup> In this table the words within quotation marks come either from published program documents or from interviews with program administrators.

<sup>32</sup> In 1972 Petaluma legislated a quota system for new dwellings that was ultimately upheld by an appeals court opinion in *Construction Industry Association v. City of Petaluma*, 522 F. 2d 897 (9th Cir. 1975).

	"Agricultural, Open Space, or Rural" by the General Land Use Map of September 1997.	
<b>Corn Belt</b>		
<p><b>Lancaster County, NE</b></p> <p>County had zoning authority over unincorporated areas.</p>	<ul style="list-style-type: none"> <li>• Had an exclusive ag zoning district with 20-acre minimum lot size, but option of clustering homes with same overall density (e.g., five lots per 100 acres) except for bonus lots for clustering to protect farmland or "environmentally sensitive areas."</li> <li>• Up-zoned to three acres per DU, such as when land was on paved road and had an adequate water supply. Comprehensive Plan called for limiting rural residents to 6% of total county population.</li> </ul>	<ul style="list-style-type: none"> <li>• County's dominant city (Lincoln) had policy of expanding incrementally and, though enjoying a three-mile extraterritorial zoning jurisdiction, did not extend sewer and water services beyond city limits, that is, no serving of subdivisions in unincorporated areas.</li> <li>• Expansion depended on decisions of elected mayor and seven-member city council. But "annexation wars" were likely in only one direction (northeast). In any other direction, no competing municipality.</li> </ul>
<p><b>Dakota County, MN</b></p> <p>Township governments had zoning authority over unincorporated Areas.</p>	<ul style="list-style-type: none"> <li>• State's Ag Preserves Program (APP) provided financial incentives for townships to adopt exclusive ag zoning and minimum lot size of at least 40 acres. Landowners would thereby qualify for ag-use value property-tax assessment and a \$1.50 tax credit per acre.</li> <li>• Rezoning to higher densities possible at any time except for land in APP. In 2005 the APP in Dakota County encompassed 61,200 acres. Enrolled land was under a covenant preventing development until eight years after owner gave notice of termination.</li> </ul>	<ul style="list-style-type: none"> <li>• The seven-county Metropolitan Council provided central sewer services in Dakota. The council's Metro Urban Service Area (MUSA) shaped high-density growth in the county. MUSA's 2020 map had no sewer service going to Dakota County's still agriculturally important six southernmost townships except for one city located there.</li> <li>• Developing cities in Dakota had asked for MUSA expansion in their direction. Metro Council advocated efficiently placed services but was not clearly committed to directing new growth to existing municipalities.</li> </ul>
<p><b>Dane County, WI</b></p> <p>Township governments had zoning authority over unincorporated areas.</p>	<ul style="list-style-type: none"> <li>• As in Dakota County, a state tax relief program encouraged exclusive ag zoning. To enable agland owners to qualify for Farmland Preservation Credits (that averaged \$797 per claimant in 2002), 30 of Dane County's 34 townships adopted such zoning districts and set at least 35 acres as the minimum lot size or average residential density.</li> <li>• Several towns' land-use plans set standards also for minimizing negative effects of non-ag uses on agriculture.<sup>33</sup></li> </ul>	<ul style="list-style-type: none"> <li>• County's Farmland Preservation Plan encouraged location of non-agriculturally related development in areas "where the full range of services (sewer, water, fire protection, and police protection) can be economically provided."</li> <li>• At least one township (Vienna) sought to restrict annexations through boundary agreements with its municipalities.</li> </ul>
<p><b>DeKalb County, IL</b></p> <p>County had zoning authority over unincorporated areas.</p>	<ul style="list-style-type: none"> <li>• Had exclusive ag zoning with a 40-acre minimum lot size. No provision for residential splits on land unsuitable for agriculture. Rather, all land not in floodplain or a conservation district was located in exclusive ag zone so as "to discourage new non-agricultural uses from developing in the</li> </ul>	<p>Under the 2003 Unified Comprehensive Plan, all except one of the county's municipalities agreed not to approve subdivisions outside their demarcated growth zones, which would leave an estimated 80% to 85% of county still rural. Municipalities had 1.5-mile extraterritorial zoning jurisdiction.</p>

<sup>33</sup> "Limit non-farm residences to non-prime farmland, to parcels that are too small for viable agriculture, or too inaccessible for use of machinery needed for production and harvesting." Limit roadways or driveways that cross agland to reach nonagricultural developments. Do not place residences "in the middle of a productive agricultural field." The 35-acre standard was often treated as a measure of average size rather than an absolute minimum lot size. A related concern was that the larger parcel (let's say 38 acres) resulting after carving out—let us say a two-acre home site from a 40-acre original parcel—not be subdivided again and thereby increase overall density to greater than one dwelling unit per 35 acres. Therefore, the plan provided that "splits shall run with the land," rather than with the owning family. Dane County Planning and Development Division, *Component Town Plans*, <http://www.countyofdane.com/PLANDEV/planning/townComponents.aspx> (accessed May 1, 2008).

<sup>34</sup> In 2005 the 2nd Appellate Court of Illinois upheld a DeKalb County zoning decision (*Nelson v. County of DeKalb*, No. 2-05-0340) to deny a rural landowner's attempt to develop a largely wooded 30-acre parcel zoned agriculture despite the fact that the land has been determined as unsuitable for crop production (due

	unincorporated areas.” <sup>34</sup>	
<b>Madison County, OH</b>  County had zoning authority over unincorporated areas.	<ul style="list-style-type: none"> <li>Had an exclusive ag district, with conditional use permit for one DU if owner had 20 acres, two if owner had as little more as 20.001 acres, and it was a lot of record as of May 1, 2002.</li> </ul>	<ul style="list-style-type: none"> <li>2005 Comprehensive Plan directed new development to areas with sewer service or areas expected to have it within five years. This objective was backed by the reality of Madison County having drainage problems (i.e., slow infiltration rates) on much of its land that made septic systems problematic.</li> </ul>
<b>Mid-Atlantic</b>		
<b>Carroll County, MD</b>  County had zoning authority over unincorporated areas.	<ul style="list-style-type: none"> <li>Had zoning district in which agriculture was “the preferred use,” but single-family, two-family, and sheltered living dwellings permitted by right. Had a 20-acre minimum lot size, except that it allowed owners to split off up to two additional residential lots, such as for their children. Lots may be created for residential purposes from any tract of land pursuant to the following standard: Where the tract to be subdivided is 6 to 20 acres, one new lot plus the remaining portion may be created; and for tracts over 20 acres, an additional new lot may be created for each 20-acre increment or part thereof. The area of a tract shall be calculated to the nearest .0001 acres.</li> </ul>	<ul style="list-style-type: none"> <li>State statute required eight municipalities to project their population growth and related land needs as basis for future annexations.</li> </ul>
<b>Berks County, PA</b>  Townships had zoning authority over unincorporated areas.	<ul style="list-style-type: none"> <li>Had ag zoning in 24 of the 44 townships, covering about 154,000 acres. Not all zones were exclusive ag districts; other uses were allowed by right. Minimum lot sizes varied. Some townships required at least 20 acres for a new home site. In other cases, sliding scales were used, such that the smaller the original farm parcel, the fewer the splits that could be carved from it (e.g., for 15 to 30 acres, three new home sites could be split out, while from 120 to 150 acres, seven were permitted). Also, to conserve land for ag, each new building parcel might be capped in size, such as two acres maximum.</li> </ul>	<ul style="list-style-type: none"> <li>County had encouraged townships, boroughs, and Berks County’s one city to develop joint comprehensive plans and zoning ordinances. By 2003, 50 of the total of 74 local governments had participated in this program.</li> <li>Future growth areas had been identified, and the county’s Vision 2020 plan called for “focusing the majority of its Community Block Grant funding, highway project prioritization, and infrastructure expansion and development on Future Growth Areas.”</li> </ul>
<b>Burlington County, NJ</b>  Townships had zoning authority over unincorporated areas.	<ul style="list-style-type: none"> <li>State laws do not permit exclusive agricultural zoning. Burlington’s 31 townships required densities that average one unit per six acres (Sokolow and Zurbrugg, 2003, p. 104).</li> <li>Large quantity of ecologically sensitive land in the southeastern two-thirds of county was subject to the Pinelands Reserve’s limits on development.</li> </ul>	<ul style="list-style-type: none"> <li>County worked with state Department of Environmental Protection (DEP) to keep central sewer and water lines away from “Agricultural Development Areas.”</li> <li>Agriculture Development Board has determined that farming is “viable over the long term.” The DEP “establishes and implements minimum standards for the approval of the design, construction and operation of treatment works.”</li> </ul>
<b>Orange County, NY</b>  Townships had zoning authority over unincorporated areas.	<ul style="list-style-type: none"> <li>A consultant’s 2004 study (ACDS, 2004) found no growth boundaries, large-lot zoning districts, or other regulations that appeared to be significantly limiting housing development on agricultural land.</li> <li>Minimum lot sizes varied from one to four acres.</li> <li>An exception was the “Black Dirt Region,” consisting of about 12,000 acres of farmed land on former glacial lakes that were protected by state environmental regulations.</li> </ul>	<ul style="list-style-type: none"> <li>The county’s 2003 Comprehensive Plan encouraged cities and villages to annex within designated “Priority Growth Areas,” located in or near the existing cities, villages, and hamlets.</li> </ul>

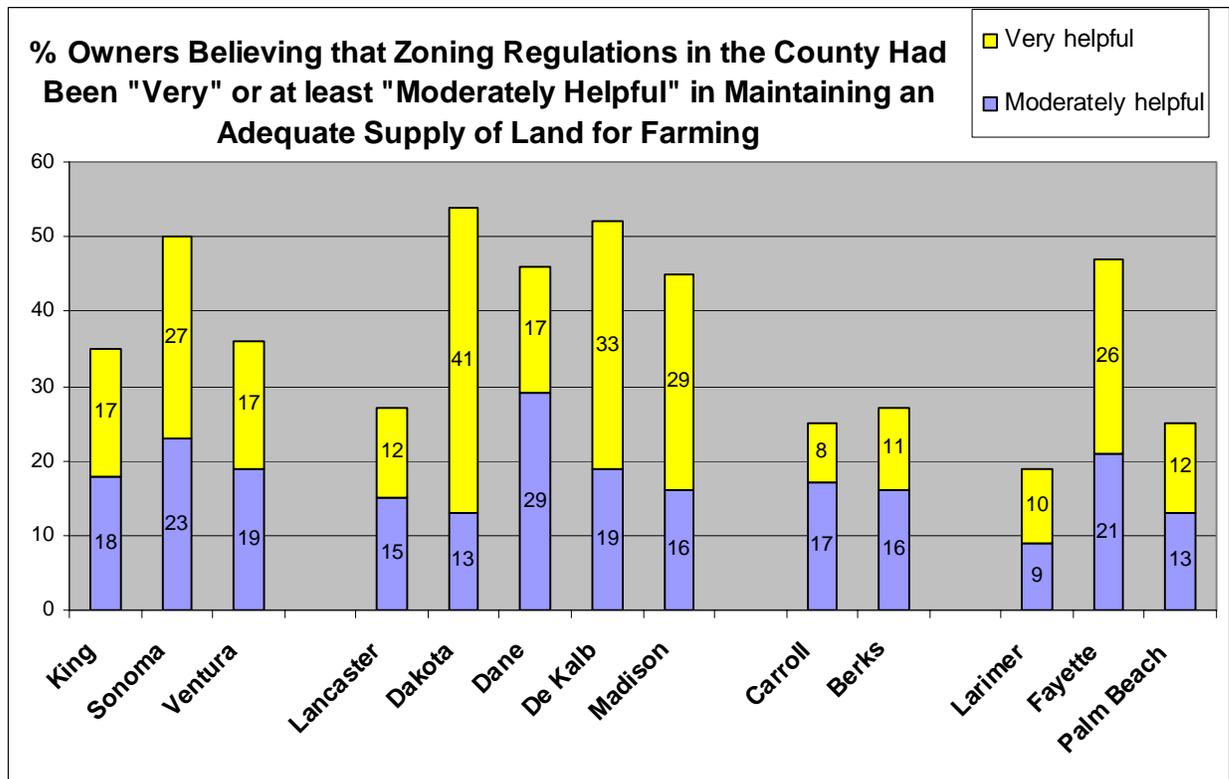
to a quarry dug on the parcel subsequent to the parcel’s original ag zoning designation). The court stated: “As for the care that DeKalb has taken to plan its development, it is substantial. Defendant has spent a great deal of time and resources developing its comprehensive land-use plan. Indeed, the plan was awarded ‘Best Plan’ by the Illinois Chapter of the American Planning Association in 2003. Having taken great care to plan its development, the county is entitled to a certain amount of deference, free from judicial second guessing, in the implementation of its growth.”

<b>Highly Scenic and Recreational</b>		
<p><b>Larimer County, CO</b></p> <p>County had zoning authority over unincorporated areas</p>	<ul style="list-style-type: none"> <li>• The “FA-1 Farming” zoning district permitted ag, ag-related businesses, single-family and group homes, recreational and public service uses, with a minimum parcel size of 2.3 acres (100,000 sq. ft.). Thirty-five acres served function similar to a large minimum lot because owners took advantage of a state law that exempted the creation of parcels of that size from subdivision ordinance review.</li> <li>• “Most of the rural plains portion of Larimer County, where there is a significant amount of ag land, is zoned O-Open. The O-Open zoning district allows both agricultural operations and single family residential development. The minimum lot size is 10 acres.”</li> <li>• In 1996 the county established the Rural Land Use Process as an alternative to the popular 35-acre splits. County staff helped owners save money when subdividing if they protected at least two-thirds of the total land via clustering and 40-year or perpetual conservation easements.</li> </ul>	<ul style="list-style-type: none"> <li>• County planning policy “has been to encourage urban development to locate in cities and towns or adjacent to these areas with the expectation that the developed areas would soon be annexed” (Larimer County Master Plan, 1997). The county worked with Fort Collins and Loveland to achieve agreement on a plan for urban growth between those two cities that included an open-space buffer.</li> </ul>
<p><b>Fayette County, KY</b></p> <p>Consolidated city-county government had zoning authority.</p>	<ul style="list-style-type: none"> <li>• Agriculture, small wineries, and detached single-family DUs were the “principal uses” in the agricultural-rural zoning district.</li> <li>• In 1998 Fayette County switched from a 10-acre to a 40-acre minimum lot size after it was found that large numbers of 10-acre parcels were being created for high-end housing. According to the Rural Service Area Land Management Plan, “From 1990 to 1998, the amount of land subdivided into 10-acre lots was comparable to the total land area utilized inside the Urban Service Area for all residential, commercial, and industrial development.”</li> </ul>	<ul style="list-style-type: none"> <li>• In 1974 Lexington merged with Fayette County to establish a consolidated city-county government. Therefore, rather than annexations threatening ag, policy decisions of concern were whether the city-county government decided to expand its Urban Service Area (USA) at the expense of the Rural Service Area. The dividing line between the two amounted to a UGB, and was the first of its kind in the nation when inaugurated in 1958. Initially covering about 69 square miles, the USA grew to 85 square miles by 1999.</li> <li>• In the deliberations leading up to completion of the 2007 Comprehensive Plan, the authorities rejected any expansion, turning down a proposal to designate as an “Urban Reserve” within the USA two areas (totaling 12 square miles) “that appeared to best adhere to the adopted ‘Urban Service Boundary Criteria.’”</li> </ul>
<p><b>Palm Beach County, FL</b></p> <p>County had zoning authority over unincorporated areas.</p>	<ul style="list-style-type: none"> <li>• “The AP [Agricultural Production] district is to conserve and protect areas for exclusive, bona fide agricultural and farming related operations particularly where soil and water conditions favor continued agricultural production.”</li> <li>• Minimum lot size of 10 acres.</li> <li>• Residential development only if related to ag uses: <ul style="list-style-type: none"> <li>a) Farm labor quarters and camps;</li> <li>b) Caretaker’s quarters, such as for pump houses;</li> <li>c) Dwelling quarters and farm residences for bona fide farm operations.”</li> </ul> </li> <li>• In Agricultural Reserve Tier, about 20,000 acres next to the Urban Service Area, the county encouraged clustering of homes with, per development project, 60% of total acres in ag use or open space.</li> </ul>	<ul style="list-style-type: none"> <li>• “The only density allowed in the AP zoning district is for properties in the LR-1 FLU [Future Land Use] category located north of Pahokee, on the east side of US 441, for the unincorporated community of Canal Point, in the Glades Tier only.” Large areas in unincorporated parts of the county were set aside for conservation.</li> <li>• Urban Service Area (USA) encompassed about the eastern quarter of the county from its northern boundary to the next county to the south.</li> </ul>

**Effectiveness of Zoning Controls in Preserving Land for Agricultural Use**

Besides preventing or delaying the conversion of farmland, zoning that agland owners perceive to be effective also seemed—according to our 2006 surveys—to influence the owners’ plans for the future. Specifically, in six<sup>35</sup> of the 15 studied counties, agland owners who believed that local government zoning had been “moderately helpful” or “very helpful” (rather than “not helpful” or “somewhat helpful”) in “maintaining an adequate supply of land for agriculture in the county” were *less likely* to expect any of their owned land in the county to be developed “10 years from now.” Also in six counties, operators who gave the “moderately helpful” or “very helpful” assessment about local zoning were *more likely* to expect the future of agriculture in the county 20 years ahead to be “bright” or at least “modest” (rather than “dim” or “none at all”).<sup>36</sup> Owners who perceive agricultural zoning in their county or township to be effective may see it as a barrier to any development plans they, themselves, might have. Then, when thinking about the health of agriculture 20 years into the future, they may conclude that zoning helps to keep farming or ranching viable by saving sufficient agland.

**Figure 3.3: In the 13 studied counties with significant local government zoning policies for protecting agricultural land, the surveyed landowners’ assessments of its effectiveness**



**Survey Findings:** The entries in Table 3.5 show that 13 of the 15 counties have local government zoning policies designed, at least in part, to preserve agricultural land from

<sup>35</sup> Dakota, Dane, King, Larimer, Madison, and Orange counties.

<sup>36</sup> Berks, DeKalb, Fayette, King, Palm Beach, and Ventura counties.

conversion. The exceptions were Burlington and Orange counties, where the minimum lot sizes seemed too small (no greater than four or an average of six acres per dwelling unit) to discourage much development. Orange County was a partial exception in that state law protected from conversion about 12,000 acres of farmland with “muck soils.” Figure 3.3 focuses on local government policies and indicates that, among the 13 counties, the combined percentages of surveyed owners who rated their local zoning policies as either “very helpful” or “moderately helpful” in “maintaining an adequate supply of land for agriculture in the county” ranged from 19% in Larimer County to 54% in Dakota County. DeKalb and Sonoma counties were close behind, with 52% and 50%, respectively. Fourth highest was Fayette County, with 47%, while Dane County had 46% and Madison County had 45% in those two response categories.

### ***Interview Findings***

*Sonoma County, California:* The local leaders we interviewed gave high marks to Sonoma County’s large-lot agricultural zoning, as well as to its urban growth boundaries. They were seen to be strictly enforced and hence effective in saving agricultural land. This county’s rural zoning helped one agricultural use out-compete residential uses in property values. In the time period of our study, buyers were willing to pay \$60,000 to \$100,000 per acre for land suitable for vineyards. There were many prospective buyers from the San Francisco Bay Area able to buy rural home sites, but not in a Sonoma zoning district with a 20- or 60-acre minimum lot size and land capable of growing grapes. By these per-acre prices, if all 20 acres were so endowed, the estate buyer would need at least \$1.2 million to \$2 million for the land to out-compete someone wanting to farm the parcel for grapes. Of course, the Bay Area buyer might aim to have both a country home and to raise grapes or hire a viticulturalist to do it for him or her. In contrast, if the minimum lot size were just four or six acres, more nonfarm buyers could compete.

However, in Sonoma and other studied counties, “grandfathered” small lots can cause problems. Created in the past but not yet developed, they retain their status as legal building lots even though being incompatible with the current comprehensive plan and zoning parcel-size minima. California state law provides for assigning “certificates of compliance” to these lots, “some of which [in Sonoma] are quite small (e.g., 1–5 acres) and not viable for farming. They undermine our zoning efforts and drive up the cost of PDR [purchase of development rights] programs.”<sup>37</sup> The more buildable lots on land offered to an easement program, the more expensive the land’s development value is likely to be.

*Fayette County, Kentucky:* Called the “Horse Capital of the World,” Fayette County land could earn high income from agriculture—particularly from raising horses. And, as discussed in Chapter 2, the marketing facilities for livestock were strong. Moreover, as in Sonoma County, Fayette County’s farmed landscape tended to be visually attractive.

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<sup>37</sup> E-mail communication from a Sonoma County land-use expert, September 30, 2008. To earn a certificate, usually the owner of a currently nonconforming lot must have proof that the lot was legally created under prior laws or before the county’s or municipality’s adoption of an ordinance for subdividing property.

Many people living there wanted to preserve it and organized effectively to revise the minimum rural lot size from 10 acres to 40 in 1999. Then, when a new comprehensive plan was being discussed, and the city-county planning department proposed in 2006 to provisionally transfer about 12 additional square miles from the Rural Serviced Area to the Urban Services Area, representatives of at least eight different organizations<sup>38</sup> testified against the proposal, contributing to a “no” vote in February 2007.

*Dakota County, Minnesota, and DeKalb County, Illinois:* Regarding zoning of agricultural land, these two counties were similar in three important respects during 2005–7. First of all, they both used 40-acre minimum lot sizes—Dakota County in most of the 13 rural townships and DeKalb County, countywide in the unincorporated areas. Second, they did not have extraordinarily beautiful landscapes that attracted new residents and provided a rationale for preservation. Third, they had not been producing high-value crops that constituted yet another justification for strict zoning. Nevertheless, majorities of local experts whom we consulted agreed that in both counties the large-lot zoning approach had been successful, at least up to times of the interviews.

From Dakota County, we received such evaluations as:

- “The one in 40 [acres] has stuck amazingly well since 1980. Traditionally farmers have supported it.”
- “So far it has been very good. It actually surprises me that townships have kept to their guns.”
- “The Agricultural Preserves Program [see Table 3.5] and zoning have been very effective at preserving the agricultural sector.”
- “Townships are holding the line with the agricultural zoning. There is less conflict in the southern area [away from the Twin Cities]. Those near the line of growth don’t see as much agricultural preservation.”

Assessments from DeKalb County included:

- “It is very difficult to get through a variance to the 40-acre rule. One is before the county board now, and it is not apt to go through.”
- “New development has to be adjacent to existing old. The county board has been firm in supporting it. . . . It has been effective in part because it has been so consistently applied from the very beginning.”
- “When developers hear that this county has not approved a stand-alone subdivision in 12 years, they tend to say ‘goodbye’ and go to another county.”
- “Farmers generally do support it [the 40-acre rule].<sup>39</sup> They are concerned about nuisance conflicts [from putting subdivisions next to farms] and about sprawl. It

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<sup>38</sup> According to the minutes of the January 22, 2007, meeting of the Lexington-Fayette Urban County Planning Commission’s public hearing, there was opposition testimony (or in one case, a letter) from officers or members of the Greenspace Commission, Old Richmond Road Neighborhood Association, the Neighborhood Coalition, Fayette County Neighborhood Council, Fayette County Rural Land Management Board, Boone Creek Neighborhood Association, the Fayette Alliance, and the United States Equestrian Federation.

<sup>39</sup> An officer of the DeKalb County Farm Bureau told us that, in March of 2006, the Bureau surveyed its members about the county’s growth model and found that 80% of the respondents supported it.

is costly for the counties and other local governments to provide services . . . away from municipalities.”

Another reason for Dakota County and DeKalb County farmers’ support of restrictive zoning was the belief that eventually development would extend toward their land—southward from the Twin Cities or westward from the suburban counties closer to Chicago. Then they or their heirs would be able to sell the land at high market prices.

- One farmer leader told us, “[We must] keep our zoning in place and make sure that the growth of population comes in a structured manner, adjacent to the urban centers. . . . It has been a good model the last 20 years.”
- “Traditionally, farmers have supported it. Growth is going into the townships. It’s just a question of when, not whether, the pressure will happen.”

In contrast to the seller patience suggested by these two experts’ statements, we heard from an agricultural leader in Orange County (with minimum lot sizes of 1 to 4 acres), “We can’t tell the fellow who owns a 200-acre farm out here that you must wait until development reaches you.” Unlike Dakota and DeKalb counties, Orange County had not been practicing large-lot zoning for more than 20 years, and its property values were much higher (Table 3.2).

In both Dakota and DeKalb counties, observers had seen an intermediate development phenomenon, that is, 40-acre splits in which the buyers of the newly created parcels were not farmers:

- “So now people are buying 40-acre estates, which may not be good for agriculture here. . . . They are putting five acres into horses and rent out the rest.”
- “Some have five to ten acres for the residential foot print, and horses are on the balance.”
- “We see 40-acre parcels popping up everywhere.”

This kind of new resident may provide political support for farmland preservation, as they did in Fayette County through lobbying via neighborhood associations and individuals (see the earlier discussion in this section).

*Dane County, Wisconsin:* By our count, 30 of Dane’s 34 township governments had exclusive agricultural zones with large minimum lot sizes—at least 35 acres. Although 46% of our survey sample found those policies to be “very helpful” or at least “moderately helpful” in maintaining the farmland base, the interview data are limited and mixed. While one expert observed that the townships without such zoning had seen agriculture “decimated,” another told us, “Each township is different. Some do this really well and others are not effective at all.” A third discussed the same problem we noted in Dakota and DeKalb counties. The high prices of lots in the cities and villages encouraged buyers to look in the agriculturally zoned areas where many could find 35-acre lots whose costs were not substantially different from urban lots, despite the great difference in sizes.

*Madison County, Ohio:* In contrast, while the combined percentage of “very helpful” and “moderately helpful” responses for Madison County was just one point below Dane

County's, the interviewees' evaluations were uniformly positive about Madison's zoning policies:

- "We have areas for agricultural use and those for rural residential. If the parcel is not in rural residential, it should be turned down [for rezoning]. It is turned down. If they disregard the comprehensive plan, it is indefensible in court."
- "County government zoning . . . is most important for keeping the county's agriculture intact."
- "Zoning is severely restrictive. It damn near stopped development. Zoning is very effective."
- In counties [like Madison] around Columbus, "The courts have allowed these ordinances [with high minimum lot sizes]. Controlled growth near the urban areas leaves the rural area free to continue in agricultural production."

Making agricultural protection zoning (APZ) more politically acceptable in Madison County were the drainage problems on as much as 40% of the land. A local official told us, "We have very flat land, so that drainage is a restriction. If they want to build housing, there are a lot of hoops to go through with the health department to have a functioning septic system."

*Ventura County, California:* In the Ventura County case, we found a similar conflict between survey and interview data. While 36% of our sample of agland owners evaluated zoning policies as "moderately helpful" or "very helpful," the interviewed local experts agreed on the ag protection zoning being strictly enforced:

- "You can't rezone farmland for the next 20 years" [because of the SOAR ordinances—see Table 3.5].
- "You can't rezone—because of SOAR."
- "It's not very easy to change."
- "We have strict agricultural zoning."
- "Urban sprawl has stopped."

The explanation may be that many of the surveyed landowners found these land-use controls to be too constraining.

*Carroll County:* While Ventura's APZ may be too strict, Carroll's supposed 1 dwelling per 20-acre zoning district may be too easily circumvented. Because so-called "off conveyances" are permitted on parcels of record as of a certain date, densities in excess of 1 per 20 can be achieved: "In 1978, when the county was still very rural, they . . . [began to allow] properties to have two off-conveyances [additional lots created without going through the subdivision process] which allowed a farmer to provide housing for his family. . . . If you have 100 acres you have seven lots with the 1:20 [100 divided by 20 acres equals 5, plus the additional two lots]."

*King County, Washington:* King County is a special case in that, by 2002, relatively very little land—41,769 acres, or about 65 square miles—was left in agricultural use. All the other 14 counties recorded more than twice as many acres in farms or ranches. In response to the limited supply of agland, almost all the remaining agland was placed in "Agricultural Production Districts" (APD), consisting of blocks of contiguous farmland.

These districts were zoned with a minimum lot size of 35 acres. An added regulatory provision was that land could be removed from an APD only if the applicant replaced it with “agricultural land abutting the same APD of equal acreage and of equal or greater agricultural value” (King County, 2006). This policy was rather dramatically phrased as “no net loss of farmland.” According to both published figures and interviewee statements, the policy was working pretty well, at least through 2005–6.

- Data on land in farmland gathered by the county showed virtually no loss between 2002 and 2005 (just 22 acres) (King County, Department of Natural Resources and Parks, 2006).
- One expert characterized the implementation of the “no net loss” policy as “strict” and like “drawing a line in the sand” that cannot be crossed.
- Another observer said, “Once in a district [APD] you stay in the district. The land base has stayed that way. . . . The 2004 zoning coded is very restrictive.”

### ***Cluster Zoning in Lancaster, Palm Beach, and Larimer Counties***

*Lancaster County, Nebraska:* Large-minimum lot sizes may cut up land into uneconomic parcels for farming, as well as waste space such as in the forms of long separate driveways and overly ambitious lawns. Critics of Lancaster County’s 20-acre minimum persuaded the county commissioners to adopt cluster zoning provisions with a density bonuses as an incentive. Developers submitted draft “community unit plans” that showed how through clustering of lots “cultivated land and pasture is preserved and no new county roads are created.” Then they may receive a 20% bonus. For example, if the parcel consisted of 100 acres, it would be entitled to one bonus dwelling unit in addition to the five allowed under the 20-acre minimum. Thirty-six percent of the total building permits issued for rural Lancaster County in 2003 were for cluster lots (DeKalb and Hartzell, 2006). Although no minimum percentage of the parcel was required for preservation, zoning authorities expected applicants to plan for one- or three-acre home sites. Relatively small lots marketed better and also left more of the farmland undeveloped.

*Palm Beach County, Florida:* Palm Beach County required 60% to be preserved but permitted a much higher overall density. In 1980 the board of county commissioners designated an “Agricultural Reserve” of 20,900 acres in the southern part of the county, serving as a “buffer between the suburbs and the Loxahatchee National Wildlife Refuge” (Palm Beach County, 2008). The reserve’s normal zoning was one dwelling unit per five acres. However, in response to high demand for developable land, beginning in 1995 the board permitted developers with at least 250 acres to build one home per acre on 40% of the land, providing the other 60% was preserved. These provisions translated into one dwelling unit per 2.5 acres, compared to Lancaster County’s one dwelling unit per 16.7 acres. Moreover, the 60% component could be located in other parts of the reserve, not adjacent to the built-up area of the proposed development, as required by Lancaster County’s and Larimer County’s clustering regulations.<sup>40</sup> A journalist reported, “The 722-

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<sup>40</sup> In 2007 one developer proposed complying with the 60% rule by buying development rights to *public land* in the Ag Reserve and using that no-longer-developable land to meet the standard. The costs of the development rights should have been cheaper than purchasing all rights to the land. However, county planning staff countered by arguing that “development rights on publicly own lands can only be transferred

acre GL Homes development spread its preservation area in four sites west of U.S. 441, in the northwestern patch of the Ag Reserve. A total of 423 acres will be kept undeveloped, but the 554 homes now will go into a smaller area.”<sup>41</sup>

*Larimer County, Colorado:* In 1996 Larimer County adopted a new set of growth-management policies, termed the “Rural Land Use Process,” to compete with the popular practice of carving 35-acre parcels out of agricultural land, which state law permitted without county review for new parcels of at least that size. This process promoted clustering lots and required that at least two-thirds of the total land per project be preserved. The county encouraged farm and ranch owners to retain control of, and continue to operate, the undeveloped land, with county staff helping them through the subdivision process and designing the clusters to maximize the remaining land’s farmability, among other types of assistance.<sup>42</sup> By December 2007 the approved cluster projects were 70 in number, encompassing 11,901 acres with about 674 home sites. Of that total acreage, 5,773 acres were preserved in perpetuity; and 2,547 acres were preserved for 40 years. Therefore, 70% of the 11,901 acres were being protected. Politically, cluster zoning proved more acceptable than agricultural protection zoning because it was voluntary.

## **5. Programs for Purchasing and Transferring Development Rights**

Among the 15 counties that we studied, 10 had purchase of development rights (PDR) programs and three had transfer of development rights (TDR), through which compensation was provided to owners. Tom Daniels (2008, p. 31), among other authorities on growth management policies affecting agricultural land, has been skeptical of the long-range effectiveness of agricultural protection zoning by itself: “Zoning is notorious for its susceptibility to changes through variances, special exceptions, conditional use permits, and re-zonings.” He advocates development-restricting easements that agland owners voluntarily impose on their land in exchange for monetary compensation for the rights to develop that are surrendered through agreeing to the easement. However, he sees zoning as a useful, if not necessary, precondition for a successful PDR program. The development rights for land zoned with reasonably strict (though perhaps not long-term) ag zoning should be less expensive. Daniels (2008) cited a Pennsylvania case in which preservation cost “almost \$54,000 an acre” (p. 23) because the “land [was] zoned for development.” In addition, the more that restrictive zoning can prevent the building of nonfarm residences near farms protected through PDR or TDR, the less likely that ag operations on that land will be limited by the occurrence or threat of neighbor complaints about farm odors, noise, dust, and so on.

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outside the ag-reserve and not used to increase density of the ag-reserve” (Palm Beach County Land Use Advisory Board, 2007).

<sup>41</sup> Maria Herrera, “Palm Beach spends last of \$100 million to protect farmland,” *South Florida Sun-Sentinel*, October 30, 2006.

<sup>42</sup>For example, the county agency administering the program, the Rural Land Use Center, states on its website that one of the advantages of subdividing via this process is “The development review process is faster and less restrictive than other county development processes and offers property owners a more predictable outcome.”

Larimer County, [http://www.co.larimer.co.us/rloc/rural\\_land\\_use\\_process.htm](http://www.co.larimer.co.us/rloc/rural_land_use_process.htm) [accessed June 21, 2008].

Usually in perpetuity,<sup>43</sup> these easements are sold and attached to the property’s deed and stipulate one or more restrictions on the use of the land, such as limiting the number and even the size of houses built on the property; prohibiting industrial, mining, and commercial activities (other than those related to agriculture); and requiring that the land be periodically mowed or otherwise kept available for farming (rather than allowing shrubs and trees to grow up that prevent cropping or grazing) (American Farmland Trust, 2006). In other words, the purchaser of development rights normally cannot compel land to be actively farmed or ranched.

In PDR programs the buyers are usually governmental entities or private land trusts, whereas under TDR the cost of development rights (e.g., \$2,500 per acre) is normally borne by a developer who seeks to transfer the development rights (let us say to build 20 new homes) from “a sending area”—land that local government wants to save for agriculture or other open-space uses—to a “receiving area—land selected for its capacities (sewer, water, roads) to sustain denser growth (American Farmland Trust, 2001).

As with our discussion of zoning and urban growth controls, we begin with a table (Table 3.6), which presents the main features of the programs. Our information for these summaries derives from printed documents and Internet postings of the county and city governments, supplemented by interviews with program administrators.

<b>County and Type of Program</b>	<b>Acres under Easements Since Start of Program</b>	<b>Funding Sources</b>	<b>Other Key Program Features</b>
<b>Pacific Coast</b>			
<b>King County, WA</b>  Purchase of development rights	<ul style="list-style-type: none"> <li>From its inception in 1979 through February 2008, this county government program acquired easements on approximately 13,200 acres.</li> </ul>	<ul style="list-style-type: none"> <li>The county was initially authorized to issue general obligation bonds up to \$50 million, with interest and principal paid from property-tax receipts. Another \$3 million was authorized in 1995. Supplemented by government and private grants.</li> </ul>	<ul style="list-style-type: none"> <li><i>Residences on easement land:</i> Preserved properties could be divided into parcels that meet the minimum 35-acre lot size for building a home in the rural ag zoning district or that average no more than one dwelling unit per 35. If land were divided, “95% of the property [was to] be kept open and available for cultivation”<sup>44</sup> (including that drainage ditches be maintained).</li> <li><i>Open space uses defined:</i> Permissible uses were limited to agriculture and “open space” (but not uses that would hinder agriculture, such as golf courses, campgrounds, or athletic fields).</li> </ul>
<b>Sonoma County, CA</b>  Purchase of development	<ul style="list-style-type: none"> <li>Established by county voters in 1990, the Sonoma County Agricultural Preservation and Open Space District</li> </ul>	<ul style="list-style-type: none"> <li>A quarter-cent sales tax voted for initially in 1990 and renewed in 2006 for another 20 years. Proceeds from the tax—</li> </ul>	<ul style="list-style-type: none"> <li><i>Residences on easement land:</i> Seller was usually allowed a second residence (such as for next generation) on the protected property. The Open Space District worked to keep a new residence in same building envelop as</li> </ul>

<sup>43</sup> Maryland law provided that “conservation easements in existence for at least 25 years that have been purchased in whole or in part with state funds may be terminated through repurchase by the landowner” if the latter could convince local government and state authorities that it was impossible to farm it profitably (Zurbrugg, 2003, p. 6).

<sup>44</sup> In this table the words within quotation marks come either from published program documents or from interviews with program administrators.

rights	had by December 2006 protected through PDR or purchase in fee simple at least 52 properties totaling more than 26,900 acres <sup>45</sup> of land with farming or ranching on them.	“about \$15 to \$18 million dollars a year”—were shared between the agricultural preservation and recreational/scenic objectives of the district. Supplementary funding came from government and private grants.	any existing dwelling unit, rather than placed separately and thereby more likely to interfere with farming. Also, not being a separate lot, it was less likely to be sold to someone outside family. <ul style="list-style-type: none"> <li>• <i>Limits on home sizes:</i> In negotiations for easements, district staff aimed to insert provisions that limited size of houses built on protected farmland to 3,500 sq. ft. Purpose was to avoid homes so expensive that farmers couldn’t afford the land plus the house.</li> <li>• <i>Contiguity:</i> By our count, 50% of the protected properties with agricultural activity on them were adjacent to farms, ranches, or “natural areas” protected by the district or other entities.<sup>46</sup></li> <li>• <i>Competition for available funds between the farmland protection and “natural area” preservation goals:</i> The district sought to “[p]rotect . . . forever the working farms and ranches, scenic hillsides and natural areas that make our county a unique place to live.”</li> </ul>
<b>Corn Belt</b>			
<b>Dakota County, MN</b>  Purchase of development rights	<ul style="list-style-type: none"> <li>• A county program, the Farmland and Natural Area Program (FNAP), began in 2003. As of June 2007, the county had approved 13 permanent agricultural conservation easements totaling 1,348 acres, with 11 of the parcels being “along” or “near” a river or creek. By June 2008 the number had grown to 20 with 2,224 acres total. As of 2007 the estimated cost per acre of all farmland approved or pending was \$4,098, of which the county’s share was 56.3%.</li> </ul>	<ul style="list-style-type: none"> <li>• County commissioners authorized \$20 million in bonds that voters approved in 2002, \$10 million of which were allocated to the farmland preservation program. Supplemented by “federal, state, and local government money, landowner donation, and foundations.”</li> <li>• FNAP shared funding between agricultural preservation and protection of natural areas.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Locational eligibility criterion:</i> “Protects highly productive soils outside of [the year] 2040 MUSA [Metropolitan Urban Service Area] in 1/40 zoning districts, enrolled in an Ag Preserve” (see Table 3.5).</li> <li>• <i>Competition for available funds between the farmland protection and “natural area” preservation goals:</i> Enrolled land must be adjacent to already protected property or within a half mile of a designated river or lake, allowing “Flexible use in future as either farmland or open space (future generations have options).”</li> </ul>
<b>Dane County, WI</b>  Purchase of development rights.	<ul style="list-style-type: none"> <li>• A county program for which we found sources indicating at least 449 acres protected at a cost of approximately \$1.799 million, or \$4,007 per acre on average.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Sources:</i> A \$5 million state grant for “planning and preservation” in order “to ameliorate the sprawl impacts of US H[ighway] 12 project” (heading northwest from the city of Madison).</li> <li>• Supplemented with grants from the federal Farm and Ranch Lands Protection Program (FRPP).</li> </ul>	

<sup>45</sup> One large property under an easement, totaling over 19,000 acres, was partially being used for livestock grazing, but it was not possible for us to learn how many acres were in agricultural use. Therefore, we must leave the statement at “more than 26,900 acres.” Given the overall size of the property, it could be many more acres.

<sup>46</sup> We did the analysis from maps of farms under easement that were published on the county’s farmland preservation website.

	<ul style="list-style-type: none"> <li>• A separate program by Dunn Township which, by March 2008m protected 23 farms with a total of 2,822 acres.</li> <li>• A program also in Windsor Township, which as of February 2008 was working with the National Heritage Land Trust to obtain an appraisal and submit an application for FRPP funding.</li> </ul>	<ul style="list-style-type: none"> <li>• Referendum in 1996 authorized contribution from property tax of 50 cents per \$1,000 of equalized valuation. In 2000 Dunn Township voters approved a \$2.4 million bond, payable from that new property tax.</li> <li>• Supplemented by federal, state, and county grants.</li> </ul>	<ul style="list-style-type: none"> <li>• Purposes of Dunn Township program: “protecting viable farm operations and farmland to maintain the rural character of the Town of Dunn, permanently preserving scenic vistas and environmentally significant areas . . . protecting the Town of Dunn from encroachment of neighboring cities and villages,” especially—it seems-- from the City of Madison. The first farm protected was “threatened with annexation by Madison.” The second was “just 15 minutes from the State Capitol.”</li> </ul>
<b>Mid-Atlantic</b>			
<p><b>Carroll County, MD</b></p> <p>Purchase of development rights</p>	<ul style="list-style-type: none"> <li>• County government partnered with the state’s largest farmland preservation program, the Maryland Agricultural Land Preservation Foundation (MALPF). As of the end of FY 2007, MALPF had bought the development rights to 263 Carroll County farms totaling 32,227 acres. County must approve applications to MALPF.</li> <li>• County preserved an additional 8,194 acres via MALPF, but using its own (county) funding. Then there was a separate county government easement program (begun in 2002) that protected another 5,077 acres.</li> <li>• Two nonprofit land trusts and a state program (Rural Legacy) preserved 5,798 additional acres, for a grand total of 51,296 across all six programs. The average cost per acre was \$2,525.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Sources:</i> Carroll’s agricultural easement purchases were funded through a combination of county general funds, the county’s share (75%) of the Agricultural Transfer Tax (imposed at the time of sale of land that “receives the agricultural use assessment”), general obligation bonds, and state funds.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Locational eligibility criterion:</i> To be eligible for MALPF funding, land had to be in an Agricultural Preservation District (i.e., at least 75 contiguous acres in Carroll County), which status required a five-year commitment to keep land in ag use.</li> <li>• <i>Residences on easement land:</i> The original owner at time of PDR sale could exclude from the agreement one lot for self and separate building lots for other family members if they met minimum lot size requirements (e.g., 20 acres for the first lot, more acres for the second, etc.). Program managers tried to place new residential building lots along roads or in woods to minimize hindrances to farming adjacent land.</li> <li>• <i>Contiguity:</i> By our count, about 91% of 452 farm parcels protected through the six programs described in the first column (from the left) were adjacent to at least one other preserved farm. Many had such farms on two or more sides.<sup>33</sup></li> </ul>
<p><b>Berks County, PA</b></p> <p>Purchase of development rights</p>	<ul style="list-style-type: none"> <li>• Established by the county in 1989, the Berks County Agricultural Preservation Board had by October 22, 2008, acquired easements to a total of 530 farms encompassing 56,000 acres. The average cost per acre was \$2,162.</li> <li>• Centre Township in Berks County had its own PDR program, as did the Berks County Conservancy.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Sources:</i> As of October 2008, state grants of about \$62.7 million, federal grants of \$1.9 million, and county contribution of approximately \$56.4 million (that derived in part from a \$30 million bond from 1999). In 2005 county commissioners authorized another \$24 million line of credit.</li> <li>• In January 2006 the board increased its per acre maximum payment to \$2,500. For previous 10</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Locational eligibility criterion:</i> To be eligible, the land must have been already enrolled in a state-authorized and county-approved Agricultural Security Area (ASA) of at least 500 acres. An ASA provided protection against nuisance complaints and government condemnation of land for public purposes, as well as making the land eligible for the preservation program.</li> <li>• <i>Residences on easement land:</i> In addition to any existing homes on the eased land, there could be one residential structure for owner, his/her family, or persons employed in farming the land, on a tract of two acres or less.</li> <li>• <i>Subdivision of easement land:</i> All new separate parcels had to be at least 52 acres in</li> </ul>

		years it had been fixed at \$2,000 per acre.	size, consist of 50% or more good soils, and have other site characteristics (slopes, location of roads, etc.) that permitted reasonably effective agricultural use of the land. <ul style="list-style-type: none"> <li>• <i>Contiguity</i>: By our count, about 96% of the 490 properties protected through March 2008 were adjacent to at least one other preserved farm. Many had such farms on two or more sides.<sup>33</sup></li> </ul>
<b>Burlington County, NJ</b>	<ul style="list-style-type: none"> <li>• The county created its Farmland and Open Space Preservation Programs in 1985. As of December 2007, agreements had been finalized on preserving 21,603 acres of farmland.</li> <li>• The cost per acre had increased from \$3,500 in 1998 to \$10,500 in 2006.</li> <li>• Chesterfield and Lumberton townships had TDR programs, as did the Pinelands National Reserve. The latter had protected at least 20,000 acres in Burlington County by mid-2007. Through 2006 Chesterfield had preserved “over 2,200” acres, and Lumberton, 850 acres by mid-2007.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Sources</i>: Farmland and open-space acquisitions were funded in part from a voter-approved property-tax levy of 4 cents per \$100 of assessed valuation. It was extended in the November 2006 election until 2036.</li> <li>• Funding also from State of New Jersey and federal government’s FRPP.</li> <li>• Developers with land in designated “receiving areas” buy development credits via auction or other market means, resulting in transfer of rights to build dwelling units from cooperating agland owners in officially designated “sending areas” at higher densities than otherwise permitted.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Residences on easement land</i>: State law required that, if building additional dwellings, the “overall gross density shall not exceed one residential unit per 100 acres” and “the [County Agricultural Development Board must] determine . . . that the construction and use of the residential unit is for agricultural purposes and that the location of the residual dwelling site minimizes any adverse impact on the agricultural operation.”</li> <li>• <i>Contiguity</i>: By our count, 69% of the 279 separate PDR parcels preserved through April 2007 were adjacent to other PDR parcels that did <i>not</i> have the same owners. Many had such farms on two or more sides.<sup>33</sup></li> <li>• <i>Keep land available for farming</i>: The county’s program could not force owners to have the land farmed, “but owner can’t take the land out of agricultural use permanently, such as if didn’t mow and let trees grow; or if neglected drainage facilities and the land reverted to wetland status. . . . We can step in, mow the land and recoup the cost through a lien on the property.”</li> </ul>
<b>Orange County, NY</b>	<ul style="list-style-type: none"> <li>• County’s Open Space Fund began in 2005 to provide funding for PDR programs of town governments (e.g., Chester, Crawford, Goshen, Greenville, Montgomery, Minisink, Walkkill, Warwick, Wawayanda). Those programs, plus land trusts, had protected by October 2007 a total of about 5,400 acres.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Sources</i>: Grants from town governments, county government, New York State Dept. of Agriculture &amp; Markets, the FRPP, and private land trusts like the Orange County Land Trust, Open Space Institute, and Scenic Hudson.</li> <li>• Town of Warwick earmarked a new land transfer tax of .075% for land acquisitions.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Residences on easement land</i>: State regulations provided that owner may construct new dwellings or farm labor housing buildings on up to 1% of the “farm area” (the entire easement area minus the farmstead area and any area set aside for protection of natural resources).</li> <li>• <i>Subdivision of easement land</i>: State did not permit it unless easement holder determined that “all parcels of land thereby created will remain viable for agricultural production either individually, or as part of an established farming operation.” Any newly created lots were limited to one residence per lot.</li> </ul>
<b>Highly Scenic and Recreational</b>			
<b>Larimer County, CO</b>	<ul style="list-style-type: none"> <li>• From 1996 through July 2008 the Larimer County Open Lands (LCOL) program protected a total of 43,061 acres via easements or fee simple purchase. About 28,233 acres (or 66%) consisted of land where farming or ranching occurred or was authorized. Four properties, including one exceeding 14,000 acres, had been purchased</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Sources</i>: A one-quarter-cent sales and use tax that was shared with the county’s eight municipalities and with LCOL’s nonagricultural acquisitions program.</li> <li>• Grants, such as from USDA’s FRPP, Great Outdoors Colorado, the Legacy Land Trust, and the Nature Conservancy.</li> <li>• <i>Landowner donations</i>: Of the seven LCOL farms and</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Water rights</i>: In this dry area of the country (Fort Collins receives only about 16 inches of rain annually), farmers competed with urban users for water rights, and some easement properties did not have sufficient supplies.</li> <li>• <i>Competition for available funds between the farmland protection and “natural area” preservation goals</i>: “The mission of the Larimer County Open Lands Program is to preserve and protect significant open space, natural areas, wildlife habitat, and develop parks and trails for present and future generations.”</li> </ul>

Transfer of Development Rights	<p>outright and leased to farmers (at least in part).</p> <ul style="list-style-type: none"> <li>• The Legacy Land Trust of Colorado also had an easement program that as of 2004 protected 1,345 acres of land used at least in part for farming or ranching.</li> <li>• Larimer County and the City of Fort Collins cooperated on a TDR “receiving area” south of the city. “Some” land in the “sending area” under county jurisdiction stayed in ag use. By 2006 almost all the receiving area was developed, and program neared its end.</li> </ul>	ranches under easements for which we had the sales data, landowners in all cases donated part of the easement cost, ranging from 2.9% to 68.4% of the total.	
<p><b>Fayette County, KY</b></p> <p>Purchase of development rights</p>	<ul style="list-style-type: none"> <li>• Launched in 2000, this program of a consolidated city-county government had by early October 2008 protected 194 farms totaling more than 22,448 acres, including “81 general agriculture [farms], 100 equine and 13 ‘other’ (sod, wooded, etc). The total includes 33 farms with donated conservation easements on 1,610 acres.”</li> <li>• Among program’s goals were: “Protect the agricultural, equine and tourism economies of Fayette County by conserving large areas of farm land. “ and to compensate the County’s farmers for loss of their 10-acre development rights” that they enjoyed before the 1998 switch to a 40-acre minimum (see Table 3.5).<sup>47</sup></li> </ul>	<ul style="list-style-type: none"> <li>• As of about March 2008, the city-county government had “invested \$21.6 million and has received \$26.9 million in local, state and federal funds” (including \$11 million from the FRPP).<sup>48</sup> This local government had a Purchase of Development Rights Bond Fund that received appropriations from general funds.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Residences on easement land:</i> Owners of easement land “retain the right” to divide it into 40-acre parcels (the minimum lot size in the Rural Service area—see Table 3.5) in order to build single-family residences on them and “to repair and reasonably expand any permitted New Residence(s).” However, in decisions regarding which easement applications to fund, bonus points were given to an applicant offering at least 80 acres who “agrees not to subdivide the parcel and build residences on those parcels.”</li> <li>• <i>Contiguity:</i> A map of protected land as of May 8, 2008, showed a total of 195 parcels in the county program. Only eight or 4.1% were not adjacent to one or more parcels preserved by the county or another agency.</li> <li>• <i>Equine operations:</i> “[T]he breeding, raising, training and general care of livestock for uses other than food, such as sport or show purposes” were explicitly permitted in the city-county program.</li> <li>• <i>Competition for available funds between the farmland protection and “natural area” preservation goals:</i> “Conserve and protect the natural, scenic, open space, historic and agricultural resources of rural Fayette County.” Prohibited uses included soil mining or another mining-type extraction and any “confined facility exceeding two thousand five hundred (2500) square feet for raising hogs or poultry for commercial resale.”</li> </ul>
<p><b>Palm Beach County, FL</b></p> <p>Transfer of</p>	<ul style="list-style-type: none"> <li>• County ordinance allowed “development rights [DRs] to be severed from environmentally sensitive</li> </ul>	<ul style="list-style-type: none"> <li>• Landowners who sold development rights were “compensated by making landowners in more</li> </ul>	<ul style="list-style-type: none"> <li>• “The easement shall restrict the use of the sending area in perpetuity. In particular, a conservation easement shall require that the sending area be maintained in its natural state</li> </ul>

<sup>47</sup> “The adoption of 40-acre minimum included a sunset provision which provided that if “the PDR Program was not adequately funded by December 2000, the minimum acreage required would revert back to 10 acres” (Lexington-Fayette Urban County Government, 2008).

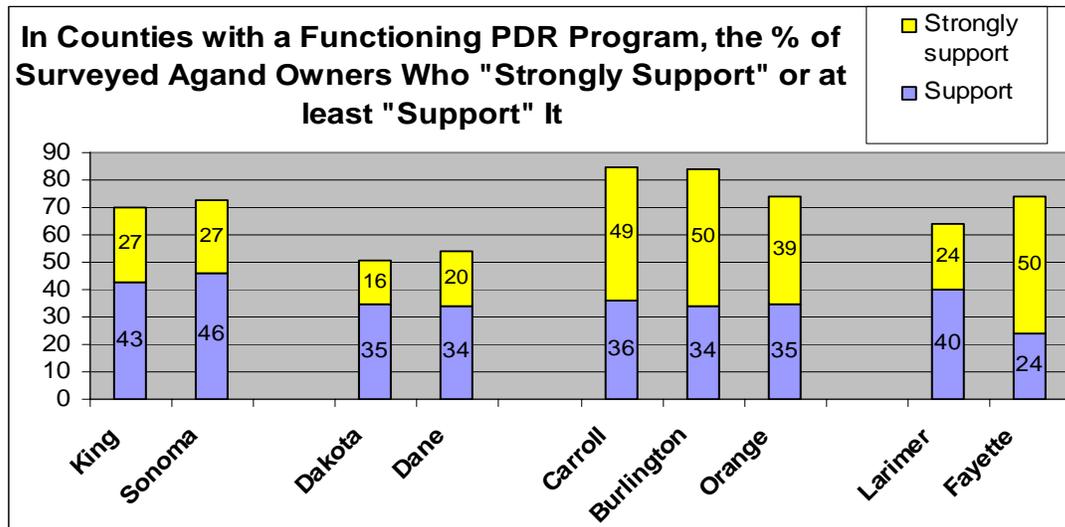
<sup>48</sup> USDA, Natural Resources Conservation Service, Kentucky, 2008.

development rights	lands and lands designated as AGR and transferred to sites where additional development can be accommodated.”	intensively developed areas pay for the right to develop beyond the existing density, by purchasing development rights.”	while an agricultural conservation easement shall restrict the use of the sending area to bona fide agriculture, fallow land, or uses permitted in the Conservation Water Resources Area (WRA) future land use category.” Density bonuses possible through transfer of DRs limited to “up to” three to five additional dwelling units per acre.
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*Survey Findings:* Each participating landowner in the 10 counties with one or more established PDR programs for protecting agricultural land was asked an evaluative question about them. Figure 3.4 presents the results for nine of the 10 counties.

For all nine counties presented in Figure 3.4, the combined percentages of “support strongly” and “support” exceed 50%. The standout cases are Carroll, Burlington, and Fayette counties, where half or nearly half of the respondents (49% to 52%) were “strongly” supportive, and the combined percentages surpass 70%. The entries for King and Sonoma counties were also at or close to the 70% mark, but their “strongly support” values were both just 27%. The combined “strongly support” and “support” values for Dakota and Dane counties were just over 50%, perhaps because those two programs had been able to protect relatively small amounts of land. However, Orange County’s achievements were also limited, but its combined percentage was 74%. Age of the program does not seem to be a dominant factor in these ratings, since Orange County’s programs date from early in this decade, while Dakota County’s began in 2003 and Dane County’s program began about the same time (although Dunn Township in Dane County purchased development rights as early as 1997).

**Figure 3.4: Owners’ assessment of established PDR programs<sup>49</sup>**



<sup>49</sup> Except for the questionnaire used in Berks County, the wording of the question on PDR included a definition of that kind of preservation program, a statement that a program was functioning in that county, and then the query about whether the owner supported the use of public revenues for protecting agland in that way. The Berks County question was different only in the final component: “How helpful has this program been in maintaining an adequate supply of land for farming in the county?” “Never heard of it”;

A tenth program, operated by Berks County, might have attracted as much support from surveyed agland owners as did the programs in Burlington and Carroll counties because it had done so much—with 56,000 acres now protected in Berks County. However, we employed a different question. After defining PDR and stating that it was being used in Berks County, we asked, “How helpful has this program been in maintaining an adequate supply of land for farming in the County?” Possible answers were “Never heard of it”; “It’s not helpful”; “Somewhat helpful”; “Moderately helpful”; “Very helpful”; and “Not sure.” The surveyed agland owners choosing the “very helpful” responses comprised 23% of the whole group, while those selecting “moderately helpful” were 27%.<sup>50</sup>

***Interview Findings:*** The interview data we gathered on easement programs, plus some of their own website information, allow us to discuss what we consider to be important issues about the effectiveness of the PDR approach to sustaining farm viability in the studied counties:

- Competition between the farmland preservation and “natural areas” preservation goals of programs;
- Contiguity of protected parcels and preventing right-to-farm conflicts;
- Residential uses permitted by easement program’s rules;
- Zoning’s role as a helper to, or competitor with, PDR;
- Adequacy of the protected land to secure agriculture’s future in the county; and
- Affordability of easement land to farmers when it is on the market.

*Competition between the farmland preservation and “natural areas” preservation goals of programs:* Interviewed experts drew to our attention that the main programs for purchasing development rights in at least four counties—Sonoma, Dakota, Larimer, and Fayette counties—had both farmland preservation and natural area protection goals that competed for the available money.

- “The urban people who wanted the money to go to the program want it to go to natural areas that they can then use. It is really more of a natural areas protection program than a farmland protection program.”
- The land acquisitions program director [for one of the four counties] “is all for protecting farmland, but . . . has a board that told him to put the money into . . . [scenic/recreational properties].”
- “The open space district serves two purposes. But it’s mostly recreation and views, and agricultural interests say that it is not for agricultural preservation.”

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“It’s not helpful”; “Somewhat helpful”; “Moderately helpful”; “Very helpful”; “Not sure.” Therefore, its results are presented separately.

<sup>50</sup> Among our reasons for wording the Berks County question differently was to see if this well-known, high-achieving program was regarded more highly than the agricultural protection zoning practiced in many of Berks County’s townships. It did. Only 11% of the Berks County sample rated the zoning approach to “maintaining an adequate supply of land for farming in the county” as “very helpful”; 16% rated it “moderately helpful.” The percentage-point difference in each of these pairs of percentages (23% versus 11% and 27% versus 16%) is statistically significant at better than the .05 level in a one-tailed *t* test for difference of proportions from the same sample.

- “It’s more for scenic value. [But] if we didn’t have the program, farmers would be able to survive, yes.”
- “The approach that Dakota County took was one half [of the money] for farmland and one half for natural resource lands, to sell the program to the public.”

By our reading of the property-use descriptions available on the Sonoma County program’s website in June 2008, as much as a third of the total acres with conservation easements or acquired through fee-simple purchase were not being used for agricultural production.<sup>51</sup> A similar analysis for the Larimer program found that as of mid-2008, properties not belonging to the program’s “Ag Inventory” accounted also for approximately a third of all protected acres.<sup>52</sup> In Dakota County the competition between protecting agricultural land and “natural areas” was built into the funding formula, with half designated for the latter type of land. Moreover, through 2007 most of the protected ag parcels (11 of 13) were selected in part because of their scenic location and/or role in preserving a riparian corridor. They were “along” or “near” a river or creek (Table 3.6).

Of course, communities need open space for recreational purposes—hiking, biking, picnicking, bird-watching, etc.—that typically are not permitted on privately owned land used to raise crops or livestock. Also, land that is attractive for recreation because of its hills, rocks, forests, or wetlands may cost the programs a lot less per acre than farmland that is cleared, drained, and otherwise easier to develop. Related to this point is an observation made by an expert observer in Sonoma County: “The Sonoma County Agricultural Preservation and Open Space District acquires easements and lands from *willing* sellers.” Therefore, if in a given fiscal year, the district faced mostly or entirely agricultural landowners unwilling to sell at affordable prices, but “open space” owners were agreeable to reasonable terms, the district understandably dealt with the latter.

A third mitigating point is that the same properties might achieve both agricultural and scenic- preservation goals. Examples would be the horse farms in Fayette County, with their bluegrass, neat fences, and other scenic attractions. One hundred of the 194 farms preserved by Fayette’s program through October 2, 2008, were classified as “equine” (Lexington-Fayette Urban County Government, Division of Purchase of Development Rights, 2008).

Finally, as suggested in the quotation above about the Dakota County program, the prospect of saving natural areas may be necessary to achieve sufficient public support for an agricultural land preservation component. That county’s leadership required the protected farmland be located either next to already preserved parcels or within a half mile of a designated river or lake, allowing “[f]lexible use in future as either farmland or open space (future generations have options)” (see Table 3.6). Rather than risking a scattering of relatively few farms that might end up isolated amid unfriendly nonfarm

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<sup>51</sup> About 56% of the total properties (Sonoma County Agricultural Preservation and Open Space District, 2008a).

<sup>52</sup> Larimer County Open Lands Program, 2008. See also the Larimer County Parks and Open Lands, *Annual Report, 2006*, p. 15. Supplemented by an interview.

neighbors or simply unviable for lack of sufficient farm-support businesses, the Dakota County program explicitly provides for this alternative use of the land.

*Contiguity of protected parcels and preventing right-to-farm conflicts:* All the programs that we studied understood the risks of complaining neighbors, and the larger programs achieved considerable contiguity when acquiring easement land and fee-simple purchases. Fifty percent of the agricultural-use properties that we identified for Sonoma County’s Agricultural Preservation and Open Space District were adjacent either to district-protected parcels or to “other public or protected land” (Table 3.6). The corresponding percentages for Carroll County’s program was 91%; for Berks County, 96%; and for Burlington County, 69%.<sup>53</sup>

*Residential uses permitted by easement program’s rules:* A related potential threat to the agricultural success of these PDR programs is proliferation of residences on or adjacent to the protected land as a result of rules governing the easement program. Besides the farmstead dwellings existing at the time the development rights are purchased, easement agreements may allow additional building rights and subdivision of the land. As the summaries in Table 3.6 indicate, we found a range of options—from reasonably strict to seemingly permissive.

- *Fayette County’s* PDR program enabled owners to “retain the right” to divide the protected farms into 40-acre parcels (the minimum lot size allowed by county zoning) and build single-family residences on them (see Table 3.6).
- *King County’s* minimum for subdivision—also determined by the zoning ordinance—was 35 acres, supplemented by the requirement that “95% of the property be kept open and available for cultivation.”
- *Sonoma County’s* program allowed a second residence (“in the vast majority of our easements”), ostensibly for the next generation of farmers or a retired farmer (or widow) from the previous generation. However, district policy was to place it on the same building lot as an existing dwelling and thereby avoid separately salable parcels.
- *Berks County’s* program also allowed a second residence for family members or employees, and owners were allowed to subdivide the protected land into separate legal parcels of at least 52 acres, providing each one had other traits (soils, slopes, etc.) promising viable agricultural use of the land (see Table 3.6).
- The *Burlington County* program permitted splitting easement land into separate lots but was limited by state law to a comparatively low overall gross density—not more than “one residential unit per 100 acres.” Additionally, the responsible county authority had to rule whether the resulting new dwellings’ locations threatened any “adverse impact on the agricultural operation.”
- The programs in *Orange County* faced a similar state-imposed constraint when negotiating with the easement sellers about land subdivision (Table 3.6).
- *Carroll County* had the most liberal provisions. At the time of negotiating the easement, the owner could exclude from the agreement one lot for him- or herself

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<sup>53</sup> We could not find a sufficiently detailed map to do this analysis for the Larimer County Open Lands program.

and separate building lots for other family members if the parcels met minimum size requirements (e.g., based on a sliding scale with at least 20 acres required for the first lot). The opportunities for these “residual” lots apparently derived in part from the liberality of the zoning ordinance (see Table 3.5) and the understandable concern that, if prospective participants in the program believed that they would lose building rights already enjoyed, they would either refuse to sign up for the program or demand much higher payments for the easement. On the other hand, standards were higher for land subdivided after the development rights were sold and protected through the main funding source (the Maryland Agricultural Land Preservation Foundation). All resulting parcels had to be at least 50 acres, unless a smaller parcel was “conveyed to an adjoining easement property and the remaining parcel consists of at least 50.0 acres.”

One knowledgeable observer of the Carroll County program was unhappy with its liberality: “You have the owner’s lots, children’s lots, and they try to cut out a tenant lot. The next thing you know you have a small city.” Another observer applauded the generous supply of additional building lots because—he believed—they might be needed to raise additional capital for the farm or family, even after the easement had been sold. Much or most of that kind of sale could go to paying off land mortgages or the heirs who chose not to participate in the farm operation.

Faced with these new residences being built on or next to easement land, at least five of our county programs in 2007–2008 were restricting, or considering limitations on, *the size and/or placement of the houses*.

- The oldest of the programs, King County’s, gave clear examples of problematic building sites. Farms were split into 35-acre parcels, and large new homes were built on open land so as to offer good views of Mount Rainier. Besides sacrificing significant numbers of farmable acres to those big building pads, the expensive homes risked making the property too expensive for farmers to afford when the original builders moved or died.
- An administrator for the Sonoma County program told us that they aimed to limit new homes to 3,500 square feet but had cases where the land was important enough to the program that they accepted something larger (like 5,000 square feet). However, their preference was for less palatial buildings. “We want to keep the property for agriculture. We can’t have the situation of the house being worth \$5 million and the land \$1 million.”
- His/her counterpart in the King County program made essentially the same point, and during the spring of 2008 the King County Agriculture Commission was working on a new draft of the restrictive covenants so as “to help ensure that the economic viability of farming is maintained.” (King County Agricultural Commission, 2008).
- As of at least 2007 Carroll County’s easement language did provide that, if state money was used, the county had to approve the placement of any new residences. A program staff person told us, “We put it along the road, even if it does reduce scenic benefits, or in the woods so it will not impede farming.”

- Burlington County’s program had the same powers: “On some properties we are limited as to where you can put septic fields. If we could put it [the house] in the woods rather than in the middle of the cropland or pasture, I would recommend in the woods.”
- The policy in Berks County was that a new home site should not use more than two acres of eased land and that the easement seller was encouraged to place it and its driveway “so it will not harm the economic viability of the restricted land for agricultural production.”

*Zoning’s role in making PDR a success:* As we saw in the King and Carroll County cases, the housing density (1:35, 1:20) provided by the agricultural zoning district may permit excessive numbers of relatively small-acreage splits of protected land. Fayette County’s 40-acre standard was of course not much better.

Larimer County’s Rural Land Use Process (RLUC), discussed above in the section on zoning, provided an alternative to both small-acreage subdivisions and the 35-acre splits. However, the process apparently may not have helped the PDR program. Instead, it was presented by the RLUC administrator as an alternative (Reidhead, 2006). He argued that more land could be saved more cheaply through the RLUC requirement that the clustered development leave as open space at least two-thirds of the total property. The cost to the county consisted mostly of the salaries of the staff who worked with farmers and ranchers on developing their subdivision plats and then in processing them through the approval process. According to the program director, an acre saved through the RLUC process between 1996 and 2005 cost the county on average \$204 compared to \$650 per acre for the Larimer County Open Land projects (easements and fee-simple purchases).<sup>54</sup> However, a Larimer official reminded us that land "preserved" through the RLUC is not open to public use and that land which is preserved for only 40 years could potentially be developed in the future."

In the DeKalb County case, the success of agricultural protection zoning discouraged the consideration of PDR. We attended a public meeting in that county during February 2008 at which two of the most prominent experts on agricultural land in DeKalb County made these arguments:

- “I don’t see PDR being a strong possibility in the near future, because I just don’t see the dollars being available. And given that the comprehensive plan [about directing new growth to the existing municipalities, not approving rural subdivisions, and limiting new homes in unincorporated areas to parcels of at least 40 acres] being consistently administered and the [cooperative] relationship between the county board, farmers, and the urban people, we may not need a PDR program to the same degree that Kane County [closer to Chicago] needs [one].”
- “We would be hard pressed to justify higher taxes [for a PDR program] in a county that has a 40-acre rule that has been so effective.

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<sup>54</sup>The \$650 average resulted after deducting the value of both grants (e.g., from the state and federal governments) that contributed to the payments made to landowners and any share of the development rights’ appraised value that represented donations from the owners. Included in this analysis were nonagricultural properties.

*Enough land protected through PDR or TDR so that the future of farming in the county is secure?*

The question is practical probably only for the three studied counties where the total amount of land already protected was substantial—at least 50,000 acres: Burlington, Berks, and Carroll counties.

By the end of 2007 Burlington County's PDR program had protected more than 25,000 acres; it was still growing with a fresh infusion of funds voted in 2006. Two townships' TDR programs had preserved over 3,000 acres, and the Pinelands National Reserve had preserved at least 20,000 acres through TDR. The latter federal/state program limited urban-density development to relatively small designated growth areas, and used TDR to compensate owners of land in the areas set aside for preservation. Those owners could sell development credits (at mutually agreed-upon prices) to builders seeking density bonuses in the growth zones (see the Burlington County case study for this project—Esseks and Schilling, 2008). Five of six experts whom we consulted in Burlington County about the land adequacy issue were optimistic, and they credited the land preservation programs for much or most of their positive assessments. None of the following quotations came from a land-preservation program administrator or elected official.

- “The preservation people there have done an excellent job. They’ll continue to be active in that area. Agriculture will remain there, with fairly large chunks of agricultural land.”
- “I think that they have preserved enough farms now, so that unless there is some drastic change there will still be enough of a land base to maintain the industry.”
- “The ones who got into it [the PDR program] will stay. And their sons or daughters are coming up to help the business continue.”
- “[Thanks to the PDR program] many people who are involved in agriculture have figured out that it’s no longer a transitional use. . . . With more and more preserved land being available, the owner may not be a farmer, but my view is that land tenure will get better [because] someone who owns a piece of preserved land can’t decide to develop it.”
- “Farmland preservation is going to be the key to the survival of agriculture in Burlington County.”
- A sixth expert was pessimistic but did credit the preservation program as being a possible solution: “Agriculture’s future in the county is dim because the development pressures will be too strong, unless they make additional money available for preservation purposes.” The property tax used to fund the program was reauthorized in the November 2006 election.

By October 2008 the Berks County PDR program had protected 56,000 acres. However, compared to Burlington County, the experts were less optimistic when we asked them about the adequacy of land for agriculture 10 years into the future.

- “Land in farms will not be adequate.”
- “Not be adequate; [just] pockets of preserved land.”
- “Land for farming is already not adequate, as seen by great increase in rents.”

- “Land for farming will diminish. Maybe there will be enough land for the remaining farms.”
- “It will be adequate if the land preservation program continues. If it doesn’t, the land will go to developers.”
- “There is enough land for farming because of both conservation and preservation programs.”
- “They have preserved a lot of land. People who love farming will stay, and rich people from New York will buy the preserved land and lease it out.”

The comparable total acres preserved for Carroll County were 51,000 acres by the end of 2007. As with Berks County, opinions about the adequacy of land in the future were mixed, though on the whole more positive:

- “In 10 years there will be fewer farms and a slight decrease in acreage, but not too much because we have preserved so much land.”
- “There will be enough land because of the preservation program. We are at 45,000 acres [at the time of the interview in 2005]. It should be adequate given the conditions we’ll have in 10 years.”
- “The ag preservation program has us at 45,000 acres. I am concerned that some have been in the program for 25 years and might be allowed out of the easement if agriculture is no longer viable.”
- “Total supply of land in farming will be fairly stable. We’ll lose some but not at a fast rate.”
- “In 10 years there will be a noticeable decrease in land for farming.”

*Affordability of easement land to farmers when it is on the market:* Eventually, much or most of the protected land will be sold in arms-length transactions (rather than at discounts to family members). Among other purposes, old age, death, the lack of heirs wanting the land, or perhaps a need to raise capital for a farming operation that transcends the property at issue motivates these sales. In 2005 the University of Nebraska surveyed a sample of owners of agricultural land whose development rights had been purchased in part with money from the federal Farm and Ranch Lands Protection Program (Esseks, Nelson, and Stroe, 2006). At the time of the survey, in the program’s ninth year, 8% of the surveyed persons were such “second generation” owners.

In five of the current study’s 10 counties with PDR programs, their administrators and/or knowledgeable observers voiced concern about the affordability of the protected properties to second and later generations of owners. The main problem was nonfarmers and wealthy part-time farmers bidding up the market prices for this kind of real estate product—largish rural properties very suitable for estate living. Able to compete with them, at least sometimes, were farmers with “1031 exchange” money and those raising high-value products like wine grapes, landscaping products, and niche-market food. Our findings were similar to those of Al Sokolow (2006), when he and colleagues surveyed program managers of 25 programs. Here are interview quotations we gathered in the five counties that illustrate the affordability problem:

- “Even with the strict development limits, land prices rose so sharply in some areas that the open land was more valuable as sites for multi-million dollar mansions.”

“You pay a lot for a view of Mount Rainier, \$10,000 to \$15,000 per acre [multiplied by at least 35 acres]. But mansion buyers put land out of reach for farmers” (King County).<sup>55</sup>

- “The problem is that when the property sells, it still goes for \$750,000 to a million dollars on a 100 acres because we have so many wealthy people in the region that are buying second homes.” “Preservation doesn’t affect the sale price” (or the “after value,” after the development rights have been removed). Said another expert, “Farmers are not able to buy easement land with their higher after values. It’s getting to be a problem” (Carroll County).
- “Wealthy people are buying our preserved land. We risk missing the economic benefits of land being in agricultural production including jobs in the processing of agricultural goods produced in the county.” “Look, we have preserved land, but it still sells for so much money.” “The land is still expensive, but less expensive because they are not bidding against developers. Even those who buy it not to farm may rent it out to another farmer” (Berks County).
- Staff of the Burlington County program cited a report from the State Agricultural Development Committee (2004) that warned about rising values of easement land that “can price farmers out of the market for preserved land.”
- “It looks as though the after-easement sale values of the land continue to increase. Recently a 100-acre farm with the right to build only one home was about to sell for more than one million.” “People are buying it [preserved land] for horses. Even with the restrictions, it will grow in value” (Orange County).

Despite these concerns, some or many farmer buyers may be able to purchase protected land. Wine grape growers in Sonoma County had the revenues to cover high mortgage payments. A source from Berks County described how farmers moving from a county closer to Philadelphia sold out at about \$30,000 per acre and bought easement land in Berks County at \$5,000 to \$10,000. The “1031 exchange” provision of the federal tax code allowed them to avoid capital gains taxes.<sup>56</sup> In February 2006 the Burlington County PDR program held an auction for seven parcels of land with easements that the program owned. Two farming couples from Burlington County successfully bid on one parcel each, while the other five were bought by out-of-county farmers of high-value ag products: fruit, ethnic vegetables, and landscape products. The purchase price per acre ranged from \$4,394 to \$10,478.

## **6. One Solution to the Affordability Problem: Public Agencies Purchase Amland and Lease It to Farmers**

In two of our counties—Sonoma and Palm Beach—public agencies have a specific program of leasing out agricultural land that they had bought. The Sonoma County Agricultural Preservation and Open Space District started in 2000 a “Small Farms

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<sup>55</sup> For smaller parcels that were created before the 35-acre minimum became binding, the cost per acre could be much higher. One King County expert cited two 2006 appraisals: \$20,000 per acre for a 10-acre parcel and \$14,000 per acre for a 20-acre property.

<sup>56</sup> See the earlier discussion about these exchanges in Section 3a above.

Program” that emphasized local vegetable production.<sup>57</sup> Using proceeds from a one-quarter-percent sales tax dedicated to both its fee-simple purchases of land and its acquisition of easements, the district had two farms under lease as of July 2007: one comprising 18 acres and the other, 48 acres. A participating leasing farmer told us, “You can’t buy land in Sonoma County. Small parcels are more expensive, even five, 10, or 20 acres.” His current lease was for five years.

Palm Beach County’s program is larger. Using proceeds from a \$100 million bond that voters approved in 1999, the county purchased over 2,300 acres by early 2007, of which reportedly 1,782 were then being leased to farmers,<sup>58</sup> including operators who had previously owned the farmland. The high market value of land prevailing in those years greatly limited the total number of acres that could be bought. Among the tenants was a nursery products operation that relocated from an area of the county under strong development pressures to 38 acres owned by the county. The lease was for 25 years. One of the nursery’s owners said—in words to the effect—that, without the program, his family business would have been compelled to move out of the county in search of cheaper land.<sup>59</sup>

There was another lease-back option in Palm Beach. Parts of that county’s share of the Everglades were under state or federal ownership and awaiting restoration, such as to reestablish wetlands where land had been drained for agricultural purposes. By one 2006 estimate,<sup>60</sup> as many as 40,000 acres of that land were leased to farmers.

The 2007–8 increases in farm commodity prices may enable many more farmers to purchase easement land. However, if—as indicated by our 2005–7 interviews—much of the PDR-preserved land will end up owned by nonfarmers or wealthy part-time farmers, what can public policy makers do to encourage those owners to have their lands farmed at commercial intensities? One tool we have not discussed so far is agricultural use-value assessment that can both (1) keep the property-tax costs of owning farmed land bearable and (2) encourage nonfarmers to lease to commercial operators because more than trivial levels of farming are required in order to qualify for preferential assessments.

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<sup>57</sup> “The Small Farms Program . . . was developed by District staff and agricultural experts who were concerned about agricultural diversity, and specifically the future of local vegetable farms. Land values for Sonoma’s quality wine grapes are so high that vegetable farmers are unable to compete. The Small Farms Initiative recognizes that vegetable farms provide a valuable benefit to the community, and contribute to the local economy.

“With the Small Farms Initiative, the District will lease land to farmers who grow vegetables, flowers, herbs, and berries. The leases will preserve some lands zoned for agriculture in production and allow access for experienced farmers who may not otherwise be able to find land. This initiative aims to ensure and enhance the continued viability of agricultural lands in Sonoma County by keeping land in agriculture” (Sonoma County Agricultural Preservation and Open Space District, 2008b).

<sup>58</sup> *Palm Beach Post*, February 23, 2007.

<sup>59</sup> *South Florida Sun-Sentinel*, June 12, 2005.

<sup>60</sup> Interview with a Cooperative Extension adviser, January 2005.

## 7. Agricultural Use-value Assessment for Property Tax Purposes

State laws defined the general rules guiding agricultural-use assessment for farm and ranchland. Table 3.7 summarizes the eligibility rules published on departmental websites and other official sources as of the spring of 2008 (or as otherwise dated).

In urbanizing areas the differences in tax assessment can be very substantial. Rodney Clouser (2005) reported that in a rural southern Florida county, “citrus land is assessed in the \$3500 range, sod-producing land is assessed just under \$1500, and unimproved pasture is assessed at less than \$100” (p. 3). In contrast, the market value of agland awaiting development in Palm Beach County might have been \$100,000 or more per acre before the decline in property values that began in 2007. A state-level study in California found that agricultural-use assessment saved owners “from 20 percent to 75 percent in property-tax liability each year” (California Department of Conservation, 2008).

Figure 3.5 suggests that most of the surveyed agland owners in the two California counties agreed. All the participating owners there and in the other 13 counties were asked, “How helpful has this law [about use-value assessment] been in keeping property taxes on agland in [the owner’s] county at acceptable levels?” In Sonoma and Ventura counties, combinations of 51% and 55% of the respondents, respectively, chose the response options of “Very helpful” or “Moderately helpful” (rather than “Never heard of it,” “It’s not helpful,” “Somewhat helpful,” or “Not sure”). The corresponding percentage for the Berks County sample was identical to Ventura County’s. But in 11 of the other studied counties, the approval rates were all at the 60% level or higher. In nine of those 11, the percentages for “very helpful” alone ranged from 53% in Orange County to 79% in Burlington County.

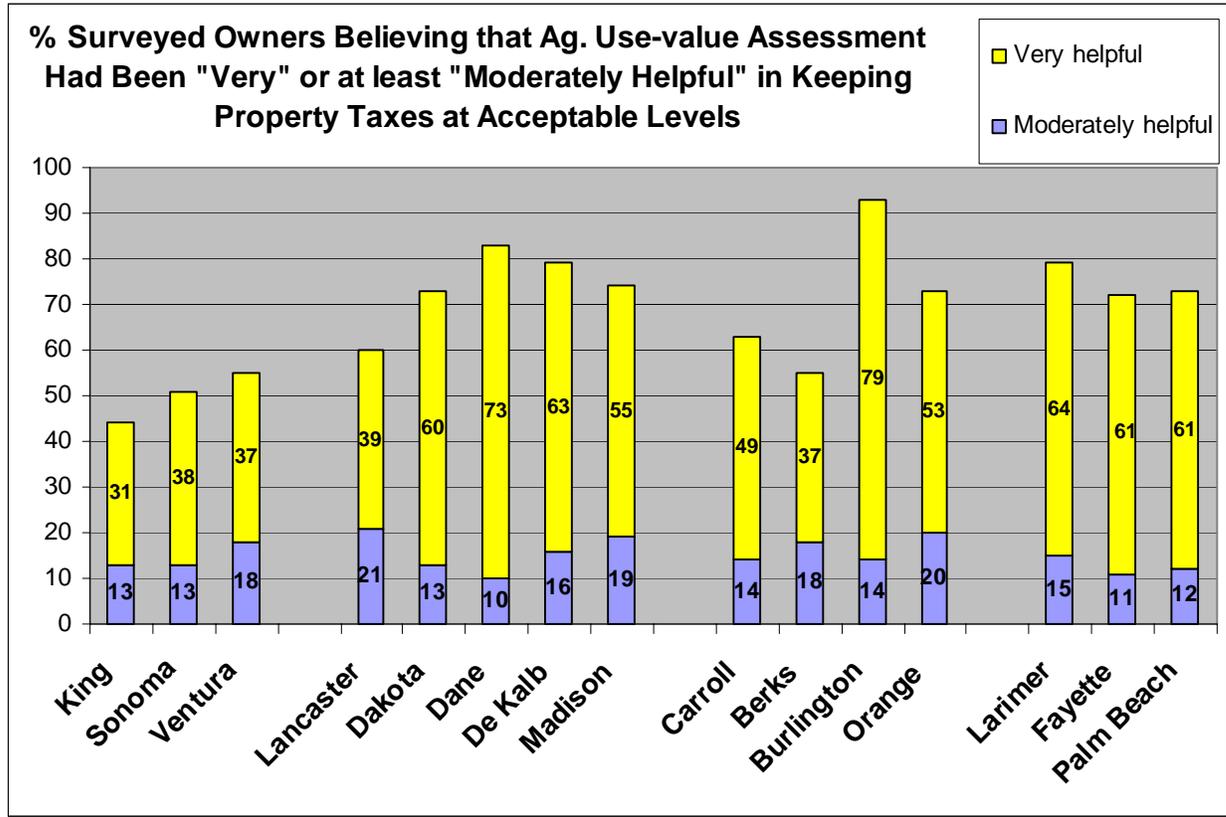
<b>Table 3.7: Eligibility Requirements and Basis for Agricultural-Use Assessment for Property Taxes</b>	
<b>Region and County</b>	<b>Major Requirements and Basis of Assessment as of Mid-2008</b>
<b>Pacific Coast</b>	
<b>King County, WA</b>	To qualify for “Current Use Property-Tax Assessment,” land must be “devoted primarily to the production of livestock or agricultural commodities for commercial purposes.” <ul style="list-style-type: none"> <li>• If less than five acres, an annual gross income from ag products of \$1,500 is required.</li> <li>• If 5 to 20 acres, \$200 per acre.</li> <li>• If 20 or more acres, no specific amount is required, but there must be “sufficient income to ascertain the property is a commercial-scale farm.”<sup>61</sup></li> </ul>
<b>Sonoma County, CA</b>	<ul style="list-style-type: none"> <li>• The Williamson Act authorizes 10-year contract between the landowner and the county whereby agricultural land and any “growing improvements” (trees and vines) are valued for property-tax purposes at their capacity for earning income. For the length of the contract only agricultural and ag-compatible uses are permitted. State partially compensates county for the property taxes lost due to this program. Contracts are automatically renewed unless owner decides to give notice of nonrenewal, in which case the contract and its land-use restrictions end after another 10 years. Tax benefits gradually diminish during that period.</li> <li>• County sets eligibility requirements: Sonoma County required farmland that was highly productive or had a carrying capacity of at least one animal unit per acre per year or met other measures of significant agricultural production.</li> </ul>
<b>Ventura County, CA</b>	<ul style="list-style-type: none"> <li>• “To be eligible for a [Williamson Act] contract, a parcel must be a legal lot of at least 10 acres, . . . considered prime land as defined by the Land Conservation Act [i.e., the Williamson Act],</li> </ul>

<sup>61</sup> In this table the passages within quotation marks come either from published program documents or from interviews with program administrators.

	<p>and must demonstrate an agricultural income of \$500/acre from the property in the past three years.</p> <ul style="list-style-type: none"> <li>• "If the land is to be contracted for grazing, the minimum parcel size is 80 acres, and the landowner must demonstrate that it can sustain a certain number of 'animal units.'"</li> </ul>
<b>Corn Belt</b>	
<b>Lancaster County, NE</b>	Land must be outside corporate boundaries of a city, village, or Sanitary Improvement District, and land must be used for agricultural or horticultural purposes. Taxable value is based on 75% of the actual value for agricultural or horticultural use, which in turn may be based on cash rents for each county.
<b>Dakota County, MN</b>	Green Acres Program required at least 10 acres used agriculturally, gross revenues from agriculture of at least \$300 annually, plus \$10 per tillable acre. A less widely used option was the Agricultural Preserves Program, which required being in an exclusive agricultural- use zoning district with minimum density of one dwelling unit per 40 acres and an eight-year covenant to leave the land in ag use. Annual property taxes are based on "ag market value only," and owner received a \$1.50 per acre tax credit in addition.
<b>Dane County, WI</b>	"Land devoted primarily to agricultural use" was eligible for assessment "based on the [net] income that could be generated from its rental for agricultural use."
<b>DeKalb County, IL</b>	"Farmed portion [must be] larger than the residential portion of parcel. . . . Farmed portion is not less than 5 acres in area." "Farm acreage is assessed based on its ability to produce income, which is called its agricultural economic value [which in turn] is based on statewide studies of land use under average level management, soil productivity, and of the net income of farms in Illinois."
<b>Madison County, OH</b>	If had at least 10 acres "devoted exclusively to commercial animal or poultry husbandry," commercial field crops, landscaping products, etc., it can be assessed on the basis of its agricultural use value rather than a "highest and best use" valuation.
<b>Mid-Atlantic</b>	
<b>Carroll County, MD</b>	<ul style="list-style-type: none"> <li>• "A parcel of land is eligible for agricultural use valuation if it is determined to have 5 acres or more 'Actually Devoted' [to agricultural use]"—with the definition of the latter varying by type of product, such as at least one animal per acre for horses or cattle and five for "sheep, goats, or swine."</li> <li>• "For parcels which are at least 3 acres in size but less than 5 acres, the average gross income must be no less than \$2,500 per year."</li> <li>• "For parcels under 3 acres in size, the average gross income must be no less than 51% of the owner's total gross income."</li> </ul>
<b>Berks County, PA</b>	<ul style="list-style-type: none"> <li>• Land is taxed "according to its use rather than the prevailing market value" if in the preceding three years there were at least 10 contiguous acres in agricultural use.</li> <li>• "Parcels of less than 10 acres and capable of producing \$2,000 annually from the sale of agricultural products are eligible for the agricultural use designation."</li> </ul>
<b>Burlington County, NJ</b>	To be eligible, owner must have at least five acres that are farmed (exclusive of the farm house). "Gross sales of products from the land must total \$500 per year for the first 5 acres, plus \$5 per acre for each acre over 5, except in the case of woodland or wetland where the income requirement is \$.50 per acre for any acreage over 5."
<b>Orange County, NY</b>	<ul style="list-style-type: none"> <li>• "Land generally must consist of <i>seven or more acres</i> that were <i>used for the preceding two years</i> for the production for sale of crops, livestock, or livestock products."</li> <li>• "The annual <i>gross sales</i> of agricultural products generally <i>must average \$10,000</i> or more for the preceding two years. If an agricultural enterprise <i>is less than seven acres, it may qualify if average annual gross sales equal \$50,000 or more.</i>"</li> <li>• "Land that supports a commercial horse-boarding operation may qualify for an agricultural assessment if the following eligibility requirements are met: at least seven acres of land supports the commercial horse-boarding operation; the operation boards at least 10 horses regardless of ownership; and the operation receives \$10,000 or more in gross receipts annually in the preceding two years from fees generated through the boarding of horses and/or through the production for sale of crops, livestock, and livestock products."</li> <li>• "Land that supports operations whose primary on-site function is horse racing is not eligible."</li> <li>• "A startup operation may qualify based on its annual gross sales of agricultural products in the operation's first or second year. Such annual sales must amount to at least \$10,000 if the startup operation has seven or more acres, or to at least \$50,000 if the startup operation has less than seven acres in agricultural production."</li> <li>• "A startup commercial horse-boarding operation may also qualify based on annual boarding fees of \$10,000 or more in its first or second year."</li> </ul> <p>"Land rented for agricultural purposes may receive an agricultural assessment. If the rented</p>

	land satisfies the basic eligibility requirements described above, it is eligible for agricultural assessment. In addition, if the rented land does not satisfy the average gross sales value requirement, but does satisfy the other requirements, it may still be eligible if it is farmed, under a written rental agreement of at least five years, with other farmland that satisfies all eligibility requirements. The applicant must substantiate the existence and the term of the rental agreement by providing the assessor with either a copy of the lease or an affidavit confirming that such an agreement exists. A startup farm operation may include rented land.”
<b>Highly Scenic and Recreational</b>	
<b>Larimer County, CO</b>	<p>A farm or ranch parcel of land used for “the primary purpose of obtaining a monetary profit,” though no monetary minimum was required.</p> <ul style="list-style-type: none"> <li>• Land was “used the previous two years and presently is used as a farm or ranch . . . or that is in the process of being restored through conservation practices.”</li> <li>• Could be located in incorporated areas.</li> </ul>
<b>Fayette County, KY</b>	<p>Land used for agricultural or horticultural purposes was eligible:</p> <ul style="list-style-type: none"> <li>• “‘Agricultural land’ means any tract at least 10 acres in area, exclusive of land used in conjunction with the farmhouse, that is used for agricultural purposes or for the growing of merchantable timber.”</li> <li>• “‘Horticultural land’ means any land of at least five acres in area commercially used for the cultivation of a garden, orchard, or the raising of fruits, vegetables, flowers, or ornamental plants.”</li> </ul>
<b>Palm Beach County, FL</b>	<p>Eligible for agricultural use-value assessment if land is used “for bona fide agricultural purposes.”</p> <ul style="list-style-type: none"> <li>• Rather than stipulating acreage or income standards, the state statute called on local assessors to decide on the presence or absence of such purposes by considering a number of listed factors, including:</li> <li>• “The length of time the land has been so utilized; . . . .</li> <li>• “Size, as it relates to specific agricultural use;</li> <li>• “Whether an indicated effort has been made to care sufficiently and adequately for the land in accordance with accepted commercial agricultural practices, including, without limitation, fertilizing, liming, tilling, mowing, reforestation, and other accepted agricultural practices; [and]</li> <li>• “Whether such land is under lease and, if so, the effective length, terms, and conditions of the lease.”</li> </ul>

**Figure 3.5**



Also, among the respondents in six counties, favorable evaluations of their ag use-value assessment were associated with being positive about the future of agriculture there. In Dakota, Dane, Lancaster, Madison, Orange, and Palm Beach counties, agland owners who found their county’s use-value assessment policies to be “very helpful” or at least “moderately helpful” were more likely to think that agriculture 20 years into the future had a “bright future” or at least “modest future” (rather than “dim,” “none at all,” or “not sure”).<sup>62</sup>

However, many or most of the use-value assessment eligibility requirements shown in Table 3.7 may need some tightening. Where minimum acre or sales standards were set, they seem to exclude only the rather small farm operations:

- Those with at least five acres in DeKalb, Burlington, and Fayette counties (for horticulture) were eligible. Gross sales qualifications were triggered for parcels from three acres to less than five in Carroll County and at least seven acres in Orange County.
- Madison County’s eligibility standard was 10 or more acres. Ten was the floor also in Ventura (for crops) plus \$500 in gross revenues per acre. For Dakota County it was 10 acres plus \$300 in annual receipts and \$10 per tillable acre.

<sup>62</sup> These likelihood estimates were found when other predicting variables in the logistic regression equations were held constant, i.e., “other things being equal.”

- King County had a 20-acre minimum, but allowed from five to fewer than 20 acres if the operation grossed at least \$200 per acre, and total revenue of \$1,500 if the farm had even fewer than five acres.
- Below 10 acres was permitted in Berks County if the gross was at least \$2,000.
- The regulations governing Orange County allowed as few as seven acres plus at least \$10,000 in gross revenues, and fewer than seven if the revenues totaled \$50,000 or more, except that commercial horse-boarding operations could get by with at least \$10,000.

For the purpose of encouraging viable farming sectors, the small acreage and revenue minima make sense if they qualify genuine farmers like producers of high-value products, rather than permitting nonfarmers to arrange minimal production efforts that meet lenient standards. The Orange County income requirements (set by the state) of \$10,000 or \$50,000 seem to stimulate commercial farming. (See the discussion in Section 3b about landowners in Orange County being so eager to have genuine farmers rent their land that they accepted low or zero rents.)

Acreage limits (five or 10 acres) without meaningful income standards may not do as well. A knowledgeable observer in Berks County complained, “The income eligibility threshold of \$2,000 has not been adjusted since 1974. The increase in the price level since 1975 is about 318%. The eligibility threshold could be adjusted to at least \$6,000 to be equivalent in purchasing power to \$2,000 in 1974.” The New Jersey standards were also set years ago, in 1964. In November 2006 the Palm Beach County Board called for reform of its state’s assessment guidelines for agland:

- “In Palm Beach County, there have been instances of property being purchased at a premium based on its future development potential, but receiving an agricultural classification and reduced tax bill because the new owner permits a minimal level of agricultural activity on the property. For example, a 7.9-acre parcel in a residential area in eastern Palm Beach County has been assessed at \$2,755 since 1998. The property owner has been able to keep an agricultural exemption by allowing a few cows to graze on the property. For 2006, the property owner will pay \$51 in taxes.
- “Guidelines for making a determination of whether property qualifies for the agricultural classification are currently provided in Florida Statutes (F.S. 193.461). We believe that the statute should be strengthened so that only legitimate agricultural operations are able to receive the benefit of an assessment reduction for agricultural use.” (Palm Beach County Commissioners, 2006).

An obstacle to the suggested reform is likely to be opposition from the many rural landowners who purchased their mini-estates on the assumption that they could work the farmland assessment system to their advantage.

Besides equity issues like nonfarmers enjoying low taxes at the expense of owners of non-rural land who pay on the basis of full market assessment, there is the problem discussed earlier of seemingly more and more PDR-protected farms being purchased by nonfarmers or not-so-serious producers. As the Palm Beach County Board recommended, reasonably high standards of eligibility for preferential tax assessment may avoid the

situation of “a few cows” grazing on the property by compelling owners either to farm seriously themselves or to persuade genuine farmers to rent from them. New York State’s use-value law encourages the latter with its eligibility provision of the parcel consisting of at least seven acres and being “farmed, under a written rental agreement of at least five years, with other farmland that satisfies all eligibility requirements” (Table 3.7).

### 8. Right-to-Farm Legislation and Conditions Shaping Their Effectiveness

A long-noted, potentially serious problem for farmers in urbanizing areas has been the tendency of nonfarmer neighbors to lodge formal and informal complaints about real or imagined nuisances resulting from the farming operations: livestock odors, dust from field work, noise from late-night or early morning operations of farm machinery, slow-moving farm equipment on public roads, and pesticides seeming to or actually polluting air and water (Lisansky and Clark, 1987; Handel, 1999). State and local government have gone to the aid of farmers and ranchers with “right-to-farm” legislation. Table 3.8 summarizes the provisions of those statutes and ordinances, as well as other relevant political traits that condition the success of the legislation.

<b>Table 3.8: Right-to-Farm Legislation and Political Traits Conditioning Its Success</b>		
<b>County</b>	<b>Main Features of State or Local Government Legislation</b>	<b>Related Policy and/or Political Traits (Including Culture of the Community)</b>
<b>Pacific Coast</b>		
<b>King County, WA</b>	No nuisance action should be brought if ag activities are “consistent with good agricultural and forest practices and established prior to surrounding non-ag and forestry activities, are presumed to be reasonable and shall not be found to constitute a nuisance unless . . . [it] has a substantial adverse effect on public health.” Specifies that the ag operation “shall not be restricted as to the hours of the day or days of the week.” <sup>63</sup>	In pursuit of the goal of protecting “unique, fragile and valuable elements of the environment,” the county’s “Critical Areas Ordinance” has, among other activities, regulated maintenance of agricultural ditches, mandated fencing setbacks, and overseen management of livestock operations, such as by limiting the number of livestock allowed, “access of animals to streams and wetlands, fencing, and manure management.”
<b>Sonoma County, CA</b>	County: “No agricultural operation conducted or maintained on agricultural land in a manner consistent with property and accepted customs and standards, as established and followed by similar agricultural operations in the county, shall be or become a nuisance for purposes of this code or county regulations if it was not a nuisance when it began, provided that such operation complies with the requirements of all applicable federal, state, and county statutes, ordinances, rules, regulations, approvals and permits. The provisions of this section shall not apply where a nuisance results from the negligent or improper management or operation of an agricultural operation.”	State: “Buyers of property in agricultural areas must be given statement of rights of farmers and sign the statement.” County: “The treasurer/tax collector shall cause the following notice to be mailed to all owners of real property within the county with the annual tax bill: ‘Residents or users of property located near an agricultural operation on agricultural land may at times be subject to inconvenience or discomfort arising from that operation, including, without limitation, noise, odors, fumes, dust, smoke, insects, operation of machinery during any time of day or night, storage and disposal of manure, and ground or aerial application of fertilizers, soil amendments, seeds, and pesticides. . . . The County of Sonoma has determined in the Sonoma County Right to Farm Ordinance that inconvenience or discomfort arising from a properly conducted agricultural operation on

<sup>63</sup> In this table the passages within quotation marks come either from published program documents or from interviews with program administrators.

		agricultural land will not be considered a nuisance for purposes of the Sonoma County Code or County regulations.”
<b>Ventura County, CA</b>	Ag operation shall not become a private or public nuisance if conducted “in a manner consistent with proper and accepted customs and standards as established and followed by similar operations in the same locality . . . due to any changed condition in or about the locality after it has been in operation for more than one year.”	Mandated disclosure to new buyers like statement used in Sonoma County (see above).
<b>Corn Belt</b>		
<b>Lancaster County, NE</b>	On parcels of 10 or more acres “devoted to the commercial production of farm products,” farm operations or public grain warehouses shall not be a public or private nuisance if they existed before “a change in the land use or occupancy of land in and about [their] locality and if it would not have been a nuisance before such change.” A pig farmer defendant lost the case because plaintiff’s use of land preceded his pig facility.	Cooperative Extension helped to resolve conflicts and worked proactively to educate rural nonfarm residents about agriculture and what to expect from farming nearby.
<b>Dakota County, MN</b>	Not a public or private nuisance after two years from its establishment, if farming operation is located in an agriculturally zoned area, complies with applicable laws, and “operates according to generally accepted practices.” However, if “the agricultural operation is subsequently expanded or significantly altered, the established date of operation for each expansion or alteration is deemed to be the date of commencement of the expanded or altered operation.”	Both a state Farm Bureau staff person and an administrator with the Minnesota Department of Agriculture were assigned to help farmers with these conflicts.
<b>Dane County, WI</b>	<ul style="list-style-type: none"> <li>• “Wisconsin right-to-farm law enacted to protect farm operations using good management practices from nuisance suits—lawsuits challenging acceptable farming practices.”</li> <li>• “A farm may even expand the size of its buildings and herd size under the right-to-farm protection, but these changes may require local zoning or permits.”</li> </ul>	Wisconsin State Department of Agriculture promoted “positive” neighbor relations between farmers and nonfarmers, including by recommending ways for farmers to avoid problems: “provide a welcome gift basket to new neighbors, . . . contact prior to spreading manure near homes, and keep farm machinery off roads during commutes and school drive times.”
<b>DeKalb County, IL</b>	“No farm or any of its appurtenances shall be or become a private or public nuisance because of any changed conditions in the surrounding area occurring after the farm has been in operation for more than one year, when such farm was not a nuisance at the time it began operation, provided that the provisions of this Section shall not apply whenever a nuisance results from the negligent or improper operation of any farm or its appurtenances.”	Additional protection if farm is enrolled in a state-authorized Agricultural Area, which must be approved by local government and consist of at least 350 contiguous acres. “[Ag] areas help protect landowners from <i>local ordinances</i> [emphasis added] that might otherwise interfere with normal farming practices. However, ag areas do not exempt farmers from nuisance suits or from following approved best management practices.”
<b>Madison County, OH</b>	Protection against nuisance complaints if the ag activity in question was “conducted within an agricultural district”; the activity was “established within the district prior to the plaintiffs activities or interest on which the action is based”; “The plaintiff is not involved in agricultural production”; “The activities were not in conflict with any federal, state, and local laws and rules.”	The state-authorized Agricultural Districts must be approved by local government, continue at least five years, and consist of parcels totaling at least 10 acres in size or that had generated in previous three years income that averaged at least \$2,500.
<b>Mid-Atlantic</b>		
<b>Carroll County, MD</b>	<p>“If an agricultural operation has been:</p> <ul style="list-style-type: none"> <li>• underway for a period of one year or more, and</li> <li>• is in compliance with applicable federal, State, and local health, environmental, zoning and permit</li> </ul>	County subdivision ordinance required this statement on final plat creating residential building lots in the agricultural district: “Agriculture is the preferred use in the agricultural district. All agricultural operations

	<p>requirements, and is not conducted in a negligent manner.</p> <p>Then: the operation, including any noise, dust, or insects from the operation, may not be deemed to be a private or public nuisance, and a private action may not be sustained on the grounds that the operation interferes with the use or enjoyment of other property, whether public or private.”</p>	<p>shall be permitted at any time, including the operation of farm machinery and no agricultural use shall be subject to restriction because it interferes with other uses permitted in the district.”</p>
<b>Berks County, PA</b>	<p>“No nuisance action shall be brought against an agricultural operation which has lawfully been in operation for one year or more prior to the date of bringing such action, where the conditions or circumstances complained of . . . have existed substantially unchanged since the established date of operation and are normal agricultural operations, or if the physical facilities of such agricultural operations are substantially expanded or substantially altered and the expanded or substantially altered facility has been in operation for one year or more prior to the date of bringing such action.”</p>	<p>Extra protection if enroll land in a state-authorized and local government approved Agricultural Security Area (ASA), which consisted of at least 250 contiguous acres: “The local government unit may not impose ordinances that unreasonably restrict farm structures or practices within the ASA, nor may normal farming operations and practices be deemed nuisances in a nuisance ordinance.”</p>
<b>Burlington County, NJ</b>	<p>The state’s Right-to-Farm Act “affords responsible farmers protections against public and private nuisance actions and against municipal regulations that constrain farming. . . . [To be eligible for these protections], commercial farms:</p> <ul style="list-style-type: none"> <li>• must be operated in conformance with federal and state laws, agricultural management practices recommended by the SADC [State Agriculture Development Committee] or site-specific agricultural management practices [those approved by the County Agricultural Development Board],</li> <li>• must not be a threat to public health and safety, and</li> <li>• must be located in an area where agriculture was a permitted use under municipal zoning ordinances.”</li> </ul>	<p>Complaints were supposed to be referred to the County Agricultural Development Board (CADB). In practice most seemed to be handled initially by either Cooperative Extension or administrators of the county’s PDR program. If not resolved, they could go to the CADB. If need be, a voluntary mediation program operated by the State Agricultural Development Committee could be used.</p>
<b>Orange County, NY</b>	<p>The state’s commissioner of agriculture was authorized to judge the validity of nuisance complaints, that is, whether the farm management practices in question were “sound.” The opinions of his/her office were final unless appealed to the state court system, except if farm is in an Agricultural District (approved by local government, certified by the state, and consisting of at least 500 acres).</p> <p>For agland located within a district, staff of the state Department of Agriculture and Marketing “review both existing and proposed laws to determine if they were compatible with farm operations,” and the department’s judgment was final.</p>	<ul style="list-style-type: none"> <li>• Buyers of rural land in Orange County were supposed to be notified at closing about the right to farm law.</li> <li>• State’s Department of Agriculture and Marketing developed and disseminated at least 11 publications that laid out what local government should and should not do when regulating agricultural operations (e.g., farm worker housing, nutrient management, and direct marketing activities).</li> </ul>
<b>Highly Scenic and Recreational</b>		
<b>Larimer County, CO</b>	<p>“An agricultural operation that employs methods or practices that are commonly or reasonably associated with agricultural production shall not be found to be a public or private nuisance as a result of any of the following activities or conditions,” including “change in ownership, employment of new technology, or change in type of agricultural product produced.”</p>	<p>The county’s right-to-farm ordinance had an explicit public educational purpose: “The [County] Board, with the primary assistance of the Colorado State University Cooperative Extension Larimer County Office and through the use of County Staff as needed, shall support efforts to educate and inform the public of the Right to Farm and Ranch Policy.” A copy of this policy was supposed to be distributed at time building permits were issued.</p>
<b>Fayette County, KY</b>	<p>No restrictions by local ordinance or nuisance findings when an operation “utilize[s] normal and accepted practices, . . . [because of] any changed conditions in or about the locality thereof after the</p>	<p>The “culture” of the rural area was reported farmer-friendly during our field work in 2005–6, in part because of the respect for, or admiration of, equine operations.</p>

	same has been in operation for more than one (1) year, when the operation was not a nuisance at the time the operation began.”	
<b>Palm Beach County, FL</b>	“The act generally provides that a farm that has been in operation for at least one year and that was not a nuisance at the time of its established date of operation shall not be a public or private nuisance if the farm operation conforms to generally accepted agricultural and management practices. . . . However, an existing farm operation may not expand to a more excessive operation with regard to noise, odor, dust, or fumes, if it is adjacent to an established homestead or business.”	

The state right-to-farm statutes focused on two general sources of constraints on farming: nuisance complaints filed by neighbors and local government ordinances designed to limit farms’ hours of operation, use of pesticides, building of greenhouses, and other practices. An explicit or implicit qualification for the protections offered by the statutes was that no farmer could expect help if he/she managed negligently or improperly. As indicated in Table 3.8, the legislation used such language as the farming must be “in a manner consistent with proper and accepted customs and standards as established and followed by similar operations in the same locality,” be using “methods or practices that are commonly or reasonably associated with agricultural production,” or be conforming to “generally accepted agricultural and management practices.”

For eight of our 14 states, the protections kicked in only if the allegedly harmful agricultural operation had been in existence one year or more before the complaint was lodged and was not a nuisance at the start of that time period. For farms or ranches in Ventura, DeKalb, Carroll, Berks, Fayette, and Palm Beach counties, the interval was just a year. For Dakota County, the qualifying time was two years, and for Sonoma it was three years (Table 3.8). Ohio’s statute had no specific time period, but it required that the farming activities in question preceded the plaintiff moving into the area or otherwise having an interest that could be affected by those activities. The Illinois statute suggests the rationale for a time requirement of one year or longer :

“No farm or any of its appurtenances shall be or become a private or public nuisance because of any changed conditions in the surrounding area occurring [like building a new home or whole subdivision] after the farm has been in operation for more than one year, when such farm was not a nuisance at the time it began operation.”

The implication is that justice calls for the property owners who caused the change—that is, nonfarmers moving into the farmed area—to bear any inconveniences. With the opposite time sequence—the farm operation (like a hog confinement facility) being established *after* the neighbors had moved in—the statute’s protections would not apply. A farm or ranch operating at least one year (or two or three) without being formally found to be a nuisance is “presumed not to be a nuisance”<sup>64</sup> just because new or old neighbors start to complain.

<sup>64</sup> “Rural Neighbors and the Right to Farm,” 2008, *Nolo*, <http://www.nolo.com/article.cfm/objectId/799F432A-9343-4EA0->

In the statutes of five states, farmers were promised additional (or any) protections, particularly from *restrictive local government ordinances*, if their land was enrolled in special geographic units for agriculture: an agricultural zoning district (Dakota County), an Agricultural Area (DeKalb County), Agricultural District (Madison and Orange counties), and Agricultural Security Area (Berks County) (see Table 3.8). The implied rationale was that local authorities should leave farmers and ranchers in these geographic areas largely free to farm since they, the authorities, had approved the areas for agricultural use.

What if the farming operation expanded or otherwise changed after the complainer moved to the area? We found three states' statutes that addressed this question. Colorado allowed changes like "employment of new technology, or change in type of agricultural product produced" as long as the practices were commonly used and accepted. The Wisconsin legislation was somewhat less generous, stipulating that the "farm may even expand the size of its buildings and herd size under the right-to-farm protection, but these changes may require local zoning or permits." The Florida statute was restrictive rather than protective: An "existing farm operation may not expand to a more excessive operation with regard to noise, odor, dust, or fumes, if it is adjacent to an established homestead or business."

**Survey Finding:** Figure 3.6 presents our 2006 survey's findings of what agland owners thought of the effectiveness of the right-to-farm legislation for their county. Specifically, they were asked: "How helpful has the law been in protecting farmers [or ranchers] against unfair nuisance complaints?" "Never heard of it"; "It's not helpful"; "Somewhat helpful"; "Moderately helpful"; "Very helpful"; "Not sure." In only six of the 15 studied counties (Sonoma, Lancaster, Carroll, Burlington, Orange, and Larimer) did 50% or more of the respondents select either "Moderately helpful" or "Very helpful." The highest combined percentage was Orange County's 58%. The lowest was 23% in King County, followed by 27% in Ventura County.

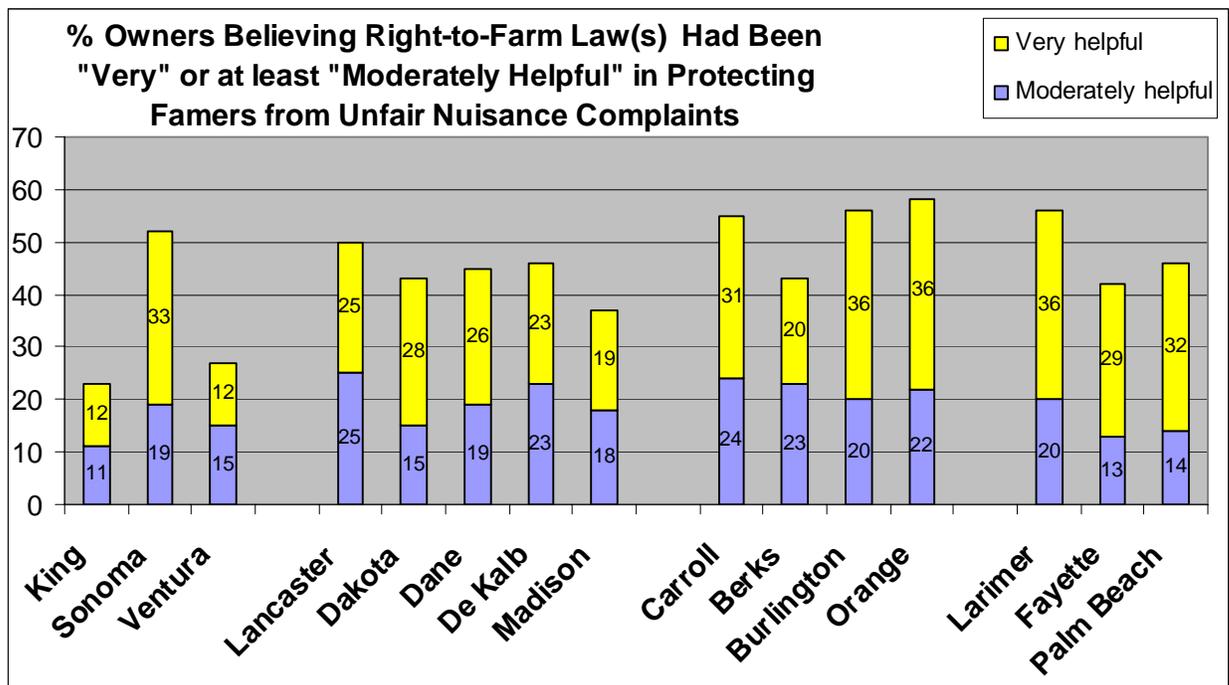
To find explanations for these differences across counties, we looked at the survey findings for three related questions: about owners' experiences with neighbor complaints in the previous five years, the respondents' evaluations of how their local governments handled controversies between farmers and nonfarmers, and also whether changes had been made in farming their land "because nonfarmers lived nearby" (see Figures 3.7 to 3.10).

To identify possible causal relationships, we used a statistical technique (logistic regression) that allowed the answers to all three related questions to be predictors, competing against one another and the farmers' reported gross sales and total number of acres owned. In the samples for seven counties (King, Sonoma, Lancaster, Dakota, Dane, Carroll, and Orange), owners who believed that local government was "even-handed" in farmer/nonfarmer conflicts were more likely to evaluate the right-to-farm

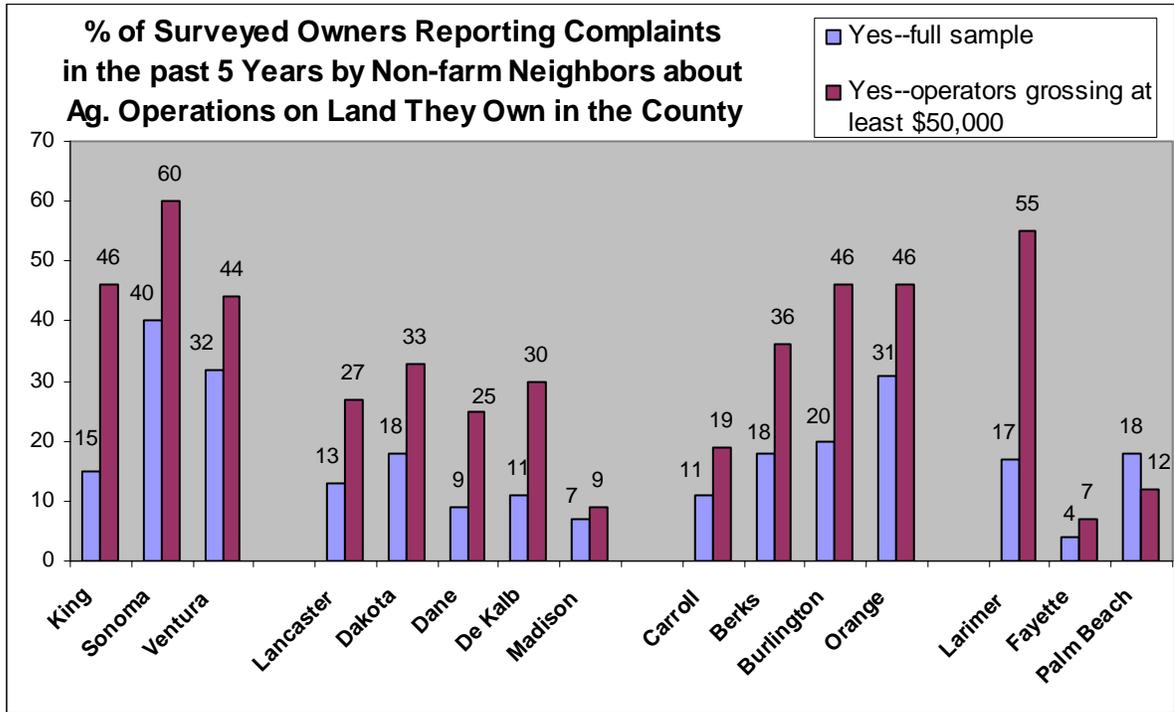
(RTF) legislation as effective. In only two counties (Dakota and Burlington) did receiving a complaint in the past five years increase the likelihood of a negative evaluation of the RTF statute. Also in just two cases (DeKalb and Carroll) did changes for the worse due to nonfarmer neighbors correlate with a negative opinion. Not surprisingly, it looks as though the perceived attitude toward local government behavior was the most important predictor.

As will be discussed in Chapter 5 (“Outlook for the Future”), answers to this same question about local government behavior correlated with agland owners’ attitudes toward the future of agriculture in 2025. Among the owners surveyed in six counties (Dakota, Dane, Berks, Carroll Fayette, and Palm Beach), the more positive they were about how their local authorities handled controversies, the more likely they were to be optimistic about the future. In four samples (those for Sonoma, DeKalb, Madison, and Larimer), the better the assessment of the local government’s record in such conflicts, the *less* likely owners expected any of their land to be developed in the next 10 years (other predictor conditions held constant).

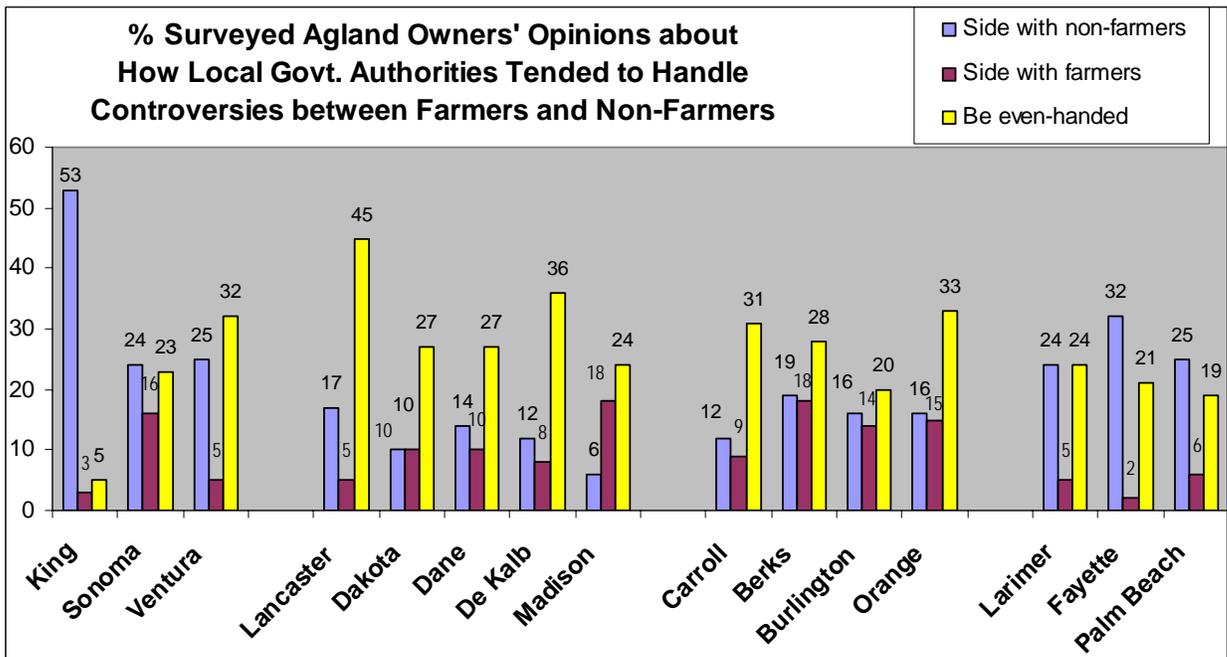
**Figure 3.6**



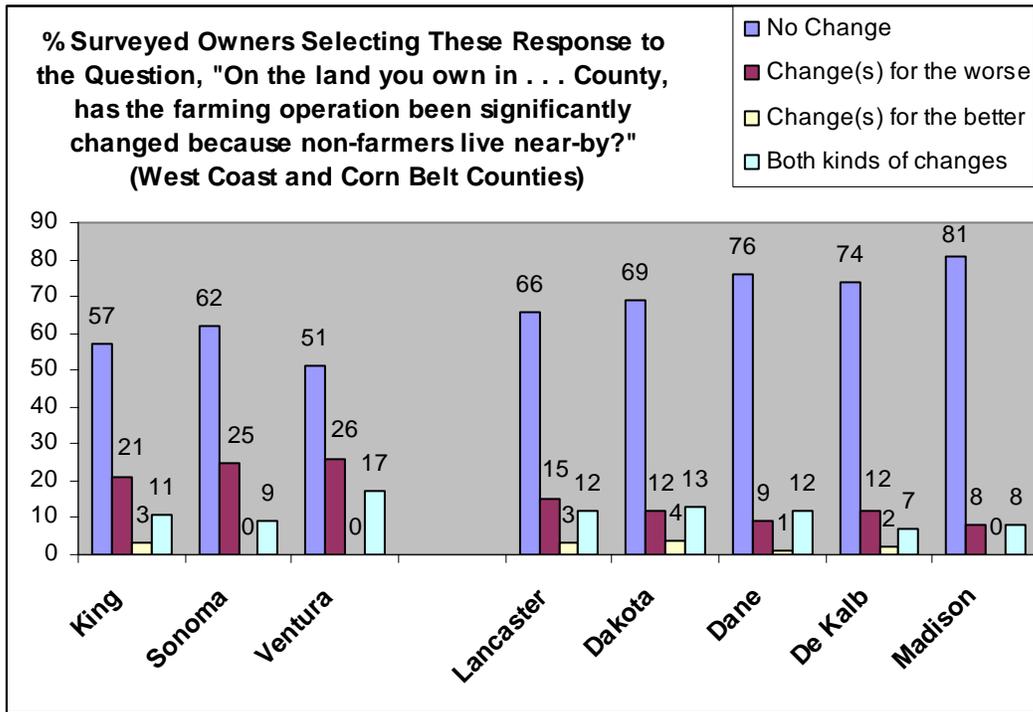
**Figure 3.7**



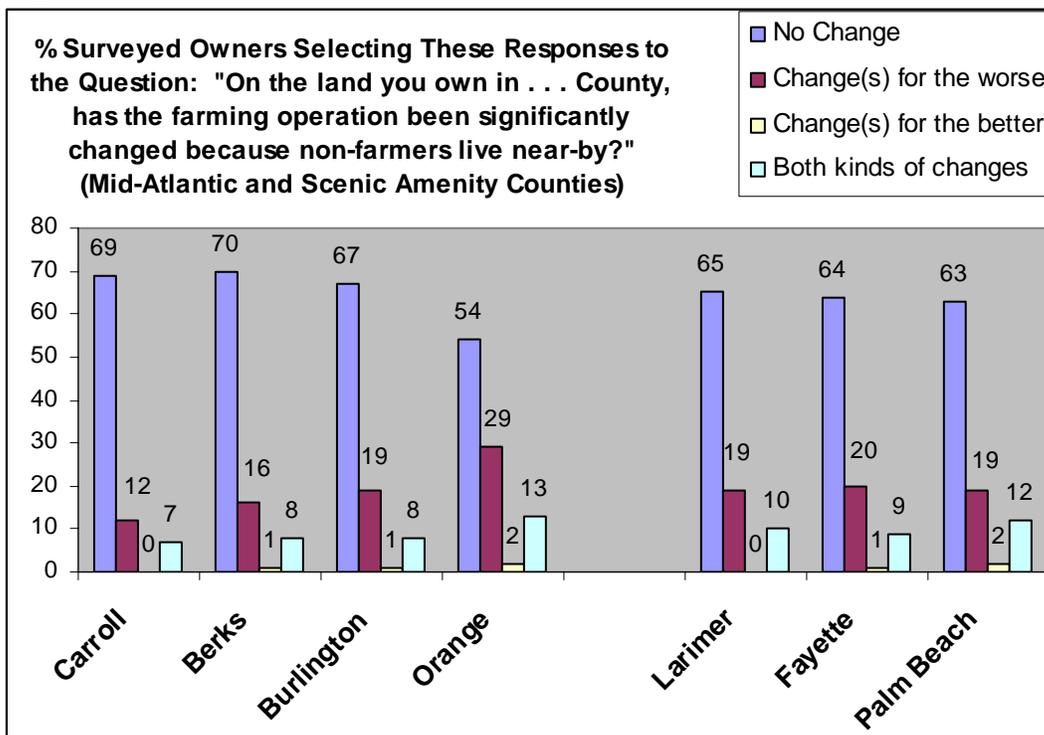
**Figure 3.8**



**Figure 3.9**



**Figure 3.10**



**Interview Findings:** In Figure 3.7 Fayette County had the smallest percentage of surveyed owners who reported complaints about farming operations on their land—just 4% of the full sample and 7% of those with operations grossing at least \$50,000. Three interviewed experts from that county explained the low incidence as due to the popularity of equine operations:

- “There is a great respect for farming, in particular horse farming.”
- “People understand the importance of the horse farms in this county [revenue generated, scenery enjoyed], and people do not complain much.”
- “There is not much trouble here. People do not complain. People seem to welcome the horse farms.”

By contrast, Sonoma County recorded the highest percentages of surveyed owners reporting complaints in the previous five years—40% of the full sample and 60% among operators with at least \$50,000 in sales (Figure 3.7). The interviews gave or suggested four reasons for these conflicts: (1) substantial numbers of residents living amid farms who have no agricultural background and therefore did not anticipate the consequences of normal farm operations like farm smells, dust, and chemicals; (2) a lot of land in crops that had to be sprayed; (3) growers’ failure to communicate with their nonfarmer neighbors; and (4) some farmers’ unwillingness to modify their operations to avoid conflicts:

- “The reality is that when people move out from the city . . . they want to live next to farmland because they basically consider it a park, an open space, someplace where they can go hiking and ride their horse. You would be amazed at how many people do not ask permission from the landowner.”
- “In Sebastopol [a town in Sonoma] a lot of orchards have been turned into vineyards, but there is also a lot of housing amongst that. We have had our times with neighbors. It’s a constant battle. If you have 100 people in Sonoma County maybe only two or one is a farmer. [Our] philosophy is get along with our neighbors. The way you do that is through communication. If we are going to spray, we try to give our neighbors at least two days’ notice. With e-mail, we can tell them tonight we’ll be spraying so tonight close your windows. We also try to give them wine or something once a year.”
- “You run into a people now with money and influence and egos. We have a lady in a house above us [up the hill who] has \$13 million invested in a house, just the house, 10,000 square feet, 15-foot doors throughout, seven bathrooms. . . . They do a lot of entertaining; that’s who you’re up against. They don’t like to drive by things that smell” [i.e., when he spreads livestock manure on his fields].
- “Some people who are anti-wine don’t like spray, even if it consists of natural or organic sulfur, which is 86% of what is sprayed in the county as a pesticide to combat molds. . . . If you’re out spraying water, you can get complaints; the people don’t know what you are doing.”
- “Some farmers modify their operations to avoid conflicts with neighbors, and some don’t. We [in local government] struggle with that.”

## **9. Needed—A Package of Land-Use Policy Tools?**

Table 3.9 presents the percentages of surveyed agland owners’ who were positive about each of four land-use tools used in their counties or proposed to be adopted: agricultural

protection zoning, purchase of development rights, agricultural use-value assessment for property taxes, and right-to-farm laws.

If, in search of a package of effective tools, we use the standard of at least 50% of the surveyed owners being positive, we find that all four tools qualified in just two studied counties: Sonoma and Burlington (Table 3.9). The three tools of PDR, use-value assessment, and right-to-farm laws met the 50% approval standard in Carroll, Orange, and Larimer, as well as Sonoma and Burlington counties. Another three-part package—zoning, PDR, and ag-value assessment—shows up in Dakota and DeKalb, plus Sonoma and Burlington counties. Then there is the two-tool combination of PDR and use-value in Dane, Madison, and Fayette, as well as Sonoma and Burlington counties. Another two-tool group—use-value and right-to-farm legislation—is found in Lancaster County. Ag-use assessment has the distinction of attracting 50% or greater support in 14 of the 15 counties, having the highest average of 68.5% of the respondents expressing support, and being a partner in *each* of the 12 combinations (Table 3.9). PDR ranks second, with 63.7% approval on average and belonging to 10 combinations. As suggested by these percentages, ag-use assessment and PDR are the most frequent partners—appearing together in Table 3.9 in bold type for 10 counties. The corresponding number for ag protection zoning is four counties, and for right-to-farm laws, six.

<b>Table 3.9: Percentages of Surveyed Agland Owners Who Were Positive<sup>65</sup> About Each of Four Land-Use Tools</b>				
<b>County</b>	<b>Ag Protection Zoning (%)</b>	<b>Purchase of Development Rights (%)</b>	<b>Ag Use-Value Assessment (%)</b>	<b>Right-to-Farm Laws (%)</b>
<b>Pacific Coast</b>				
<b>King County, WA (n = 103)</b>	35	<b>70</b>	44	22
<b>Sonoma County, CA (n = 108)</b>	<b>50</b>	<b>73</b>	<b>51</b>	<b>52</b>
<b>Ventura County, CA (n = 105)</b>	36	49 (no program but support its adoption)	<b>55</b>	28
<b>Corn Belt</b>				
<b>Lancaster County, NE</b>	27	47 (no program but support its adoption)	<b>60</b>	<b>50</b>
<b>Dakota County, MN (n = 136)</b>	<b>54</b>	<b>52</b>	<b>74</b>	43
<b>Dane County, WI (n = 174)</b>	46	<b>53</b>	<b>83</b>	45
<b>DeKalb County, IL (n = 171)</b>	<b>52</b>	<b>60</b> (no program but support its adoption)	<b>79</b>	46
<b>Madison County, OH (n = 107)</b>	45	<b>56</b> (no program but support its adoption)	<b>74</b>	36
<b>Mid-Atlantic</b>				
<b>Carroll County, MD (n = 140)</b>	25	<b>85</b>	<b>63</b>	<b>54</b>
<b>Berks County, PA (n = 123)</b>	28	49	<b>55</b>	43
<b>Burlington County, NJ (n = 140)</b>	<b>50</b>	<b>84</b>	<b>93</b>	<b>56</b>
<b>Orange County, NY (n = 133)</b>	38	<b>74</b>	<b>72</b>	<b>58</b>

<sup>65</sup> Definitions of positive evaluations: Ag protection zoning—“very helpful” or at least “moderately helpful” in “maintaining an adequate supply of land for farming”; PDR—“very strongly” or at least “strongly support” use of local revenues to purchase development rights to farmland in the county; ag use-value assessment—“very helpful” or at least “moderately helpful” in keeping property taxes on farmland “at acceptable levels”; and right-to-farm laws—“very helpful” or at least “moderately helpful” in protecting farmers against unfair nuisance complaints.”

<b>Highly Scenic and Recreational</b>				
<b>Larimer County, CO (n = 117)</b>	19	<b>64</b>	<b>80</b>	<b>56</b>
<b>Fayette County, KY (n = 100)</b>	47	<b>76</b>	<b>72</b>	42
<b>Palm Beach County, FL</b>	25	No program and no question about PDR	<b>73</b>	45
<b>Average</b>	36.8	<b>63.7</b>	<b>68.5</b>	45.1

The high regard for use-value assessment among agland owners makes sense in that, if it is administered well, they should benefit from it without incurring much if any sacrifice. In 14 of our 15 counties, majorities of 51% to 93% reported that it was “helpful” or “very helpful in keeping property taxes on farmland at acceptable levels” (Figure 3.5). PDR has rather strong appeal also, except that local sales, property, or other taxes may need to be increased to help pay for it. Majorities of 51% to 85% “supported its use in 11 of the counties” (Figure 3.4).

Agricultural protection zoning (APZ) is more problematic. It earned 50% or better support only in Sonoma, Dakota, and DeKalb counties (Figure 3.3). But as discussed earlier, they were among the counties with the strictest APZ. That policy tool may require agland owners to miss or defer selling their land at high prices. However, our interviews with local experts suggest that zoning can work well in certain contexts, including a county like Sonoma where a high-value crop (wine grapes) made agriculturally zoned land competitive with residential uses, and also where 50% of the sample evaluated it positively. Nearly a majority (47%) supported 40-acre ag zoning in Fayette County, where equine operations can be highly profitable, as well as offering beautiful home sites for owner-operators. Then interviews in Dakota and DeKalb counties suggested that many farmers trusted that development would eventually move toward them and that they were therefore content to farm (or have their heirs farm) until that time. In the meantime, they could take advantage of the counties’ good soils and operate in areas with few nonfarm neighbors to complain about their dust, smells, harvesting noise, etc.

## Chapter 4: Labor, Credit, and Other Inputs of Production Besides Land<sup>66</sup>

### 1. Introduction

Inputs of production besides land are also critical to the viability of agriculture in urbanizing metro-area counties. This chapter focuses on the adequacy of six types of inputs in the counties that we studied:

- labor for crop and livestock operations,
- new farmers to replace operators who died, retired, or relocated to other parts of the country,
- veterinarians for large animals,
- credit,
- manufactured or processed inputs (e.g., chemical fertilizers, pesticides, implements, and seeds), and
- water for irrigation and livestock.

As discussed in earlier chapters, our study focused on 2005 to 2007. The findings on input supplies gathered then may not be applicable to the time when readers get this report. However, they can check to see if the problems and/or solutions we found still prevail. Alternatively, there may be instructive contrasts between contemporary conditions and the earlier ones described in the report. Among the problem situations we found were that many farm operations depended heavily on undocumented foreign migrant labor, and there was considerable dissatisfaction with the federal government's program for legal "guest workers." Another, perhaps incipient, problem was that during the period of our research, operators in most of the studied counties faced a narrower choice of separate banks serving agriculture in their communities. Also possibly problematic was the heavy reliance on entrepreneurial talents provided by established local families; it was difficult for persons not belonging to them to become farm operators. Among the apparently successful problem solutions we found was that in the face of the closure of local outlets of equipment suppliers, farmers adjusted to new channels for securing essential spare parts—such as Internet sources that delivered via UPS and FedEx.

#### *Usage of 10 Types of Inputs among the Surveyed Agland Owners*

Table 4.1 has two main functions. First, it indicates the percentages of the total relevant respondents<sup>67</sup> per county who answered the questions about the adequacy of inputs. Figures 4.1 to 4.10 present only the opinions of those owners who reported using the subject input during the previous full production year (2005).

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<sup>66</sup> The principal author of this chapter is Dick Esseks.

<sup>67</sup> By "relevant," we mean a respondent who indicated that either he/she was "an operator of at least some of the land I own in [named] County" or that, though not an operator, "I have detailed information about how my land there is operated."

Second, in providing the percentage by county of users of each type of listed non-land input, the table permits comparisons for the same county across different types of inputs and across different counties for the same input. For example, 72% of the relevant respondents in King County (Washington) reported “family labor” working on their land during 2005 (Table 4.1). By comparison, 51% said “nonfamily labor” had been employed. Not surprisingly, the “family labor” percentages tended (in 12 of the 15 counties) to be higher than the nonfamily entries—from 4 percentage points (Orange County) to 34 points (Carroll County). The exceptions were the two California counties and Palm Beach County. Similarly, excluding King and Palm Beach counties seasonal laborers were more likely to be found in the studied operations compared to year-round workers—by differences of 2 percentage points (Burlington County) to 22 points (DeKalb County).

The differences across counties in the use of large-animal veterinary services could be explained mostly by the variation in percentages of owners who reported dairy cattle, beef cattle, and/or horses on their land (i.e., the higher the percentage of respondents with these “large animals,” the greater the percentage of total respondents using large-animal vets).<sup>68</sup> Other correlations were not as high, the closest being a positive relationship between using farm chemicals and patronizing implement dealers.<sup>69</sup>

**Table 4.1: Percentage of Surveyed Owner-Operators and “Knowledgeable” Non-operator Owners\* Reporting Use of Indicated Input of Production on Their Owned Amland in 2005**

County and Number of Respondents	Family Labor	Nonfamily Labor	Seasonal Labor	Year-round Labor	Large-Animal Veterinary Services	Credit from Banks and Other Sources	Farm Chemicals	Goods/Services from Implement Dealers	Goods/Services from Seed Dealers	Water for Livestock or Crop Irrigation
King (95)	72	51	23	28	68	27	56	73	59	76
Sonoma (100)	65	79	74	59	39	45	76	84	53	90
Ventura (96)	62	79	78	69	29	45	89	91	44	93
Lancaster (124)	72	52	40	21	49	54	84	82	82	60
Dakota (114)	83	61	45	31	61	76	87	94	92	75
Dane (133)	77	62	44	32	63	63	86	87	88	62
DeKalb (130)	81	66	52	30	42	75	89	89	92	40
Madison (84)	70	49	33	21	49	62	86	85	83	48
Carroll (87)	81	47	28	21	69	37	90	90	85	68
Berks (97)	79	47	28	22	57	35	77	81	81	55
Burlington (115)	75	51	34	32	41	35	67	81	71	59
Orange (114)	82	78	54	49	57	50	76	90	82	72
Larimer (103)	65	52	30	26	62	35	73	75	69	82
Fayette (94)	81	76	64	51	82	46	82	95	93	88
Palm Beach (100)	66	76	45	56	39	40	80	80	65	84
Average percentage	74.1	61.7	44.8	36.5	53.8	48.3	79.9	85.1	75.9	70.1
Median value	75	61	44	31	57	45	85	82	82	72

\*“Knowledgeable non-operator owners” are surveyed owners who answered “yes” to the response option, “I am not an operators of my land there [in the county], but I have detailed knowledge about how my farmland there is operated.”

<sup>68</sup> The Pearson correlation coefficient for these two variables is .862, which is statistically significant at the .000 level.

<sup>69</sup> The Pearson correlation coefficient is .732, significant at the .001 level.

Among the types of non-land inputs recorded in Table 4.1, the most commonly reported one used was implement dealers' services, with an average of 85.1%. Agricultural chemicals, seed dealers, family labor, and water for livestock or irrigation ranked second to fifth, respectively, with their averages of 79.9% to 70.1%. Not surprisingly, labor would rank much higher—first—if we aggregated all users of at least one of the four types of labor inputs listed in Table 4.1. The range would be 79% (King County) to 97% (Fayette County), and the average, 86.7%.<sup>70</sup>

“Credit from banks and other sources” sticks out for its relatively low percentage of users—48.3% on average. Only in the five Corn Belt counties (Lancaster, Dakota, Dane, DeKalb, and Madison) did more than half the respondents report using this input in 2005. According to our interviews with local experts, the explanation for credit's comparatively low usage level was that many operators were self-financing, employing either revenue from their agricultural operations or savings from their other occupations. In fact, among all our 664 surveyed operators for whom farming or ranching (or managing operations) was *not* their principal occupation, 38% reported using bank or other credit in 2005, while among the 573 whose chief occupation was agriculture, the corresponding percentage was 63%.

## **2. Human Inputs: Labor for Crop and Livestock Operations**

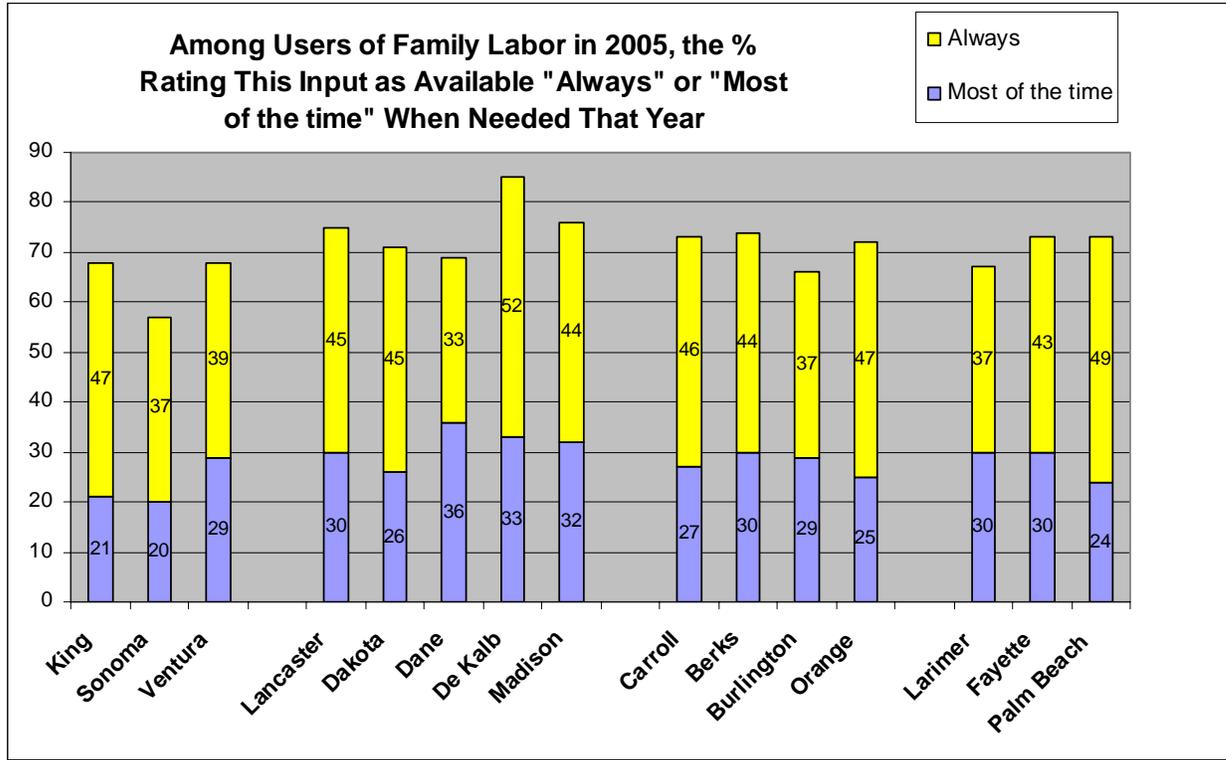
### ***Survey Findings***

The bar graphs in Figure 4.1 suggest that there was a largely sufficient supply of family labor (spouses, children, parents, grandparents) for 2005 in our studied counties. The specific question was: “In 2005, were you or the farmer(s) of your land in [named] County able to get the following production inputs when they were needed?” The “always” answers for family labor ranged from 33% (Dane County) to 52% (DeKalb County), with a median value of 44% (Table 4.2). With the exception of 57% in Sonoma County, the combined percentages for “always” and “most of the time” approached or exceeded two-thirds of the total users—from 66% (Burlington and Larimer counties) to 85% in DeKalb County. The median value was 71%.

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<sup>70</sup> The other 13 values for this aggregate “labor” variable are: Sonoma, 94%; Ventura, 95%; Lancaster, 82%; Dakota, 90%; Dane, 82%; DeKalb, 90%; Madison, 82%; Carroll, 86%; Berks, 83%; Burlington, 84%; Orange, 90%; Larimer, 78%; and Palm Beach, 89%.

**Figure 4.1**

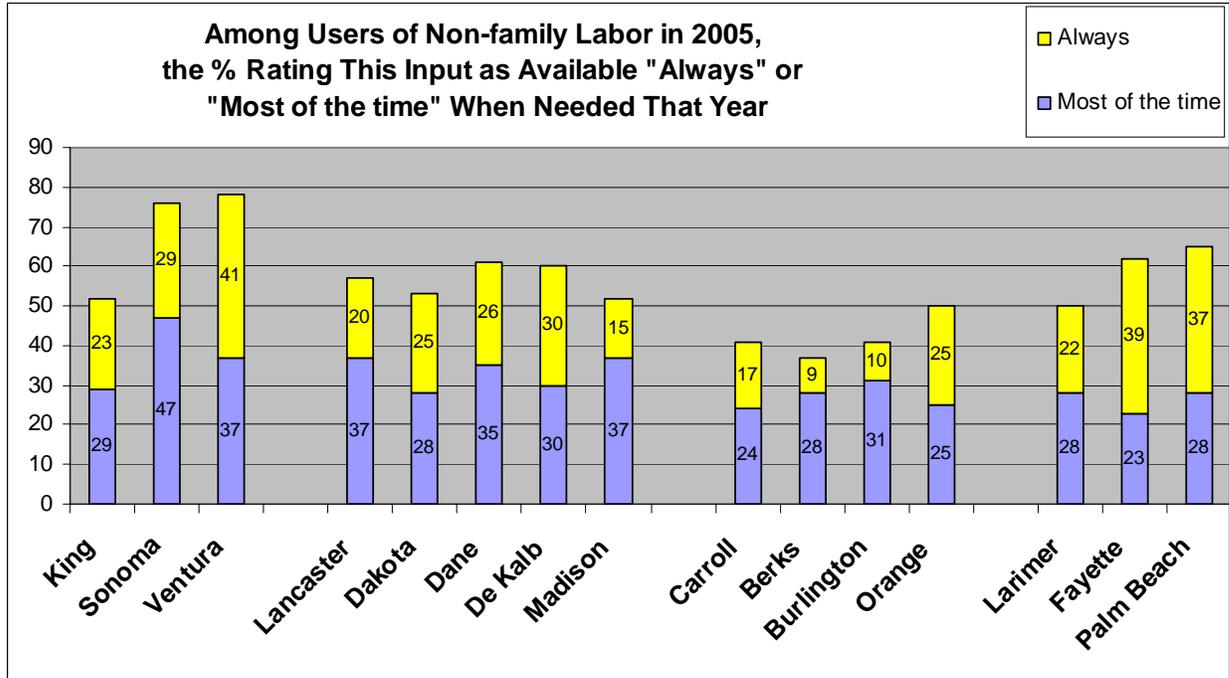


**Table 4.2: Percentages of Surveyed Users of Four Categories of Labor Inputs of Production (Family Labor, Nonfamily, Seasonal, and Year-Round) Reporting Their Ability in 2005 to Get the Input When Needed "Always" or at Least "Most of the Time"\***

Evaluation Category	Range (%)	Median Value	Number of Counties at the 50% or Better Mark	Number at the 66% or Better Mark
Family labor: Percentage available always	33 to 52	44	1 of 15	0 of 15
Family labor: Percentage always or most of the time	57 to 85	72	All 15	14 of 15
Nonfamily labor: Percentage always	9 to 41	25	0 of 15	0 of 15
Nonfamily labor: always or most of the time	37 to 78	53	12 of 15	2 of 15
Seasonal labor: Percentage always	8 to 37	26	0 of 15	0 of 15
Seasonal labor: Percentage always or most of the time	21 to 74	57	9 of 15	2 of 15
Year-round labor: Percentage always	16 to 64	43	3 of 15	0 of 16
Year-round labor: Percentage always or most of the time	59 to 90	67	All 15	10 of 15

\*Range, median value, and percentage of counties with a value of at least 50% and percentage with an entry of 66% or better.

**Figure 4.2**

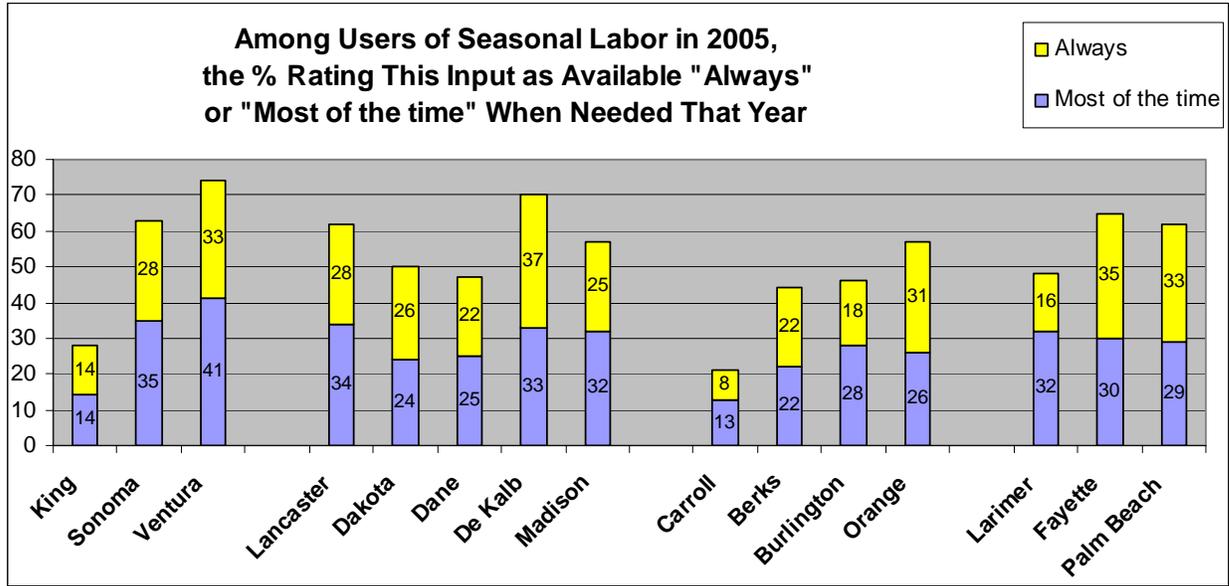


The survey’s findings for nonfamily labor were not nearly as positive (Figure 4.2). In just two of the 15 counties (Sonoma and Ventura) did as many as 66% of the surveyed users report that their needs were met “always” or “most of the time.” And the four Mid-Atlantic counties, plus Larimer, failed to have even majorities when the two ratings were added together. The “always” responses by themselves varied from only 9% (Berks County) to 41% (Ventura County), with the median being 25% rather than the 44% level for family labor. The combined percentages for “always” and “most of the time” ranged from 37% (Berks County) to 78% (Ventura County), with a median of 53%.

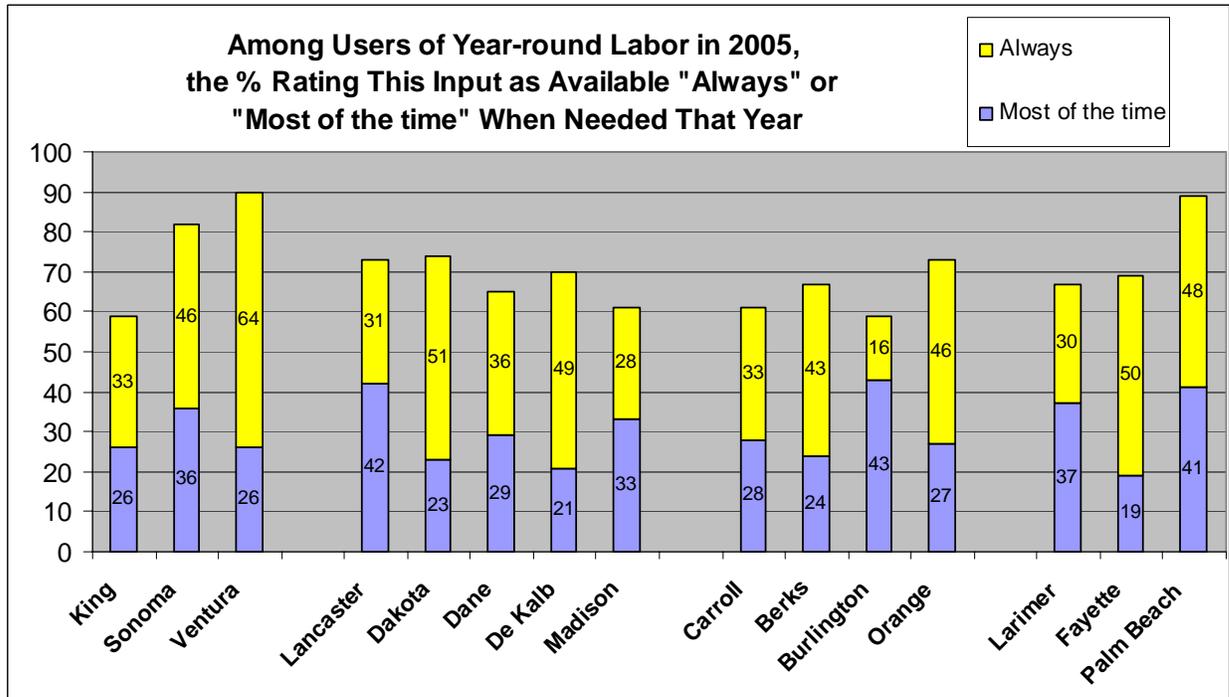
Figures 4.3 and 4.4 report the percentages of satisfied users *for seasonal* and *year-round* labor. Overlap is likely with the data for the previous two figures on family and nonfamily labor since workers could belong to one of those categories as well as having either seasonal or year-round employment status. Among the four figures, the third—about seasonal labor—shows the greatest range in the combined percentages—53 percentage points, from 21% in Carroll County to 74% for Ventura County. The “always” answers for seasonal labor ranged from just 8% in Carroll County to 37% for DeKalb County, with a 26% median (Table 4.2).

The year-round labor picture looked better. The lowest combined “always” and “most of the time” value was an impressive 59% (King and Burlington counties), while the highest reached 90% (Ventura County), and the median was 69%. The range for the “always” responses varied from 16% in the Burlington County sample to 64% in the Ventura County sample, with a median of 43%.

**Figure 4.3**



**Figure 4.4**



**Regression Analysis**

For the four types of labor inputs (as well as for the other seven types of inputs discussed in the chapter), regression analysis was used to identify predictors of operators' satisfaction with the adequacy of supplies. Among our hypothesized causal conditions were:

- gross sales and total land farmed (owned and rented),

- whether farming or ranching was the respondent’s principal occupation,
- operator’s age and number of years operator had been farming,
- whether the operator had a written succession plan to transfer ownership and management of the agricultural land,
- percentage of the operator’s total gross sales marketed through wholesale outlets,
- percentage marketed via direct outlets,
- number of “acres of farmland you owned in [named] County devoted to the following uses”: vegetables, fruits, landscaping products, grains, hay and other forage, and
- “approximately . . . the typical number of animals being raised there [on their owned land in the county in 2005]” from each of five categories of livestock: hogs and pigs, dairy cattle and calves, beef cattle and calves, poultry for meat or eggs, and horses.

Because the statistically significant predictors we found at the county level tended to be very small in their apparent causal functions,<sup>71</sup> we gave into the temptation to look for relationships in *the entire subsample* of surveyed owners who were operators, 1,237 respondents. The findings must be considered as only suggestive since that combined sample was not random. That is, although the owners selected for each of the 15 county samples were randomly chosen, the counties—themselves—were picked purposively (see the discussion in Section 5 of Chapter 1).

In the combined sample, the owner-operator’s level of gross sales was a significant predictor for all four types of labor inputs (Table 4.3). Farmer-users of those inputs were *more* likely to be satisfied (“+” before the variable name) if their gross sales were at least \$50,000 compared to users earning less (other things being equal). Perhaps the higher the sales, the greater the operator’s capacity to afford the wages and salaries needed to secure adequate supplies of those types of inputs.

Besides these regression findings at the level of all surveyed operator-users in our data set, we used chi-square analysis to test for significant differences in our individual county samples among farmers employing *seasonal labor*. In 12 of the 15 counties, proportionally more operators with at least \$50,000 in gross sales were satisfied with their supply of seasonal workers compared to users without that much revenue. In six counties the differences were statistically significant<sup>72</sup>—Ventura, Lancaster, Dakota, Burlington, Orange, and Fayette counties.

Regression analysis of the survey data found also that the more acres of owned land operators had planted to fruits and berries, the more likely they were to be satisfied with their nonfamily, seasonal, and year-round labor supplies. Again we tested for this relationship in our county samples. In all three of the counties with nontrivial numbers of growers of fruits (15 or more) in their samples (Sonoma, Ventura, and Burlington), the operators who had at least the median number of acres in fruits and who employed

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<sup>71</sup> With pseudo R-square values of only about .05.

<sup>72</sup> In chi-square tests at the .10 level.

seasonal workers were more likely to report satisfaction with that input than those with fewer or no fruit acres. It might have been easier to secure sufficient productive workers for fruit crops, such as wine grapes and other fruits that enjoyed high unit prices, because they could support attractive wages.<sup>73</sup>

In contrast, grains tended in 2005 not to earn well. However, our surveyed operators with relatively substantial acres planted to grains that year were more likely to be pleased with their supplies of family labor. One reason for this relationship may be that since grain production is normally not labor-intensive, it was relatively easier to meet labor needs. Fortunately, we had interviews with local experts to supplement these speculations about cause and effect.

<b>Table 4.3: Traits of the Farmer's or Rancher's Operations and Traits of the Operators Associated with a Higher (+) or Lower (-) Likelihood of Respondents' Satisfaction with the Supply of the Particular Production Input: Combined Sample from All 15 Counties</b>							
<b>Production Input</b>	<b>Sales or Acres</b>	<b>Principal Occupation or Education</b>	<b>Age or Years Farmed</b>	<b>Had a Successor or a Plan</b>	<b>Percentage Whole or Direct</b>	<b>Crops</b>	<b>Livestock</b>
Family labor	+ \$ of gross sales			+ Had a succession plan		+ Acres in grains	
Nonfamily labor	+ \$ of gross sales					+ Acres in fruits	+ Number of horses
Seasonal labor	+ \$ of gross sales				+ Percentage wholesale	+ Acres in fruit	
Year-round labor	+ \$ of gross sales				- Percentage direct	+ Acres in fruit	
Large-animal vets	None of these seven variables qualified as statistically significant for predicting satisfaction with the supply of large animal vets.						
Farm chemicals	+ \$ of gross sales		+ Years farmed		+ Percentage wholesale		
Credit			+ Years farmed			+ Acres in grains	
Implements			- Years old		+ Percentage wholesale	+ Acres in grains	
Seeds	+ \$ of gross sales		- Years old + Years farmed			+ Acres in grains	
Water	+ \$ of gross sales					+ Acres in grains	- Number of beef cattle

### ***Interview Findings Regarding Crop and Livestock Labor***

**Sources of Labor:** As with our interview data on all topics, we cannot claim that opinions gathered about the adequacy of production inputs are completely valid. Our

<sup>73</sup> For two examples, respondents with fruit growing on their owned land in Sonoma and Ventura counties were much more likely to be satisfied with the supplies of nonfamily labor in 2005 compared to surveyed owners without that type of crop (other predictor variables held constant).

samples are too small. However, where the interviewees agreed with the surveyed owners, we may well have “gotten it right.”

Virtually none of our interviewees complained about the supply of *family labor*, a set of findings congruent with our bar graph on that input (Figure 4.1). Across the 15 counties 72% was the median percentage of surveyed respondents reporting they could secure adequate help from family labor “always” or “most of the time” (Table 4.1). The interview data on *nonfamily labor* also matches rather well with Figures 4.2 and Table 4.2, indicating less satisfaction with input supply, with a median of 53% rather than 72%. Interviewed experts reported difficulty meeting the needs of dairy, vegetables, and other sectors requiring considerable hand labor. They frequently or mostly used immigrant labor. Local residents, as well as some migrants, tended to shun agricultural labor because they could earn more money in urban or suburban jobs and also thereby avoid farm dirt, odors, and working outdoors in bad weather. By contrast, grain operations tended to be easier to satisfy because of their typically high degree of mechanization and seasonality in labor demand (i.e., planting and harvesting).

Each one or group of quotations (under the same “bullet”) given here and in other topic subsections of this chapter comes from a different county. And the opinion presented in each bullet is shared—at least in general terms—by at least one other interviewee from the same county (whose quotation is either included there or omitted for lack of space). If a county’s informants disagreed significantly, we either present the opposing views or we present the one that had at least three-to-one support.

### **The Role of Migrant Workers, the Kinds of Products They Helped to Raise, and the Related Unwillingness of Local Residents to Do the Work:**

- “Part-time migrants do orchard pruning. Mexicans pick blueberries. High school kids won’t do that kind of work all day, and that’s what we need done.” But for grain farming, migrants did not seem as important: “Most grain farmers can do the work with a son or other relative. My son works with his son,” said a semi-retired grain farmer. (Burlington County)
- “Migrant labor is needed for weeding [and] harvesting by hand. Mixed vegetables and fruit rely on hand-harvesting. They work in packinghouses, and they generally don’t do a lot of equipment work.” “Most of our dairy farmers have some migrant workers; usually the bigger farmers who get them to be milkers.” (Orange County)
- “There has been a lot of immigrant labor coming in the county in the last 10 years, and it seems that there is enough labor supply due to the Mexican workers primarily. They are working in the horse farms, for tobacco and vegetable farms as well.” (Fayette County)
- “More and more livestock farms [in DeKalb County] are using . . . immigrant labor, and most of these livestock managers think this works out well.” Other sources from the same county said that grain farms did not need much labor except at planting and harvesting when “there is still an adequate supply of retired farmers who want to work in spring and fall.” The problem sectors were “more

labor intensive operations. Livestock and niche markets and landscaping are always looking for labor.”

- “Lemons are short of labor. Migrant workers are a must.” (Ventura County)
- “Labor is available. Of course, some of it is immigrant and a lot of milking is done by immigrants.” (Dakota County)
- “Field workers are a problem. Lots of need for immigrant workers,” although it “helps that the type of crops raised in this county [mostly grains] have low labor needs.” (Madison County)
- “Labor is a problem in [Larimer] County. This is because there is this tendency to produce more cucumbers and other vegetables. The small farm operations concentrate on vegetables, and this is more labor intensive.” A lot of migrant workers were used; but since Larimer County lacked sufficient affordable housing for them, they had to be bused in from outside the county.”
- “Locals won’t work now. Up until 14 or 15 years ago, I’d have four or five . . . boys come by the end of April or first part of May saying . . . ‘I’m finishing high school, and I’m looking for a summer job. Can we crew with you?’ That’s the labor I always used; no local guy has come by here in 10 years, asking me for a job.” (Sonoma County)
- “Large Hispanic population. A lot work on dairies and horse farms.” “Hired quite a few Mexicans, but compete with the construction people. When the boom was big, could not compete with \$15 an hour. . . . Most white guys won’t want to do the [field or livestock] work.” (King County)
- “Labor is very difficult, and it is impacting the fruit and vegetable folks. They do have migrant labor, but lately this labor pool finds they can do better on construction crews.” (Carroll County)
- The picture in Palm Beach County was mixed. While one expert told us that the supply of labor was “more than adequate,” two others had concerns: “Not too difficult, but there are some problems lately due to INS’s {Immigration and Naturalization Service’s} more stringent policies. This might become a problem in the future in case the rules are enforced more.” “With immigration reform not yet resolved, we faced continued labor shortages. We have seen oranges left on trees, tomatoes and sweet corn left in the fields and disked under because of this problem.” (Palm Beach County)

**Competition from Nonfarm Sectors:** Competition from nonfarm sectors increased the wages farmers had to pay. However, if that part of the local economy was not doing well, it released workers for farming.

- “Labor is tough in this area. Farmers that do have a hired hand have trouble because you can go into town and flip burgers for eight bucks [an hour].” (Ventura County)
- “It’s difficult to find good quality workers willing to work at reasonable rates. Now I pay nine to eleven dollars per hour. Most of the day workers want 15 and want to work only four to five hours a day.” (Sonoma County)
- “Farmers who are looking to hire must compete with [City of] Madison companies who offer vacation/insurance/retirement.” (Dane County)

- “Urbanization has its plusses and minuses. It provides a larger labor pool, but more competition means the need to pay higher wages.” (DeKalb County)
- One advantage of non-ag jobs nearby is to keep migrant workers busy between farm jobs. “We have a couple of cement and landscape companies that are quite large. So a few ag workers go over to that kind of business for a week or two.” (Carroll County)
- “[Agricultural] labor is expensive here because it competes with the urban market for labor.” However, the people “in the service industry are some of the first to be laid off, and so sometimes they find themselves milking cows.” (Dakota County)
- “There is competition with fast food chains. There’s been a large increase in the Hispanic population in a lot of the farm areas. Buy they are moving to fast food chains, getting in out of the weather and earning more money.” (Burlington County)
- “Labor is always a problem with our farmers, especially if young kids want to work at McDonald’s or a mall versus work in the hot sun, even though kids can get 10 bucks an hour [working on farms] if they’re worth it.” (Orange County)
- “The migrant workers (they are mainly from Mexico) prefer to work in construction. The pay rate is higher, and it is not seasonal.” (Larimer County)
- “For seasonal type of labor, the situation is more complicated. There are truckloads of people looking for work, but not all the time. After awhile they find jobs either with a bigger farmer (a more stable) or another job, and it can be a problem. However, I do not think that this is a big problem in Fayette County.” (Fayette County)

#### **Concern about Loss of Hispanic Labor:**

- “We definitely need those folks to help out in the fields. I do believe that some type of guest worker program is needed. . . . The California economy definitely depends on the immigrant work force. It’s getting harder and harder each year. Some of the dairies are having a really difficult time over the past couple of years.” (Sonoma County)
- “Labor is good for now, but the conservatives will ruin the sector if they don’t pass a guest worker program.” (Ventura County)
- “Immigrant reform is needed, such as for a guest worker program.” (DeKalb County)
- “Labor is a potential major problem. Some of the debate about immigrant issues [in the summer of 2006] is very disturbing because we can’t be here without our helpers. Not much I can do about that. If the worst-case scenario, we’d move on, but I don’t know in which way.” (Burlington County)
- An Orange County expert told us in 2005, “There should be no problem in supply of migrant labor in the foreseeable future in Orange County, unless somebody puts up a large fence at the Mexican border.” However, by October 2006, President Bush had “signed into law a bill providing for a 700-mile fence along the country’s southwestern borders.”<sup>74</sup>

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<sup>74</sup> David Stout, “Bush Signs Bill Ordering Fence on Mexican Border,” *New York Times*, October 26, 2006.

- “As long as the illegal immigrants are there, and the laws are not in place or not enforced, everything is fine.” (Fayette County)

These kinds of concerns may have been widespread in the country. USDA’s Economic Research Service (ERS) found that in 2006, nationwide, 43% of hired farmworkers were of Hispanic ethnicity and 95% of them were noncitizens (Kandel, 2008). From the National Agricultural Workers Survey, ERS learned that “roughly 50% of all hired crop farmers lacked authorized status” (Kandel, 2008, p. 12), that is, they were vulnerable to deportation.

**Enforcement of Immigration Laws:** Interviewed farmers in counties from both coasts testified to lenient or selective enforcement of federal immigration laws through at least 2006 or 2007.

- “If a new worker comes into the office and presents to me credentials that are on the list of acceptable credentials [Social Security card, U.S. passport, a state-issued ID] and they appear to be valid, I can employ him. . . . [T]he law says that I don’t have to look into that beyond the obvious appearance of the credentials looking invalid.” (Burlington County)
- “We’ve never had anybody [from enforcement] come by here. I’ve not heard of any other small operations being bothered. It’s mostly where there are big crews and a lot of labor contractors who do custom harvesting and that kind of thing. They do go around to some of the places where the day workers hang out. . . . I do fill out an employment form for every employee. It’s not clear that it has to be submitted. I don’t submit them.” (Sonoma County)
- “They have to show me their papers. Do I question them? No. I fill out the I-9 forms and withhold their taxes.”<sup>75</sup> (Orange County)
- “In 2007 [through at least October] we’ve been able to get the needed labor most of the time. Not too much of a problem. Because freezing weather ruined crops farther south, migrant laborers were up here looking for work. [Any raids by the federal government?] They are H-2A [legal guest workers]; mostly that’s what we use.” (Carroll County)
- Through at least July of 2007, “no raids [by enforcement officials]. I know businesses that have had that happen, but not any farms.” (Sonoma County)
- As of July 2007, “My clients who use migrant labor are concerned about the future, but got what they needed this season. There is a network out there. They get on the phone to get their workers. But there is a lot of fear. Here there were raids only on food service, hospitality, processing. Not farm operations.” (Berks County)

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<sup>75</sup>“All U.S. employers are responsible for completion and retention of Form I-9 for each individual they hire for employment in the United States. This includes citizens and noncitizens. On the form, the employer must verify the employment eligibility and identity documents presented by the employee and record the document information on the Form I-9. Acceptable documents are listed on the back of the form, and detailed below under “Special Instructions.” U.S. Citizenship and Immigration Services, <http://www.uscis.gov/figureics/formsfee/forms/i-9.htm> (accessed October 29, 2006).

### ***Problems with the Legal Guest Worker Program (H-2A)***

Interviews in two Mid-Atlantic counties and in Fayette County gave us insights into the legal channel for recruiting seasonal workers from abroad, the H-2A “Agricultural Guest Worker Program.” Among the problems described to us by local experts familiar with this program were the required pay levels, worker transportation and housing costs, burdensome paperwork, and uncertainty of supply.

- A knowledgeable state official told us, “None of the growers there [in Orange County] can afford it. Under H-2A they would have to pay the adverse-effect wage rate, which is about \$9.05 per hour. . . . [Instead] growers pay \$6.50 to \$7.00 an hour.”<sup>76</sup>
- “So much paperwork [that you] almost need one member of the family to take charge of that program and manage all the complications. And you need to transport the workers from their home country and back. If you value that person and want to keep them, you have to go through extraordinary measures to assure that they get back to their country of origin, and then they are allowed back next season.” (Berks County)
- “The farmers on the panel [convened by Cooperative Extension] were very clearly saying that the system doesn’t work. Lack of housing was a big part of it, [and they, the farmers] have to provide housing [for the guest workers]. . . . And from a zoning perspective you just can’t put worker housing on your farm. So from a housing perspective it was not workable.” (Larimer County)
- “I was on the phone consistently two or three weeks with my labor contractor who has connections in Mexico to get some guest workers to come here through the H-2A program. It resulted in my calling my congresswoman and her staff, my state senator and his staff. They had to call Immigration [and Naturalization Service] in the Boston region and try to pull my application and move it up and to make sure that things went well at the consulate in Mexico.” (Orange County)
- However, a farmer from Fayette County disagreed with the timeliness criticism. “I use the H-2A program, and it works like clockwork. I have them when I need the workers, and they’ve gotten better over the years.” We heard also that fruit farmers in Carroll County regularly use the program with apparent success, in part at least because they have the financial resources to meet the program’s standards such as for worker housing: “We mostly use H-2As. We have the biggest fruit producer in the state. . . . They grow all kinds of stuff and have all kinds of housing so that they can bring in a bunch of migrant workers.”

## **3. Human Inputs: New Farmers**

### ***Interview Findings***

When inquiring about the supplies of farmers of new operations and of farmers to replace those who were retiring or had died, we relied on interviews with local experts such as officers of USDA agencies, farmer organizations, and recommended specialists on farm labor. In the mailed questionnaire, we asked about owners’ succession plans and

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<sup>76</sup>The “adverse effect wage” is set by the U.S. Department of Labor to be high enough so that wages sought by citizen farm workers are not deflated due to lower wages that migrants are willing to accept and are paid. For example, in 2005 the “adverse effect wage” required of farmers hiring migrant workers under H-2A was \$9.05. For 2006 it was pegged at \$9.16 (Whittaker, 2006).

operators' successors (if any), topics that we cover in the report's final chapter, "Outlook for the Future."

In none of our 15 counties, except perhaps for Larimer, did these interview sources report a serious scarcity of replacement farmers. However, almost all the successors these sources mentioned were children or other relatives of the leaving farmers. Potential newcomers faced the usually formidable obstacle of farmland being too expensive to buy. The modest numbers of operators who established new farm businesses typically leased parcels or they bought small ones, doing either hobby farming or raising high-value crop or livestock products on their few acres. Some of these smaller new commercial farmers were immigrant agricultural workers who rented or managed someone else's land or, if successful with their savings, had bought land. We heard about "beginning farmers" receiving loans from USDA's Farm Service Agency (FSA) and assistance from FarmLink. The latter is a nonprofit organization active in California, Florida, Pennsylvania, New Jersey, New York, Washington, and other states where we had study counties.<sup>77</sup>

In at least some states, staff constraints limited the extent to which Cooperative Extension could help new farmers. We were told of one extension program in the northern New Jersey, but none functioning in the southern half of the state where Burlington County is located. Similarly, in the region of New York to which Orange County belonged, a well-informed source described a program that helped immigrants, "But otherwise [the efforts are] minimal. We're poorly equipped to handle new farmers. Cornell's FarmLink program for mentoring works better upstate" (rather than where Orange County is situated). Beginning farmers in Dane County had convenient access to the University of Wisconsin's School for Beginning Dairy and Livestock Farmers, which since 1995 has offered classroom instruction and on-farm internships. A survey of 74 graduates found that 34% of them reported having started their own farm businesses, and another 38% were planning to do so (University of Wisconsin, 2008).

Besides heirs and others who were genuinely new to being farm operators, a third group consisted of experienced farmers who were new *to the county*, but not to farming. They tended to relocate from other areas where farmland prices were higher. As discussed in Chapter 3, these transferees bought their land in a studied county using money gained from selling farmland they had owned in another county, probably closer to urban areas. They benefited from the federal Internal Revenue Code's Section 1031, which allowed them to avoid capital gains taxes if they used the sale's proceeds to purchase similar assets.

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<sup>77</sup> According to its FarmLink California's website, "Our mission is to build family farming and conserve farmland in California by linking aspiring and retiring farmers [through their Internet site, among other channels]; and promoting techniques and disseminating information that facilitate intergenerational farm transitions." For example, on July 25, 2008, California FarmLink listed 39 agricultural properties in Sonoma County from which aspiring farmers might find one or more that they could financially and technically be able to farm, including a "10 acre partnership near Santa Rosa for ranching" and "15 acres for lease from Petaluma Goat Dairy," [http://californiafarmlink.org/joomla/index.php?option=com\\_cmsrealty&Itemid=59&cmsrealty=user&county\\_or\[\]=Sonoma&action=searchresults](http://californiafarmlink.org/joomla/index.php?option=com_cmsrealty&Itemid=59&cmsrealty=user&county_or[]=Sonoma&action=searchresults).

### *Types and Quantities of New Farmers and What They Were Raising*

#### **Descendant Farmers:**

- “[There are] very few [younger farmers less than 40 years old]. . . . They must take over the family farm in greenhouse things. Some dairies succeed if passed down.” (King County)
- “There is a real low rate of new farmers because the land is too costly. They are raising whatever their family did, like avocados and citrus, except oranges are not doing well now.”<sup>78</sup> (Ventura County)
- “Yes, we have younger farmers: Lots of continuation of farms to the next generation.” (Dakota County)
- “No new farmers, except heirs.” “Not many of the newer types of producers.” “Don’t know of anything like [farmers] producing goat meat or cheese or ducks for emerging markets.” (Lancaster County)
- “Very few farmers under 40; rare—maybe 10 in the past five years—and those are generational . . . from tight-knit dairy families.” (Dane County)
- “Not too many entering farming; you need to be born into it. Nursery farms have some younger operators.” (Madison County)
- “Yes, we have younger farmers.” “You have to be a descendant really.” “Aside from the federal program [of the Farm Service Agency, to be discussed later in this chapter] that is designed to help a new farmer get his feet on the ground, no program to help. And even that program is not used much.” (Dane County)
- “Few new or younger farmers seem to be entering farming in Carroll County. Those that do are usually the next-generation farmer, able to inherit farmland from the parents.” “No ‘new couple’ types are coming in. The factor there is the availability and price of the land.” Heirs might have faced the difficulty of paying off either their parents for whom the farm was their retirement resource and/or co-heirs who chose not to farm or be financial partners. “The only way for new farmers to come in is for the farm kids to sell the [antidevelopment conservation] easements and use the money to pay Mom and Dad for the farm.” (Carroll County)
- “The most likely source was the existing farm family that already held considerable land, except some kids had left to farm in other states.” (Orange County)
- “Some sons come back to help with their family operation, but there are not many. They are sent by their families to get educated, and just very few come back.” (Larimer County)

#### **Specialty-Product Farmers or Managers:**

- “[There are] very few [operators new to farming] . . . probably 30 to 40 new farmers each year. Very small organic operations, cheese makers, and half of

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<sup>78</sup> Where, as in this case, a “bullet” has just one quotation, the reader should know that our interview notes contain at least one other quotation with the same general content from the same county.

- them fail.” “Most are doing vegetables, a few have specialty dairy (goats and cheeses), and some are in fruits.” (King County)
- “Some of these next-generation farmers [children of current operators] are starting their own niche markets, such as for organic vegetables, selling through a subscription plan” (rather than producing the traditional products like corn and hogs). (DeKalb County)
  - “From the standpoint of specialty commodities, agriculture has become so technical that you can’t go to your phone book and find farm managers for orchard crops or vegetables, as you can with wine grapes. You need to do it yourself. Over the past 15 years, the classes [at the community college] used to be full of students. Now we have a hard time filling those classes. Last time the specialty crops production class had eight students and we had to cancel it.” (Sonoma County)

#### **Relocating Farmers:**

- “Not many new farmers. The number seems to be limited to individuals that are going into business with family. With the high cost of equipment, land and cash rent limit the ability of an individual to get started.” Exceptions are those “coming into the area after their land has been bought in an area of a higher valued farmland.” (DeKalb County)

#### **People of Wealth:**

- “The wealthy come and buy small estates and play, raising grapes, vegetables, have some alpacas or emus, and try to grow some kiwis or put up a greenhouse.” (Carroll County)
- “There are no new farmers in the county in the traditional way. Just the hobby farmers.” “The only exception is represented by the fruit farmers—very intense production—fruits and vegetables. About 41% of the small farmers sell less than \$2,500.” (Larimer County)
- “There are hardly any new farmers in Fayette. This is what they call the ‘High Rent District.’” “The exception is horse farming.” “There are people coming from all over the world for horses and pay very well.” “There are Arab sheiks, influential people from Ireland, France, and other countries that own farms in Fayette.” (Fayette County)

#### **Origins of New Operators Who Were Not Descendants, the Rich, or Transplants:**

- “A lot of the new farmers taking over from retirees are *immigrant farmers*, like a Hispanic who had been working there.” “Many Hmong farmers are starting up by renting land of estate owners.” (King County)
- USDA’s Farm Service Agency has a loan program for beginning farmers. We were told, “One new farmer was given credit in the last two years, a Hmong doing 40 acres of vegetables.” (Dakota County)<sup>79</sup>

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<sup>79</sup> “To qualify for the Direct Farm Ownership Down Payment Loan Program, applicants must be beginning farmers and ranchers, provide a down payment of at least 10 percent of the purchase price, and meet all other direct farm ownership eligibility requirements.” USDA, *Farm Bill Forum: Comment, Summary and Background*, p. 2 of 5.

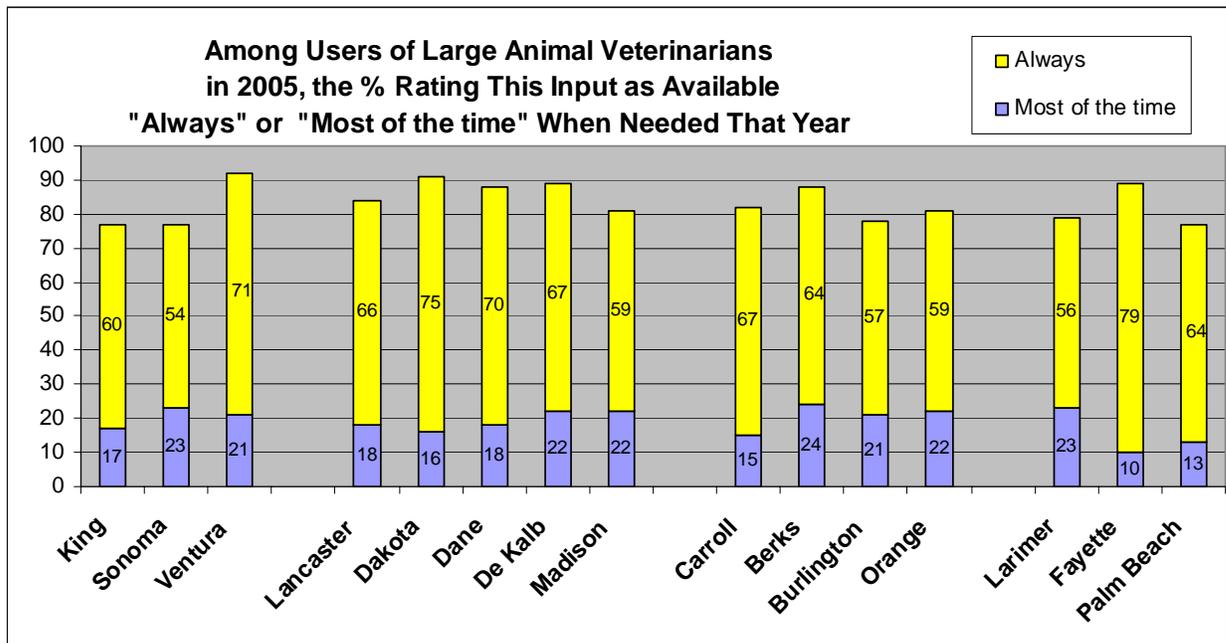
- Also there have been “*former corporate executives* trying to learn either how to grow the grapes on their expensive landscape or to be able to converse with managers they might hire. But most of the workers in this area are coming from the Hispanic population, and many of them are working their ways up to management roles.” (Sonoma County)
- “Most of the new or smaller equine farms are either the ones started by these *former farm managers or by rich people.*” (Fayette County)
- “Some are *Mexican farmers* going into strawberries, 10 to 20 acres. Some migrants are starting new operations.” (Ventura County)

#### 4. Human Inputs: Large-Animal Veterinarians

##### Survey Findings

Another kind of potentially critical human input of production is the large-animal veterinarian taking care of dairy cattle, beef cattle, and horses. Table 4.1 (above) shows that from 29% of our relevant survey sample in Ventura County to 82% in Fayette County used such services during the previous year. Figure 4.5 indicates that these users were generally very satisfied with the availability of the veterinarians. In all 15 counties, majorities—from 54% (Sonoma County) to 79% (Fayette County)—reported that the vets were “always” there when needed,” while from 74% (King and Sonoma counties) to 92% (Ventura County) found them available either “always” or “most of the time.”

Figure 4.5



##### Interview Findings

The interviewed experts tended to agree that large animal veterinarian services were adequate. However, in some counties we found vets’ traditional customers—cattle and dairy farmers—facing competition from horse operations, hobby farms, and/or pet owners. However, where these traditional patrons were declining in numbers, the newer

types of customers with large animals may help to keep up the supply of vets by compensating for the loss of the previous dominant types.

- “There are more veterinarians than there have ever been. This is due to the veterinarian program at CSU [Colorado State University in Fort Collins]. They study there, and then they get jobs there.” (Larimer County)
- “Vet schools are not turning out enough vets. The better majority of that class went to small-animal practices. Retaining them in the area is difficult because of the high cost of living, the outrageous price of homes, and the property tax. We just lost two vets.” “In 1979 we had 300 dairies. As we have fewer dairies, we lose services. Large-animal vets won’t get excited about coming to a county with 60 dairies.” (Orange County)
- “For horses, yes, there is a satisfactory supply. If you have other livestock, no. Bovine vets have to come in from other counties.” “We’re moving to hobby farmers, not a lot of services for other farmers. Because of urban development, the vets and service providers are spending less time with production-type livestock.” (King County)
- “Vets have to go toward small animals or a combo of small and large because this county has made the shift to no feedlots or finishing places, just small herds.” (Lancaster County)
- “Oh, yes, you’re able to get the services of large-animal vets because their bread and butter are all the horses for recreational purposes: dressage, quarter horses, and the leftover time can be applied to serving the about 80 dairies left.” (Sonoma County)
- “We are trying to do more and more of that stuff ourselves. I can’t do a DA [displaced abomasum, or “twisted stomach”], but I give all my own bottles and try to learn how to do pregnancy checks. You got to be on your own. . . . I go on the Internet everyday to an ag talk website, where guys write in with questions. . . . Everyone is honest. Even a guy from New Zealand answered questions.” (Orange County)

## 5. Bank and Other Credit

### *Survey Findings*

As discussed earlier, many surveyed operators did not use bank credit (Table 4.1). However, among the users, the adequacy ratings were rather high. The combined percentages of respondents finding needed credit available “always” or “most of the time” ranged from 63% in Burlington County to 98% in Lancaster County (Figure 4.6). The “always” percentages were at least 43% across the 15 counties, and the median “always” value was 50%. Of course, these evaluations were made in 2006, two years before the 2008 credit crisis.

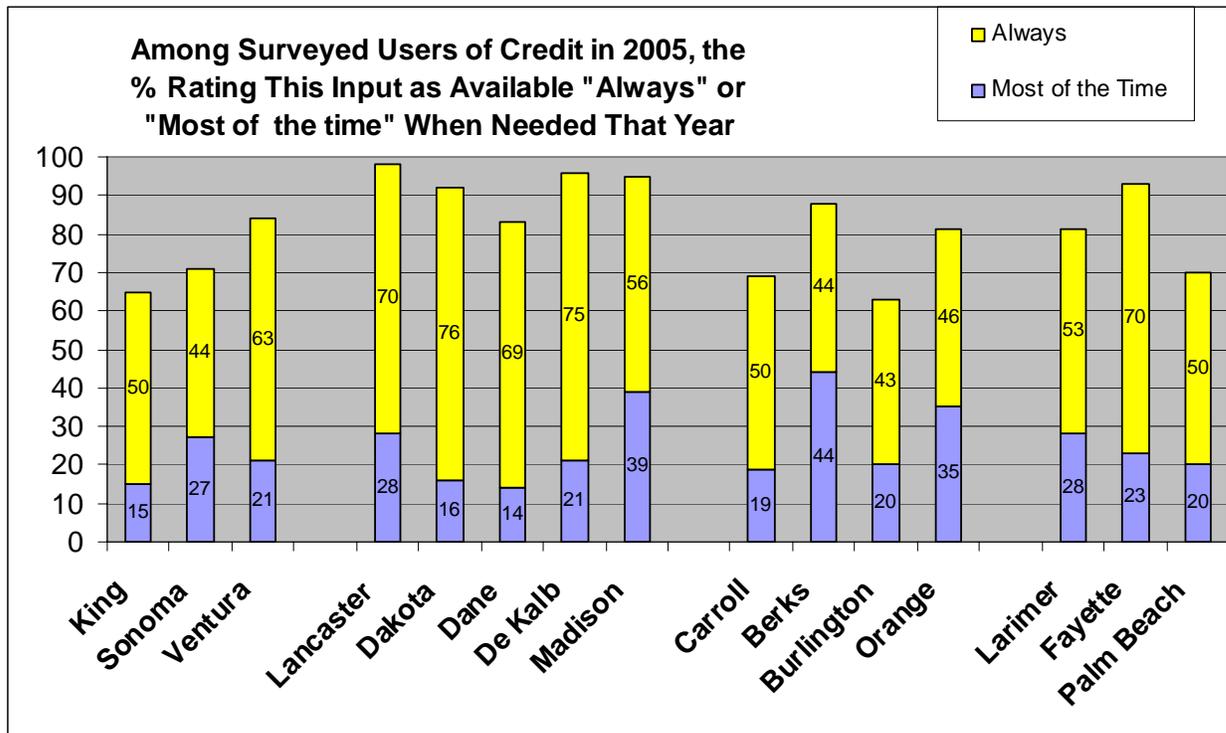
### *Interview Findings*

**Adequacy of Supply:** As with the pattern of responses gathered from the surveyed agland owners, in almost all the studied counties our interviewed experts were largely positive about the availability of credit for agriculture. One variant of this optimistic assessment was that many farmers could do without bank credit.

- “Credit is not a problem.” “Credit is okay as long as the farmer is credit worthy.” (Dane County)
- “Yes, satisfactory.” “Adequate, good farm banks.” “Yes, farmers have a satisfactory choice.” (Lancaster County)
- “We have quite a few banks willing to lend into Berks County. In comparison, places [closer to Philadelphia] like Montgomery and Bucks County struggle.” (Berks County)
- “Yes, there is enough credit available.” “This is not a problem.” “There is enough credit for farmers in the area.” (Fayette County)
- “Haven’t heard of problems.” “Very adequate for good farmers now.” (DeKalb County)
- “There is enough competition, and there is a good coverage —enough of the agricultural area.” “This [credit for agriculture] should not be a problem.” “Adequate; no problem here.” (Larimer County)
- “There is credit available. However, the farmers in the area are rich people, and they don’t need the credit.” “Most farmers don’t need operating capital. Sugar growers need some limited input capital, but nurseries don’t because they have recurring monthly cash flow” (rather than having to wait until harvest to receive sizable revenues). (Palm Beach County)

However, informants reported problems, especially a decline in the separate numbers of lenders; banks showing favoritism to the most profitable ag sectors; and difficulty in obtaining credit to purchase agricultural land.

**Figure 4.6**



**Loss of Credit Sources:**

- “Yes—very good, low interest rates and a wide choice. But comparatively worse than in past because community banks have backed away, and regional banks have also.” (Madison County)
- In a second county, although the evaluations were mostly upbeat, two interviewees complained about the withdrawal of commercial banks from agriculture, leaving just a few actors. One of the two explained, “The problem is that bigger commercial banks do not get involved in agriculture because of the high risk.” (Larimer County)
- The same concern was expressed more strongly in a third county: “It’s worse. Most banks consider that farming has become a high-risk business because income stays the same, but the costs go up. Hence, many banks stopped lending operating money.” (Fayette County)
- “We used to get a discount because of the competition [among banks]; now no competition.” “Only half as many banks. Or replaced with those not understanding agricultural borrowers.” (Lancaster County)
- “The financial community has less interest in agriculture. There are no more agriculturally oriented banks. Basically they went out from the county due to a declining agricultural sector there.” (Larimer County)

In all, informants in 10 of the 15 counties complained about a narrowed choice of banks and other credit sources.

**Bankers’ Preferences:**

- “There are the production credit loans that you can get. Those seem to be primarily for vineyards [the county’s most important type of farming] when they are first getting going.” “Outside the wine industry, who needs it [credit]?” (Sonoma County)
- “The thoroughbred [horse] is the major farm operation in Fayette County, and there is available credit for this because it is profitable.”

**Difficulty in Borrowing to Buy Land:**

- “Land is just too expensive for banks to loan money to farmers to buy land.” (King County)
- “Real estate keeps going up. Most people need a contract with a winery” (to assure enough revenue to cover the mortgage). (Sonoma County)
- A banker told us, “Climate and soils sustain production of very high-valued crops, but still they can’t compete with land’s prices for development.” (Ventura County)
- A realtor reported, “Land values are very high. They are way above its agriculture value. Therefore, when a farm goes on sale, there will not be any farmers that can buy. It will be sold for recreational purposes—for hunting, horses, and estates.” (Larimer County)
- “We can’t pay for land from farm profits.” (Lancaster County)
- “If a farmer wants to borrow money in order to start a new operation, it does not make any economic sense. This is because one cannot buy land priced at \$15,000

per acre and borrow money to start his operation, and expect enough return to cover all the costs and make a living also.” (Fayette County)

### ***Constraints Facing a Major Actor in Agricultural Banking (Farm Credit System)***

Representatives of a major source of credit to farm operators in our studied counties described a problem situation that they believed was serious. Serving each county was an affiliate of the Farm Credit System (FCS).<sup>80</sup> A 2006 report (Heuer, 2006) revealed that FCS banks played significant roles in at least six of our 15 counties (Table 4.4). Managers or directors of affiliates for five of those counties, as well as in two others not covered in Table 4.4, advocated a loosening of FCS regulations regarding loans to part-time farmers, defined as those with less than “50% of their assets and income from agriculture” (Monke, 2005, p. 3). For them, FCS could lend for all agricultural and family purposes, but was limited in its ability to lend for nonagricultural purposes. The interviewees sought greater freedom in lending because of the evolving nature of urban-edge agriculture, including the needs of young farmers:

- “For full-time farmers, we can do almost anything. For part-time farmers, we can finance the land and a house but not a restaurant . . . or any other agri-entertainment-type enterprise.”
- “Our core farmer is going in two directions: getting larger or going to part-time. As they go part-time, our lending is limited. To part-time farmers we can lend only for agricultural purposes. For full-timers we can finance nonagricultural purposes. . . . Diversification into nonagricultural business can support the agricultural function.”
- “Diversifying income sources combined with supplementing traditional ag income is the most important survival strategy for many farmers and ranchers. The trouble with meeting these needs is eligibility issues with our regulator, the Farm Credit Administration (FCA). [It] prevents us from following many of our customers into new ventures [such as] . . . a flower shop the spouse operates.”
- “For a young farmer in our six-county area to survive in agriculture nowadays, they need to branch into other enterprises so as to help stabilize their personal financial situation and keep their family in farming. This means that their non-ag assets may eventually become a larger percentage of their portfolio than ag assets.”

### ***Credit Opportunities for Smaller Farmers***

The responses we obtained when asking about credit opportunities for smaller farmers indicated considerable variation by county, including in some cases reports that banks shunned smaller and/or unconventional operations, news of banks actively cultivating small operations in other counties, and the advantages of being a second-career or part-time farmer when financing operations.

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<sup>80</sup> This banking system consists of “five regional banks that provide funds and support services to 96 smaller Agricultural Credit Associations (ACA), Federal Land Credit Associations (FLCA), and Production Credit Associations (PCA)” (Monke, 2005, p. 1).

<b>Table 4.4: Farm Credit System’s Reported Percentage of Shares of Real Estate and Operating Loans to Agricultural Sectors in Studied Counties, as of 2007*</b>		
<b>County</b>	<b>Real Estate Loans (Percentage)</b>	<b>Operating Loans (Percentage)</b>
Ventura	57	“About 20%”
Lancaster	60	15
Dane	60	60
Palm Beach	“Ninety% of my portfolio is real estate. We may have 70% market share.”	
Carroll	“Farm Credit has approximately 70% market share for agricultural credit because commercial banks have started to move away from ag lending.”	
Burlington	“First Pioneer believes it has 60% market share of commercial farm businesses in Southern New Jersey, but less than 50% in Burlington County itself.”	
Orange	“Roughly 20% of financing is done through private banking; 60% is done through First Pioneers Farm Credit. . . . The balance is funded through FSA [USDA’s Farm Service Agency], lender of last resort.”	

\*Percentages were reported by officers of the Agricultural Credit Associations serving that county (Heuer, 2006).

### **Some Lenders Shunned Smaller and/or Unconventional Operations:**

- Banks told a small farmer who leased that they couldn’t help him. “You don’t have enough backing, don’t have land or a house or anything to put up . . . although I got a loan to buy a car [which can be repossessed]. Same with the tractor company; they gave me a loan, zero down, but they can take it back. But we can’t borrow for supplies. This is where the CSA [community-supported agriculture, i.e., customers subscribe ahead to receive farm products during the harvest season] comes in. . . . One year when finances were getting bad, we borrowed some money from our CSA members. Borrowed almost ten thousand and paid them back in a discount on the subscription.” (Sonoma County)
- “It’s more difficult to get credit for new crops and livestock (goats, for example) because lenders are more familiar with established crops’ markets, estimating profits, etc.” (Madison County)
- “Traditional farmers have the advantage because bankers know their operations and are more comfortable in offering them loans. Bankers often don’t understand the operations of an organic farm and can be more hesitant to lend money.” (Dane County)
- “Small farmers are at a disadvantage if the lender is unfamiliar with the type of crop proposed to grow.” (DeKalb County)
- “[Banks] are not comfortable with lending for niche products—exotic birds, certain types of fish, ostriches—for lack of an established market.” (Palm Beach County)

### **Some Banks Cultivated the Smaller Customers, Including Part-Time Farmers:**

- “We are putting more resources into attracting small farmers—20 acres or so. It is a competitive market for these small farmers.” “It is a recent trend that my bank provides credit to smaller farmers. My bank has tailored credit programs to meet their needs.” “Traditional security markets are open to providing credit for hobby farming.” (Dane County)
- “We help the smaller farmers, especially the part-time farmers. We serve those as well because there are many. They might be more secure than the traditional

agriculture people because their primary source of income is not farming. They have other sources of income, and the hobby farm is just a lifestyle choice. They do quite a bit of that, and there is a lot of growth of the hobby farms.” (Larimer County)

- USDA’s Farm Service Agency had an office in each of the studied counties or in one adjoining it and offered credit on subsidized terms under its Beginning Farmers and Ranchers Loan Program.<sup>81</sup> Included were ownership down-payment loans, direct and guaranteed ownership loans, and direct and guaranteed operating loans. When FSA was guaranteeing rather than being the actual lender, the “maximum amounts of indebtedness” could be greater, such as (in 2008) \$949,000 for a guaranteed operating or ownership loan rather than \$300,000 if the farmer or rancher borrowed directly from FSA. The comments we obtained about FSA’s lending suggested an important role in some counties, but not much impact in others. In Dakota County we were told that only one new farmer had received credit under this program in the previous three years. And in Fayette County the program had few clients because, one observer believed, the eligibility conditions were too restrictive (e.g., no more than 10 years as an operator, owned a farm no greater than 30% of the median size for that county). However, in Madison County FSA was reportedly providing most of the credit for types of enterprises where small farmers are often found (direct marketing, processing, and agritourism). And in Larimer County it was lending to farmers with crop and livestock products new to the county (another area where smaller farmers frequently operate).
- The Farm Credit System also provided loans to young farmers and other typically small operations. Across the country in 2007 “the system’s associations made \$6.3 billion in new loans to young farmers, \$10.4 billion in new loans to beginning farmers, and \$13.0 billion in new loans to small farmers.”<sup>82</sup> We learned about small-farmer loan activity in our studied counties from our own interviews and through reading a 2006 report (Heuer, 2006).
  - The FCS branch office head for one of our counties said, “Small, part-time operations are the future. . . . We need to find these part-time farmers and new startups that are not in the traditional wholesale agricultural industries and present them with value.”
  - His counterpart in another studied county gave this positive assessment: His association “recognizes the credit issues facing young, beginning, and small farmers and created a special incentive program to assist young

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<sup>81</sup> “The Farm Service Agency (FSA) provides direct and guaranteed loans to beginning farmers and ranchers who are unable to obtain financing from commercial credit sources. Each fiscal year, the Agency targets a portion of its direct and guaranteed farm ownership (FO) and operating loan (OL) funds to beginning farmers and ranchers. A beginning farmer or rancher is an individual or entity who (1) has not operated a farm or ranch for more than 10 years; (2) meets the loan eligibility requirements of the program to which he/she is applying; (3) substantially participates in the operation; and, (4) for FO loan purposes, does not own a farm greater than 30 percent of the median size farm in the county.” USDA, Farm Service Agency, *Loan Programs: Beginning Farmers and Ranchers Loans: Overview*, <http://www.fsa.usda.gov/FSA/webapp?area=home&subject=fmlp&topic=bfl>.

<sup>82</sup> This information was e-mailed to us by a director of one of the associations in November 2008. He noted that there was some overlap among the three types of loans.

startup farmers. The program has lower fees, lower rates, and more flexible terms than loans of similar size to established farmers.”

- In a third county the smaller operations received the majority of the association’s loans: “Today, about 60% of our business is devoted to people that would be considered small part-time farms for the purposes of purchasing land to farm, to build a home on or any other credit needs. The percentage of our business devoted to a traditional ‘full-time’ large farmer would be less than 10%–15% of total business in this county.”

### **The Role of Nonfarm Income or Savings from It:**

- “Small farmers are at a disadvantage if the lender is unfamiliar with the type of crop proposed to be grown. Typically if there is nonfarm income support, it is no problem.” “If small, then maybe credit is not available. But typically, nonfarm income provides enough support to access this credit.” (DeKalb County)
- “The newer [typically small] farmers struggle without support. If you don’t have the history in agriculture, it is a roadblock to getting credit. And the capital needs are so high. Unless you have real estate or something, it is hard. Also, most of the startups fail in my experience. I made four loans in the last year, only one is there still, and they are fairly new. They don’t last long, either. We are typically looking for another source of money—support—when we fund a startup.” (Berks County)
- “Part-time farmers, unless they’re buying real estate, don’t need a lot of credit. They’re paying for it as they go. Get one tractor or a couple of greenhouses at a time. They have cash [from their other occupations] or get home equity loans.” (Burlington County)
- A supporting example came from a small farmer retired from his first career: “We are self-financing. I pay for things that I add. A lot of people are doing what I am doing and come to organic farming as a second career.” (Orange County)
- “The larger operations doing pure agriculture are having more difficulty than the smaller ones. This is because the smaller operations rely mostly on nonfarm income, and they are more stable this way. The repayment history proves to be better for people with nonfarm income.” (Fayette County)

## **6. Manufactured and Processed Inputs: Implements, Chemicals, and Seeds**

### ***Survey Findings***

Three of our survey questions about the adequacy of farm production inputs concerned:

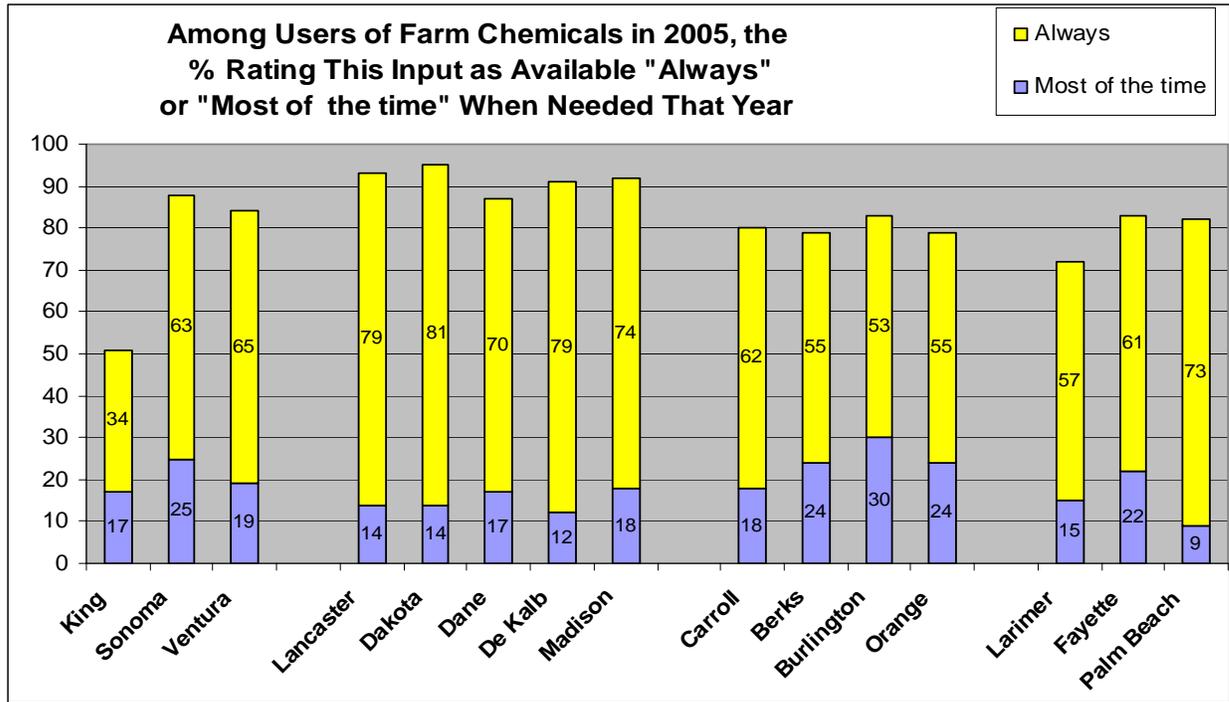
- “Farm chemicals (fertilizers and pesticides),”
- “Goods and services from implement dealers,” and
- “Goods and services from seed suppliers.”

<b>Table 4.5: Distribution of Percentages of Surveyed Users of Three Inputs of Production (Agricultural Chemicals, Implements, and Seeds) Reporting in 2005 Their Ability to Get the Input When Needed “Always” or Either “Always” or “Most of the Time”*</b>				
<b>Evaluation Category</b>	<b>Range (%)</b>	<b>Median Value</b>	<b>Number of Counties at the 66% or Better Mark</b>	<b>Number at the 75% or Better Mark</b>
Farm chemicals: Percentage “always available”	34 to 81	63	6 of 15	3 of 15
Farm chemicals: Percentage “always” or “most of the time”	51 to 95	83	14 of 15	13 of 15
Goods & services from implement dealers: Percentage “always available”	43 to 77	58	4 of 15	1 of 15
Implement dealers: Percentage “always” or “most of the time”	69 to 95	83	All 15	12 of 15
Goods & services from seed suppliers: Percentage “always”	45 to 86	66	7 of 15	2 of 15
Seed suppliers: Percentage “always” or “most of the time”	70 to 97	89	All 15	12 of 15

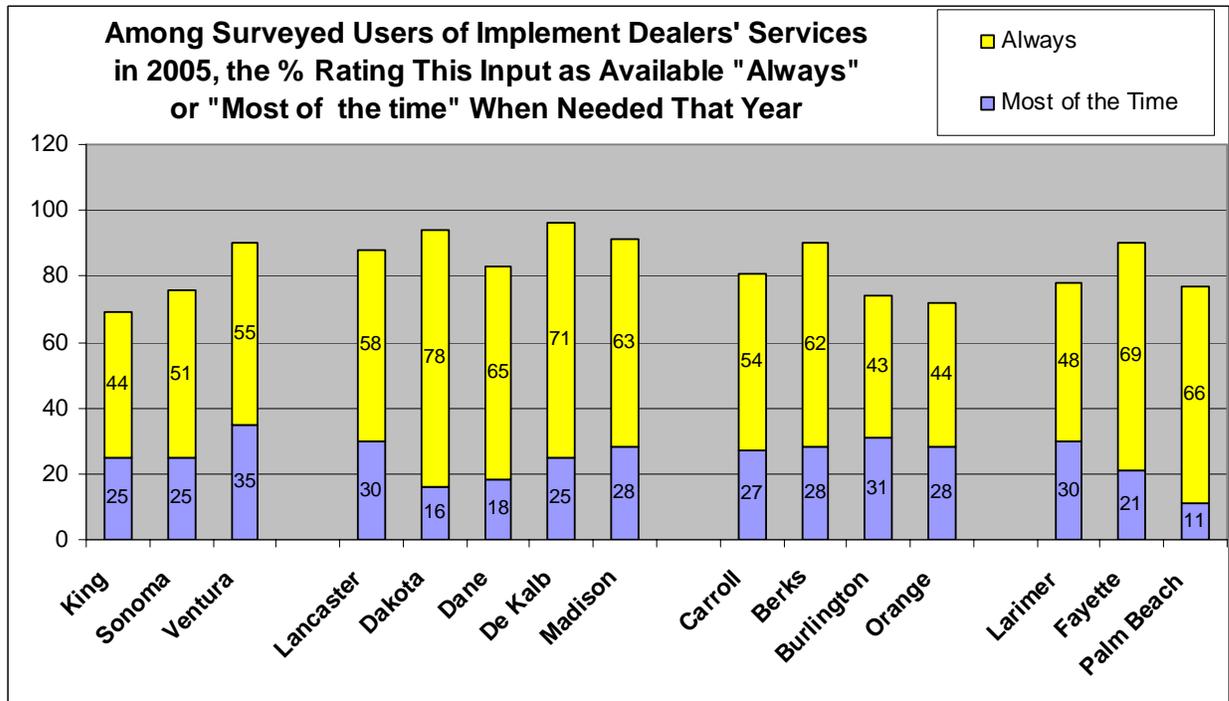
\*Range, median value, and percentage of counties with a value of at least 66% and percentage with at least an entry of 75%.

Table 4.5 and Figures 4.7 to 4.9 present the extent to which the input users in the samples (i.e., owner-operators and owners “with detailed information about how my farmland . . . is operated”) reported that their needs for these inputs had been met in 2005. In 13 of the 15 counties, 75% or more of the respondents indicated their needs for farm chemicals were met “always” or “most of the time” (Figure 4.7). If we lower the standard to 66%, the ratio is 14 of 15 counties (Table 4.4). “Goods and services from implement dealers” did a little better at the 66% mark—with all 15 counties qualifying. At the 75% standard there were 12 of 15 counties. The corresponding measure for “goods and services from seed dealers” was also 12 of 15. By comparison, in only two of the 15 counties did as many as 66% of the users report meeting their nonfamily labor needs “always” or “most of the time” (Table 4.2). And two out of 15 was the proportion also for seasonal labor.

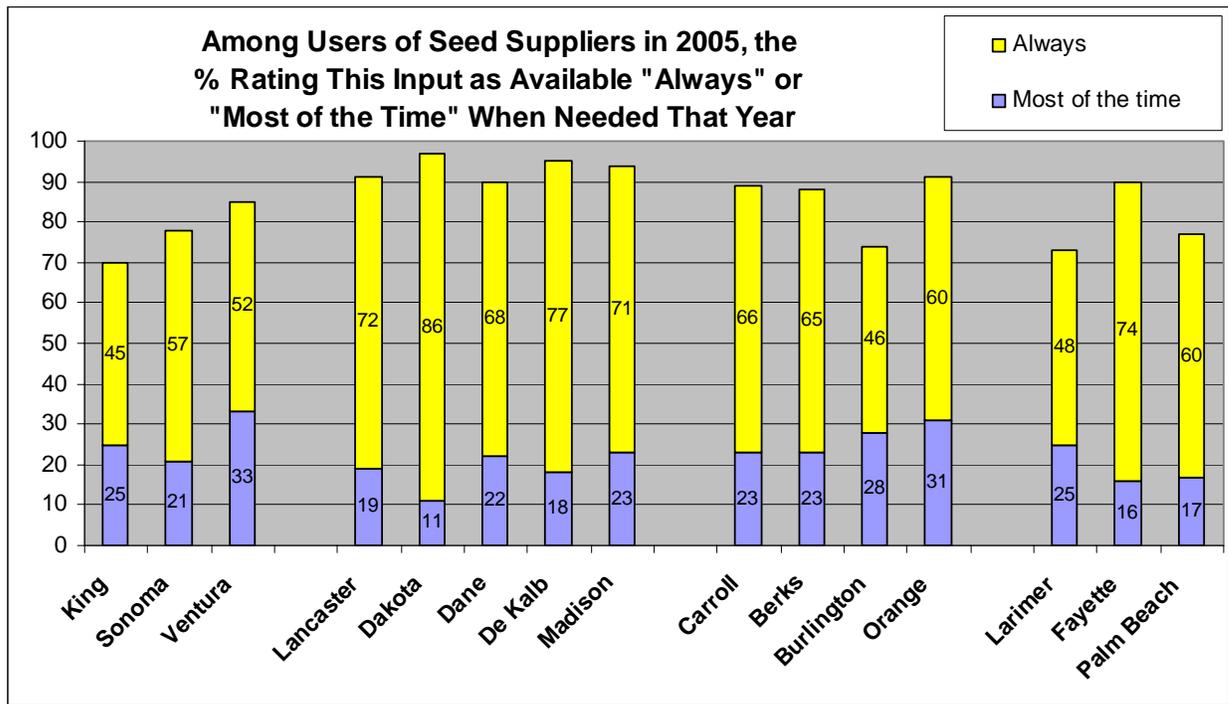
**Figure 4.7**



**Figure 4.8**



**Figure 4.9**



As these numbers indicate, just a few counties’ samples included substantial percentages of unsatisfied users of any of the three types of manufactured or processed inputs. King County ranked lowest in all three figures—with combined “always” and “most of the time” entries of 51% (chemicals), 69% (implement dealers), and 70% (seed dealers). Larimer County was second-lowest in two figures—for chemicals and seeds.

***Regression Findings***

As discussed at the beginning of this chapter, we applied regression analysis to identify likely causes of operators’ evaluations of the adequacy of production inputs. For chemicals and seeds, the analysis found that, the more years the respondents had been farmers or ranchers, the more likely they were to have their needs met at least “most of the time,” other things being equal (Table 4.3). For example, as many as 20 years of experience made a difference compared to respondents with fewer years. The underlying cause should *not* have been that more senior farmers had greater gross revenues; the analysis took into account differences in sales and found that years farmed still made significant, positive differences. With years of experience may come better contacts with suppliers and more knowledge about how to negotiate good terms of purchase and schedules for delivery.

For two kinds of inputs—implements and seeds—age made a difference. Other things being equal, older farmers—such as those at least 65 years old—were *less* likely to be satisfied with the supplies. Perhaps the older operators were less inclined to order supplies through the Internet, a source that several interviewed experts argued could offset the closure of nearby dealerships (see discussion below).

Gross sales were also significant predictors for two inputs. Other things being equal, operators with at least \$50,000 in sales were more much more likely to have their farm chemicals needs satisfied either “always” or “most of the time,” compared to respondents with lower gross revenues. The same relationship was found for seeds. Presumably, the larger producers tended to negotiate better purchase conditions or at least to command more attention from suppliers because their potential invoices were higher.

Another predictor was the operator’s extent of selling via wholesale outlets. The higher the operator’s percentage of total sales that was wholesale, the *more likely* the surveyed farmer was to be satisfied with their supplies of ag chemicals and seeds. Since wholesale buyers may also sell such farm inputs, they have a vested interest in seeing that their farmers are adequately supplied.

Also, the more acres in grains on the respondents’ owned land, the *more likely* they were to be pleased with services from implement and seed dealers. Since we took account of the relative importance of marketing outlets, the explanation for this relationship is probably not in the type of buyer. There may be something about grain production that lends itself to better supply conditions, such as the greater potential market because of the high number of producers. According to the 2002 Census of Agriculture (table 34), there were 348,590 farms producing corn for grain and 169,528, wheat, compared to 54,391 for all types of vegetables and 9,408 for potatoes.

### ***Interview Findings***

In our efforts to learn from interviews about manufactured and processed inputs of agricultural production, we were able to talk directly with local suppliers (as we did when speaking with local bankers about agricultural credit), as well as with other knowledgeable informants like extension educators and prominent farmers.

### **Overall Adequacy of Supply**

**By county:** As the quotations below indicate, the supplies of these three types of production inputs were considered generally adequate. The sufficiency varied with, among other factors, the profitability and number of farms/ranches in the area’s ag sector. For example, King County’s dairy sector was not prospering in 2005–2006, while—despite the urbanization—Sonoma County’s grape industry was.<sup>83</sup> And we received complaints about services available to King County’s dairy farmers, but not about Sonoma County’s vineyards. Similarly, revenues for Ventura County’s fruit sector were expanding,<sup>84</sup> and the support services for it were reported to be good.

While the counties with bigger ag sectors (e.g., Palm Beach, Sonoma, and Ventura counties) seemed to have no problems, a theme common for most of the others was a decline in the number of separate local dealers, with negative consequences in some

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<sup>83</sup> From 2003 to 2007 the market value of Sonoma’s wine grape production grew from \$313.1 million to \$416.5 million (Agricultural Commissioner, Sonoma County, 2008).

<sup>84</sup> Between 2003 and 2007, the value of Ventura’s fruit and nut crops increased from \$591.7 million to \$752.1 million (Agricultural Commissioner, Ventura County, 2008).

cases. Price benefits of competition were reduced, and farmers had to travel farther to purchase goods and interact with dealership staff, such as over repairs. However, as discussed later in this chapter, both suppliers and farmers took steps to adapt to the reality of fewer, geographically less accessible dealers.

- “No problems at all. Farmers have the world’s largest John Deere dealership.” “Dealers? No problems there. There is a big John Deere dealership and that is what I rely on.” (Palm Beach County)
- “Our service sector is good for the wine grape industry—whether it’s fuel, tractors, repairs, technical services, wine-barrel making.” A wholesaler for vegetables told us, “No problems I’ve heard about regarding the supply of seed or farm equipment or services. (Sonoma County)
- “There is plenty of support for strawberry and lemons. Everyone is getting what they need.” (Ventura County)
- “Fewer sources but no inadequacies.” “Services are as good as 10 years ago, [although there have been] some shift. Co-ops have bought out dealers, and there have been mergers.” (Madison County)
- “We have lost infrastructure. No slaughtering firms, no places for milk. Some support services are around, but competition is not there anymore.” “Machinery and equipment dealers are getting less and less.” “There are one or two chemical dealers.” (King County)
- “Yes, [there was a satisfactory supply of inputs] except for the fact that we are getting less competition among implement dealers. . . . Now there is beginning to be a shortage, so we are getting a monopoly.” “There isn’t a John Deere dealer in Lincoln; you lost that competitive edge. You used to be able to go around and shop on prices.” (Lancaster County)
- “Services are OK; no real problem.” “All inputs are available in Dane or in surrounding counties.” “[Choice of suppliers is] pretty much the same, just the number of dealers has decreased.” (Dane County)
- “The farmers would probably like a little more competition, but they get what they need [in agricultural chemicals].” “There are a lot fewer [chemical dealers than 10 years ago]. The more local, full-line dealers have consolidated. About four dealers have consolidated into two.” (Berks County)
- “Hard to think of an input not available locally.” “But with the continued elimination of implement dealers . . . the problem will be the locating of the input in a timely matter if it is needed at a critical time in the farming operation.” (DeKalb County)
- “We have one equipment dealer. Finches is the only one. But Hoobers [in Middletown, Delaware, about 100 miles away from the Carroll County seat], an International dealer, makes a Herculean effort to get over here and get combines and big tractors into here.” (Carroll County)
- “We’re OK with chemicals and fertilizers. They deliver to our farm.” “[If] the big suppliers don’t have them, you may have a problem. There are two suppliers. One is local. . . . The next alternative is two counties away. They’ll deliver, but not the next morning.” “There is not a single implement dealer in the county. But no problem because one John Deere dealer [from outside the county] delivers on

Tuesday, and the second one on Wednesday. And we have UPS overnight delivery.” (Burlington County)

- “Producers can get what they need. There are still dealers here with chemicals, sprays, seeds, fertilizer, lime, and implements.” (Orange County)
- “This is not a problem in the county. There are less equipment dealers than in the past, but yet there is no problem. The proximity of Larimer County to Jackson County (Walden area)—a big agricultural county—helps.” “Considering the whole area—Larimer, Boulder, and Weld—there is enough supply.”
- “Not a problem because they can just go to Scott or Woodford County. We are a small or rather urbanized county served by dealers in neighboring counties.” (Fayette County)

### **Repair Services**

Although parts and other equipment supplies can be obtained from distant dealers, repair services may be problematic. The following quotations suggest that urban-edge farmers may be required to do more of their own repair work. Alternatively, their pool of needs may be sufficient to keep independent mechanics in business. However, as found in Larimer County with Fort Collins and other very popular places to work, the urban employment opportunities may be so attractive that too few people are willing to do agricultural mechanical work.

- “Some of those companies that work on tractors, they also work on big trucks. So there’s some overlap with other types of users besides farmers.” (Sonoma County)
- “Repair is pretty good, even though there are no dealerships. But service is not worse.” “The supply is adequate; there are more small machinery dealers, [but] no large machinery dealers in county.” “Small repairs can be done by someone coming out and doing the repairs on-site; but if it is a major problem on a large piece of equipment, it is really costly because they have to load it onto a semi-trailer and take it to one of the dealers in the surrounding communities.” (Lancaster County)
- “Farmers do most of their own maintenance.” (Madison County)
- “Repair and maintenance needs to be done by yourself.” “Larger farms . . . push our ability to service smaller farms. But most large farms do it themselves.” (Madison County)
- “[In a county without a single implement dealer] we are fortunate to have two independent mechanics that we can get quickly, especially for [hay] balers. I couldn’t be in business in hay without them. You can’t wait two hours, if the baler is down.” “I have a mechanic who comes on weekends and after hours to work on my many tractors and vehicles.” “I have a semi-retired friend who can do a lot of repair work.” (Burlington County)
- “There are not enough qualified mechanics, or they just switched to work in a different industry, like construction, where they are better paid. The problem is that the training programs for qualified mechanics are tough” “It’s harder to find good people. They work in computer jobs [found in the county or in suburban Denver]. There are no young people that want to get into the industry. They want high tech stuff and higher salary.” (Larimer County)

### **Adequacy of Supply for Smaller Farmers**

The quotations given immediately below, and in the subsection farther below that, entitled “Adaptations by Suppliers,” suggest that in at least some counties dealers had already adjusted to the growth in smaller, part-time farmers. The selection of final products and parts for them seemed adequate. However, as in DeKalb County, small operators may have encountered higher unit costs (for lack of volume discounts) and longer waiting periods, as the dealers gave first priority to satisfying their larger buyers. Avoidance of these problems could occur, as in Larimer County, if the smaller farmers had collectively become the most important customers, or in King County, where equipment dealers offered models suitable for both urban users and the smaller farmers.

- “No, there are enough dealers for all sizes.” “There is not a big problem with the service providers. The inputs are there for everybody, regardless of the size.” (Fayette County)
- “No problem for the smaller farmers.” “The market is changing. The big farmers buy big equipment, the small farmers buy small equipment [that can also be sold to non-farmers living on acreages].” (Dane County)
- “No inadequacies of inputs. But economies of scale favor larger farmers [in] pricing and timing of access to some of these [inputs] like credit, favorable prices for fertilizers, etc.” “They [smaller farmers] can purchase the inputs, but may not get the ‘volume’ discounts or may not get as fast service to get the job done as a larger operator. . . . The larger operations demand and get better service as the dealer cannot afford to lose the bigger business as easily as he can afford to lose a small operator.” (DeKalb County)
- “No, actually, the smaller farmers might have fewer problems than the bigger ones because the dealers have already adapted.” “Small farmers get good service; they predominate.” “Very important. Yes, they will help us stay in the business.” (Larimer County)
- “No, not worse for smaller farmers. Maybe somewhat easier, since large equipment is not needed on the really small farms, and equipment dealers have switched to more urban scale implements and tractors.” (King County)

### **Adaptations by Farmers**

***Mail, phone, and Internet orders:*** The following quotations suggest that, when local, readily accessible dealerships close down, operators have found at least three alternative channels for obtaining needed inputs—mailed, phoned, and Internet-generated orders—besides driving the extra distance to dealers out of county. However, in two counties—Lancaster and Larimer—we picked up some dissatisfaction with Internet sales—farmers worrying about quality and regretting the absence of direct contact with service personnel.

- “We mail-order a lot of seed. . . . In King County, most farmers go out of county for large quantities.” “Some animal operators are buying some supplements and vaccinations online.”
- “There are no local seed producers. We order from out of state. The most reasonable prices are provided by a seed company in Ohio.” (Sonoma County)

- “Customers drive outside county, order over the Internet, or use secondhand materials, such as from NAPA Auto Parts.” (Madison County)
- “People feel more comfortable going online and going farther [to next county] to get what they need in equipment. Taking time away from the farm for this stuff was hard 25 years ago because there was so much livestock on the farm.” (Dakota County)
- “Implements are OK. If need be, [you can] phone outside the local area or use the Internet.” (Dane County)
- “I use the Internet. I get pretty much anything—seeds, seedlings. I do almost all my seed buying over the Internet.” “We do a lot of business over the cell phone right here in the shop. You get it in 24 hours if you call in by 10 AM. If you want a guarantee by 10 AM the next morning, you pay them an extra 12 dollars.” (Orange County)
- “A lot buy online. . . . We have very computer literate farmers, very adjusted to the use of technologies.” “Yes, many buy online or through a catalog.” (Sonoma County)
- “Some place orders online. Older farmer will usually leave it up to the son . . . to deal with the online computer work.” “Farmers are skeptical. There are stories of getting burned, and they are too old and don’t won’t to mess with computers.” “Farmers see Internet purchasing as risky, illegal for chemicals; they may get a can of junk.” (Lancaster County)
- “They would go to Weld County [just to the east of Larimer] or buy online.” “Yes, for chemicals they use the Internet, but the problem is that they do not get warranties or services.” (Larimer County)

***Farmers do their own repair and/or set up their own small supply services:***

- “Many farmers just try to do it themselves because there are no dealers left in the county. Diesel mechanics for implements are less, and mobile welders are less to none.” (Lancaster County)
- “They [the dealer] offer service clinics. They also offer training for small groups when they buy the same equipment. The clinics are designed to make them aware of everything the machine can do and safety. They also provide financial incentives to those who come to these meetings—usually discounts on parts.” (Dane County)
- “Most farmers do maintenance themselves, although dealers will come out to the farm.” (Madison County)
- “My husband . . . does 90% of the equipment repair. . . . We have two neighbors who help us out. It’s out of the question to send it to a dealership because of their high rates and lack of competence.” (Orange County)
- “Farmers do their own repairs. They kind of learn it. I teach them. Newer stuff is better, but it takes better technicians to work on it today. It’s all computerized; you need laptop computer to work on them. Never heard of a car or truck dealership going into this business [servicing agricultural equipment] as a sideline.” (Burlington County)
- “Mennonite farmers will set up a small dealership on their farm with chemicals and seeds. They are not equipped to deal with fertilizers.” (Berks County)

- “[Dealership] companies come back to me and say that there is not going to be any mainline equipment dealer [and therefore wanted him to be a local distributor]. I added shelves to my basement to stock . . . parts. I started to interact with farmers, and with word of mouth, customers came. And I could help them with my knowledge of farming.” (Orange County)

***Patronize dealers in adjoining or nearby counties:***

- “In Seward County [the first county to the west], there are three implement dealers: International, Allison, and John Deere.” (Lancaster County)
- The industry has changed a lot in the last 10 to 15 years. There used to be a John Deere dealer every 10 to 15 miles. Since then six Deere dealers have gone out of business, and the remaining dealers have absorbed their customers. Today their service trucks service farms that are as much as 50 miles away because they are the closest Deere dealer.” (Dane County)
- “Farmers may have to travel a bit, but within a decent distance.” (Carroll County)
- “[If an input is not available locally] farmers go to Weld County [a major agricultural county just to the east] or buy online.” (Larimer County)
- “Yes, there is no problem. The idea is that even if they are not in Fayette County the farmers can just go to Scott County [northwest] or to Bourbon [east] or Woodford County [west], and they can get what they need.”

**Adaptations by Suppliers**

By 2006 or 2007 some of the suppliers who survived urbanization and mergers had developed the sales staff and delivery capacity to serve multicounty (or regional) clientele, while others had stayed in the studied county, continuing to serve full-time farmers but staying financially healthy by serving the growing numbers of urban dwellers (who needed small tractors, lawn fertilizer, etc.) and/or the smaller, part-time operators.

- “Our market has changed; we used to be just three counties, but now we are selling to a much broader geographic trade area. The Internet is expanding [our] base of customers.” (DeKalb County)
- “The wine grape industry has an easier time because of the volume of business that they provide. But for some [agricultural] industries, it has decreased to the point that we have more regionally operated service businesses, such as in the livestock and dairy industry.” (Sonoma County)
- “Dealers have closed, but they have done some things like delivering parts. Now you can get online and check all your parts [in their catalog], and they will deliver them.” “There are drop-off boxes. You call in the order and drop off at the box, so the equipment is serviced out of other places. They have field crews with zones to work. There are also parts runners.” (Lancaster County)
- “The [relocating] companies do not want to lose their customers, and they try to adapt. Recently, they started developing a route system. They go in certain areas at certain times of the week or month, and they serve several farmers. They actually deliver at the door. They wait until several orders are done, and then they deliver.” (Fayette County)
- “Thousands of acres have been taken out of production and into development. This urbanization has changed my business. I sell many lawn and garden

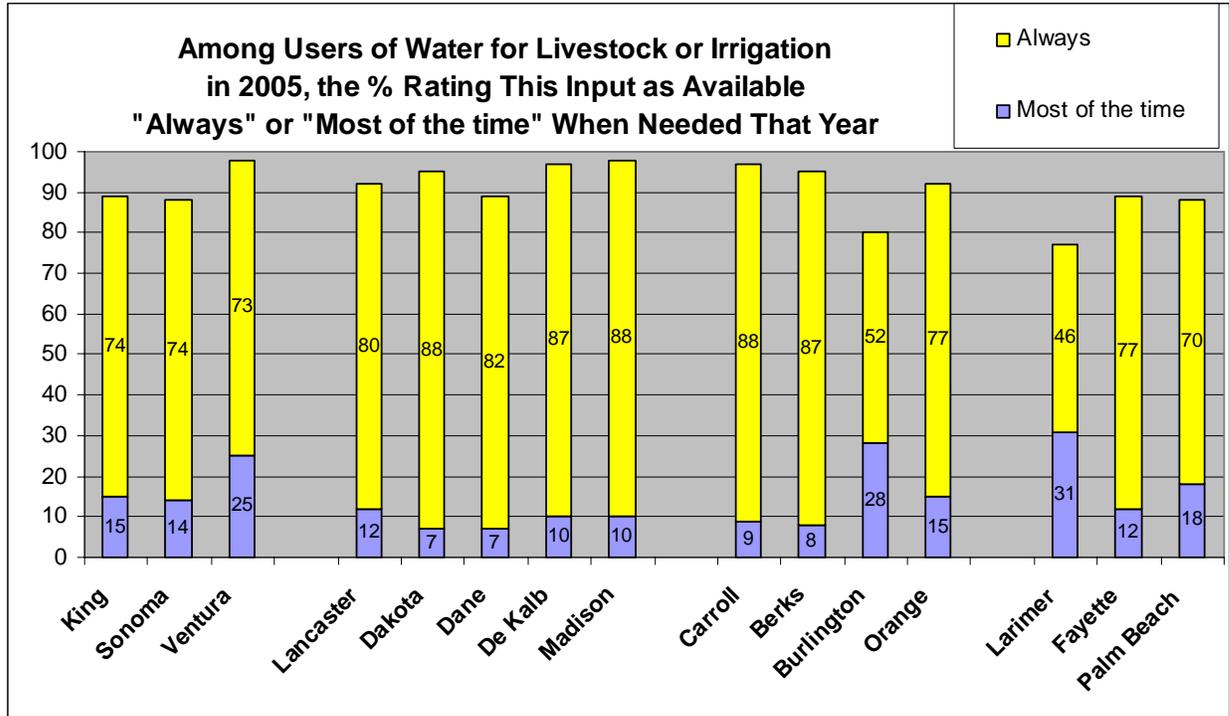
consumer products, large lawn tractors, etc. The lawn and garden customers are just as important as the farmers who buy bigger, more expensive equipment.” (Dane County)

- “If we served primarily the farming community, we would not be here long because farms are closing. We lose 10 to 15 farms every year and start only one or two every year. And the ones that start up last an average of two to three years.” (Orange County)
- “We used to be all ag business. Then, about 18 years ago, we opened another store only for gardening—small equipment suited for lawns and gardens and other supplies. However, about 10 years ago there were clear signs of urban development and as a consequence, we merged the two stores (the machinery with the gardening one) and moved to a new building. It is worthwhile to note that most of my profits come from gardening.” (Fayette County)
- “We have our own garden center. . . . I saw a real niche to serve landscapers—a lot of them. I put into play a procedure for them, a regular program for them [and] that end of the business has grown four times. . . . My main objective is to do all these extra things so that we can still be here for the farmers. If we had to depend on farm sales only, we would not be here.” (Burlington County)
- “Now we sell for the small producers, even gardening supplies. There are many people that produce, at small scale, sheep, pigs, and llamas, buffalo herds.” “Small operations—this is our business right now. We turned our focus on small operations in a three-state area five years ago.” “Now the trend is to sell smaller tractors because of the hobby farms/small acreage farmers. These people want the lifestyle, but they do not farm for a living. They come out and buy land, buy used tractors or even small new ones. They might be doctors or lawyers and just do a little farming in the weekend.” (Larimer County)
- See the subsection above, “Repair Services,” for such adaptations as installing drop boxes where equipment can be picked up, serviced, and returned.

## **7. Water for Livestock or Irrigation**

Figure 4.10 indicates that, for 2005, the supply of water for livestock and crop irrigation was considered to be good in almost every studied county. In nine counties at least 75% of the users reported having their water needs met “always,” while the combined percentage of “always” and “most of the time” ranged from 77% (Larimer County) to 98% (Sonoma and Madison counties), with that measure’s median value being 89% (Table 4.4).

**Figure 4.10**



The lowest entries of both levels of satisfaction measures were for Larimer and Burlington counties. In interviews for both counties we found the same concern: urban users were competing with farmers for a limited supply of water. In Larimer County it looked as though the nonfarmer users of water were clearly winning. In Burlington County there was the beginning of a rationing system that might protect an adequate share of the county's relatively shallow aquifer for agriculture

### *Adequacy of Supply in Larimer and Burlington Counties*

- “The land available for agriculture has diminished. The price of the land climbed so high, and the price of water as well. I consider actually the water problems even worse than the land issues.” “In 1970 for instance, we had 120,000 acres of irrigated agricultural land. Now, there are 70,000 or less [58,831 acres, according to the 2002 Census of Agriculture]. This is because in most years the cities have bought up more water and then leased some of this back to farmers. However, when there is a drought, then there is not much water available, and there are much less acres irrigated.” “When people buy small, broken-up farms, they almost never get water. Without the water there is no farm. This area has to be irrigated. The water is worth more than the land, and the water has to be tied to the land. They sell their water rights separately. Buyers can’t afford both. Even if they can, the [irrigation] ditches may not be able to get their water to them, because so much ‘upstream’ land is no longer farmed.” (Larimer County)
- “We are concerned about the supply of water for agriculture because we have a shallow aquifer. . . . [Urban users might cause] it to be overpumped and depress the water table in surrounding [agricultural] areas.” “In northern New Jersey, farmers are deprived of water they need because residential users claim it. I think that it will come to a head here.” (Burlington County)

### *Adjustments to Scarcity of Water*

**By farmers:** “If you own shares in the North Poudre [water] system, and your allocation is four acre feet. You’ll get it, but you may need more and won’t get it. Way back then, you might have had six feet. They [the farmers] may have changed their cropping sequence to adjust to the reduced availability of water—to have lower water demand crops during the dry years. Not plant as much corn and go to sorghum.” (Larimer County)

#### **By local government:**

- Sonoma’s county seat, Santa Rosa, developed a system of pipes to deliver treated wastewater to farms that irrigate: “Yeah, we’re fortunate because we have reclaimed wastewater from the City of Santa Rosa via an irrigation system that is networked. We’re able to use that. Also we have a high water table. They don’t have a groundwater ordinance in yet. But that will come. We’re fortunate.” “We already have subdivisions that are using recycled waste water for landscaping. The whole neighborhood is plumbed for that use of wastewater.” (Sonoma County)
- “Following the enactment of state authorizing legislation, the county designated in 2004 an agriculturally important, multi-township area in the northwestern part of the county as a “receiving area,” where farmers may qualify for higher [water] usage amounts. Outside that area, farmers should not be able to increase their withdrawals: “The allocation formula in this receiving area is: 40% for residential, 50% for agriculture, and 10% leeway.” (Burlington County)

### *Adaptations to Urbanization’s Tendency to Decrease Supplies of Inputs of Production*

In much of this chapter, we reported on the adaptations that farmers, suppliers, or (regarding water) local governments have made so that agriculture can receive adequate

inputs of production despite the competition from nonfarm users and other effects of urbanization. As shown in Figures 4.1 to 4.10, user satisfaction levels were generally high. Helping to sustain them have probably been adaptations, such as:

- Farmers complying only superficially with immigration regulations, and enforcement personnel not bothering to monitor individual farms, preferring to raid—if at all—businesses with large numbers of migrants in one location, like a meatpacking plant.<sup>85</sup>
- Some very profitable sectors, like wine grapes and thoroughbred horses, encouraging young people or experienced ag workers to acquire the skills to become farm *managers* (because they could not afford to buy the land to become owner-operators).
- Banks and other suppliers finding that there was considerable money to be made by providing for the needs of smaller farmers, including those part-timers whom interviewed agribusiness managers called “hobby farmers.”
- Smaller farmers using income or savings from their main occupations or former careers to finance much of their agricultural operations.
- Farmers funding their operations by borrowing on the basis of the rising value of their land for residential or estate use or by simply selling high-priced farm land in one location and moving their operation to an area with lower per-acre prices.
- Operators using mail, phone, and Internet orders to compensate for the loss of nearby dealerships.
- Suppliers adjusting to their sectors’ business consolidations and related diminished density of stores by increasing the number, geographic scope, and speed of delivery services.
- Farmers learning to do more of their own equipment and machinery repairs.
- Livestock farmers mastering diagnostic tests and other procedures to keep their animals healthy.
- Crop operators changing their crop mix (e.g., switching from corn to sorghum) to adapt to less reliable supplies of irrigation water.
- Local governments using their expenditure and regulatory powers to help farmers in their competition with urban users for water.

It seems plausible that most of these adjustments can continue to be helpful. A potentially very serious exception, however, is seasonal labor. As discussed early in this chapter, many vegetable, fruit, and livestock products need hand labor. For some of them, mechanical replacements are being worked on or, though developed, await broader farmer acceptance (Ferguson and others, no date; Goldfarb, 2008). But for considerable more time farm laborers’ inputs will likely remain essential. Political pressures are currently strong to curtail the inflow of undocumented workers. Needed is an effective guest worker program.

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<sup>85</sup> As of the end of our interviews in the 15 counties in 2006 or 2007, no raids by the U.S. Immigration and Customs Enforcement agency on farms in our counties were reported.

## Chapter 5: Outlook for the Future<sup>86</sup>

### 1. Introduction

This final chapter reports the findings gathered from both the agland owner surveys and the interviews with local ag leaders about the future viability of agriculture in the 15 counties. There is, however, a time sequence problem for which we have a partial solution. Our surveys started in January 2006 and ended by Thanksgiving of 2006. The interviewing was concentrated in 2005 and 2006, with some follow-up field visits and phone calls in 2007. However, during 2008 (through at least mid-November), urban-edge agriculture looked considerably different from 2005 to mid-2007.

In the first place, urban development pressures diminished. In the metro areas where our study counties are located, the median prices for single-family homes declined in 14 cases between the second quarter of 2007 and the second quarter of 2008, averaging 9.9% lower (Table 5.1). The two worst decreases were Ventura County's 29.5% and Palm Beach County's 19.3%. These losses in value followed increases between 2005 and 2006 in 13 of the counties and in nine cases between 2006 and 2007.

County	2005 (in thousands of dollars)	2006 (in thousands of dollars)	2007 (in thousands of dollars)	2nd quarter 2007 (in thousands of dollars)	2nd Quarter 2008 (in thousands of dollars)	Percentage difference between 2007 and 2008 2nd Quarters
King	316.8	361.2	386.9	395.3	380.5	-3.7%
Sonoma	715.7	752.8	805.4	846.8	684.9	-19.1%
Ventura	529.0	584.8	589.2	593.0	417.8	-29.5%
Lancaster	137.2	137.5	137.5	138.0	133.5	-3.3%
Dakota	234.8	232.3	225.2	227.1	210.8	-7.2%
Dane	218.3	223.2	226.5	223.5	227.4	1.7%
DeKalb	264.2	273.5	276.6	283.2	257.6	-9.0%
Madison	152.0	148.1	147.4	153.9	145.7	-5.3%
Carroll	265.3	279.9	286.1	293.7	280.5	-4.5%
Berks	136.6	143.2	154.7	157.8	153.6	-2.7%
Burlington	215.3	230.2	234.9	243.0	235.7	-3.0%
Orange	495.2	539.4	540.3	558.7	498.5	-10.8%
Larimer	247.1	249.5	245.4	255.2	225.2	-11.8%
Fayette	146.9	147.8	147.5	148.3	146.8	-1.0%
Palm Beach	363.9	371.2	365.5	384.4	310.1	-19.3%
Average percentage difference between 2nd quarter of 2007 and 2nd quarter of 2008						-8.2%

Source: National Association of Realtors

A second major difference consisted of marked changes in the market prices of agricultural commodities that were significant in many of the counties we studied.

<sup>86</sup> The principal author of this chapter is Dick Esseks.

Between July 2007 and July 2008 the National Agricultural Statistics Service’s price index for feed grains and hay rose by 82 points (Table 5.2). The corresponding increases for food grains (including wheat) was 73 points and for oil-bearing crops (such as soybeans), 118 points. However, by mid-November 2008 prices had dropped. Corn had declined from a high of above \$7.00 per bushel in June to below \$4.00 on November 14th. In the same time period soybeans fell from a high of almost \$16.00 per bushel to below \$9.00, while wheat dropped from above \$9.00 to close to \$7.00 (Minneapolis).<sup>87</sup>

Commodity	July 2007	July 2008	Change (points)
Feed grains and hay	154	236	+82
Food grains	173	246	+73
Commercial vegetables	126	148	+22
Fruits and nuts	146	151	+5
Oil-bearing crops	136	254	+118
Meat animals	120	126	+6
Dairy products	165	149	-16

\*Base period is 1990 to 1992.

Source: USDA, NASS, *Fact Finders for Agriculture: Agricultural Prices*, released July 31, 2008.

There were fluctuations also in the prices charged to farmers for inputs like fuel and fertilizers. The National Agricultural Statistics Service’s “Index of Prices Paid” by farmers rose 29 points between July 2007 and July 2008, while in the same period its “Index of Prices Received” by farmers increased by 22 points.<sup>88</sup> But then oil prices plummeted in the fall of 2008.

### ***Emphasis on Causal Relationships***

Given the depressed markets for housing and the fluctuations in input and ag product prices, we recognize that this chapter’s subject matter—information gathered mostly in 2005–2006 on the future plans of agland owner and farm operators and, also, local agricultural leaders’ predictions about the future—might be significantly different if collected now (the fall of 2008). Our best solution is to emphasize what the 2005–2006 data tell us about the conditions that *shaped* the plans and opinions. Some or many of those causal conditions should persist or return. For example, if concerns about shortages of seasonal labor or conflicts with nonfarm neighbors made a difference in 2005–2006, they could well be causal factors in 2008–2009 and years beyond.

### ***Main Questions***

This chapter addresses five causal-type questions about the future viability of farming in the studied metro-area counties:

1. Why did some surveyed owners expect to develop their farmland in the next 10 years whereas others did not?

<sup>87</sup> Prices for Minneapolis: USDA, Agricultural Marketing Service, “Daily National Grain Market Summary,” [http://www.ams.usda.gov/mnreports/sj\\_gr850.txt](http://www.ams.usda.gov/mnreports/sj_gr850.txt) (accessed November 14, 2008).

<sup>88</sup> USDA, NASS, *Fact Finders for Agriculture: Agricultural Prices*, <http://usda.mannlib.cornell.edu/usda/current/AgriPric/AgriPric-07-31-2008.pdf> (accessed August 7, 2008).

2. Why did some owners expect that their land would have new agricultural investments over the next five years (i.e., by 2011), such as in farm buildings, and some owners did not?
3. Why did some farm operators among the surveyed owners plan to stay farming in the studied counties for at least 10 years and others expected to quit or leave? Our analysis “controls” for the obvious causal factor of age.
4. Why did some surveyed owners and interviewed agricultural leaders have positive expectations about the future of agriculture in the county while many of their peers did not?
5. Why did some ag leaders recommend that hardworking young people with an agricultural background stay in the county to farm, but other leaders urged a different career path?

Among the conditions that we found to be likely causes of the relevant plans and opinions were:

- the subjects’ assessments of the adequacy of inputs of production (e.g., land, labor, water) and of marketing outlets;
- the kinds of agricultural products being raised on the surveyed owners’ farmland;
- whether they had sons, daughters, or grandchildren lined up to be successor farmers;
- their own experiences with, or opinions about, farmer-neighbor conflicts in the county; and
- evaluations (by the survey participants and the interviewees) of the effectiveness of zoning to protect farmland, of purchase of development rights programs, agricultural use-value assessment for property taxes, and right-to-farm laws.

## **2. Surveyed Owners’ Expectations about How Much of Their Farmland Would Be Developed in 10 Years (2016)**

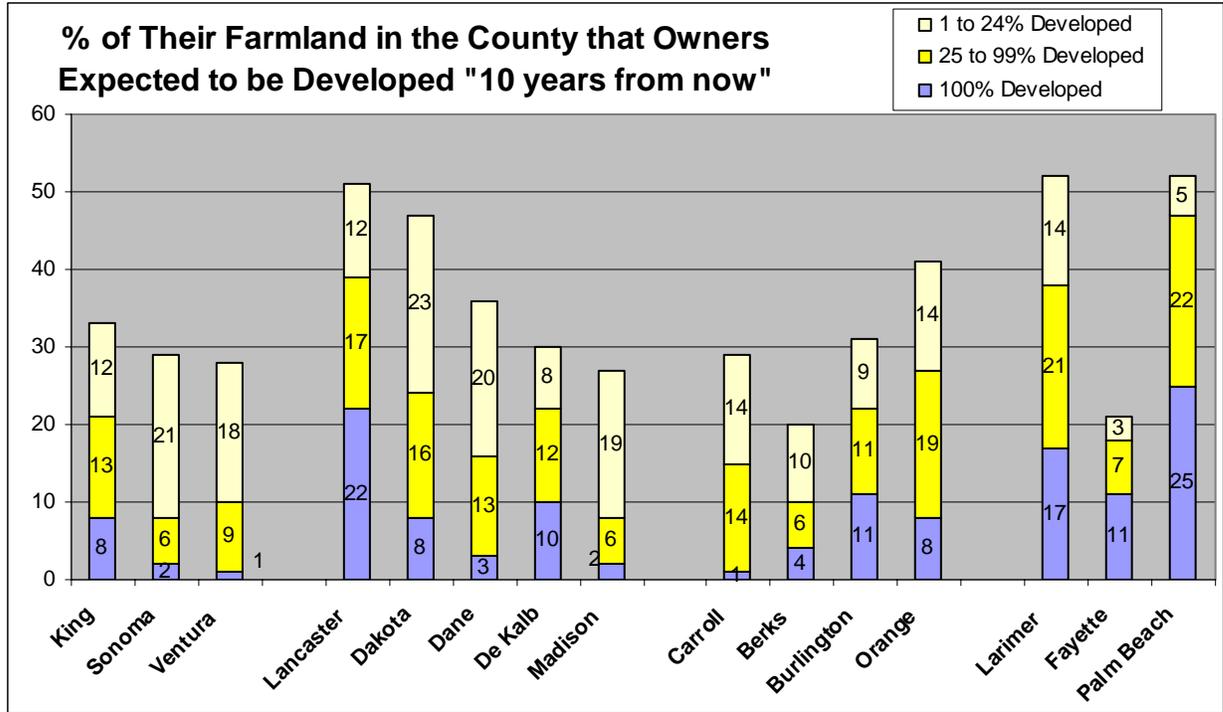
As discussed in Chapter 1, our justification for focusing the survey on farmland owners (rather than on harder-to-sample farm operators) was that owners can make critical decisions for the continued viability of agriculture in their counties—including whether to invest in its ongoing productivity for farming or to develop part or all of it for nonagricultural purposes. Early in the questionnaire we asked, “Given all the agricultural land you own in [that particular] County, about how much of it (if any) do you expect to be in some developed use (residential, commercial, industrial) 10 years from now?”

Figures 5.1 and 5.2 display the answers to that question. Across the 15 counties the percentage of owners anticipating *all of their land* to be developed varied considerably—from only 1% in Ventura and Carroll counties to 25% in Palm Beach County. Toward the other end of the spectrum of owners with development plans were those expecting to convert only 1% to 24% of their holdings in the county. This group ranged from 3% of the total respondents in Fayette County to 21% in Sonoma County (Figure 5.1).

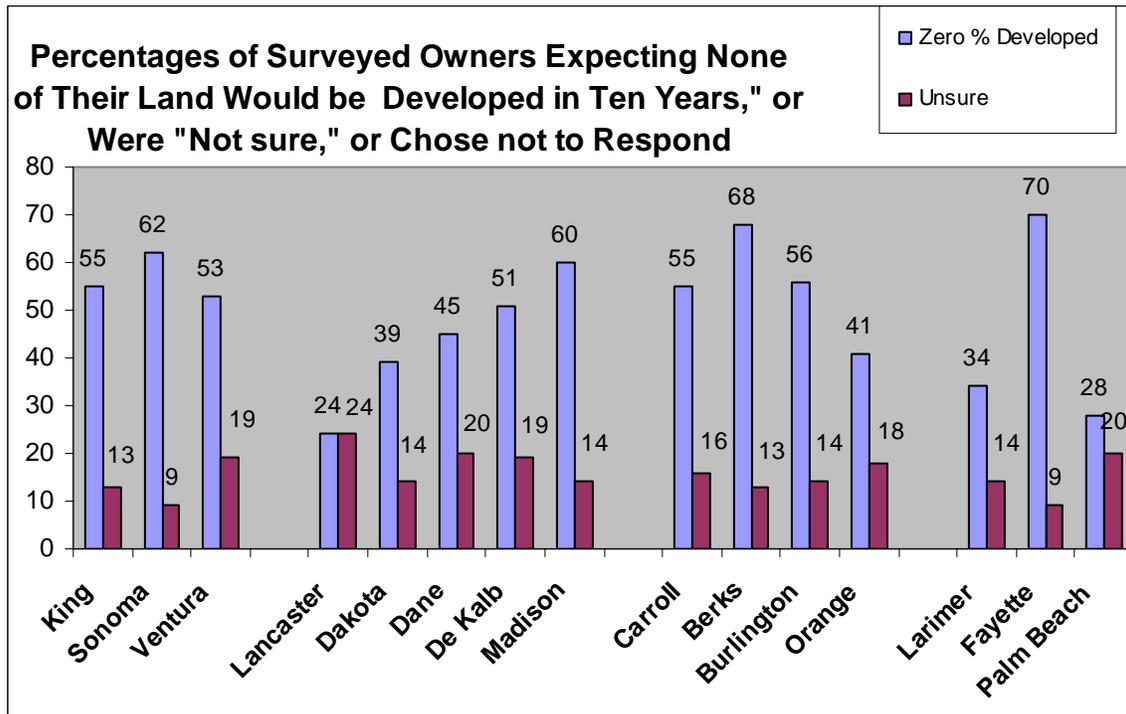
In Figure 5.2 the largest group of respondents in each county—24% (in Lancaster and Dakota) to 70% (Fayette)—expected *no part* of their farmland to be developed. Complicating the picture, however, were the nontrivial percentages of owners—from 9%

in Ventura and Fayette to as many as 24% in Lancaster who were unsure or unresponsive about what they intended to do with the land (Figure 5.2).

**Figure 5.1**



**Figure 5.2**



We were tempted to explain the differences by county among the “no-development-planned” cases in Figure 5.2 by what we learned about the strictness of zoning from the interviews. Ag leaders consulted in Sonoma, Ventura, Dakota, DeKalb, Madison, and Fayette counties reported that their counties’ zoning tended to protect agricultural land from development. And five of those six counties registered among the highest percentages of surveyed owners expecting “zero development”—from 51% of the sample in DeKalb to 70% in Fayette (Figure 5.2). Dakota County’s 39% value, however, is not particularly impressive, while Burlington County’s 56% zero-development percentage is, even though our interviewees there reported both strong and weak zoning policies, depending on the township government. Therefore, we used regression analysis to look for conditions in addition to zoning that may have shaped owners’ plans for development.

### ***Regression Findings***

Table 5.3 lists the traits of the surveyed owners that emerged from the statistical analysis as likely causal conditions in at least two counties and that were consistent in their causal “direction” (either consistently related to a higher likelihood of no development expectations or consistently linked to a lower probability).<sup>89</sup> Also included were single-county entries if the predictor was the *opposite* of another statistically significant variable and had the opposite kind of impact (e.g., reducing the likelihood of development). For example, the analyses for three counties (DeKalb, Madison, and Sonoma) showed that respondents were *more* likely to develop their land if they believed their local governments tended to “side with the non-farmers” in conflicts between the latter and farmers. Then in one county (Larimer) surveyed owners were *less* likely to convert some of their land out of agricultural use if they believed local governments tended to be “even-handed” in such conflicts (rather than siding with non-farmers). An unsympathetic local government can prohibit or impose restrictions on needed farm investments or operations, such as building greenhouses or seasonal worker housing, installing a farm stand, or expanding livestock herds.

Such “right-to-farm” controversies were predictors of plans and expectations for development (or their absence) in a total of nine of our 15 counties. There are the four cases cited in the previous paragraph. Another four involved a relationship between (1) the owners’ expectations about developing the land and (2) whether the farming operations on their land had changed “for the worse” because “non-farmers lived nearby.” In two counties (Fayette and Orange) respondents were *more* likely to develop their land because of such changes, while in two others (Carroll and Ventura) surveyed owners were *less* likely to develop if they reported *no* changes for the worse. Finally, there were two additional counties (Carroll and Palm Beach) where development was *less* likely if the respondent believed that the right-to-farm legislation operative in the county was effective (Table 5.3).

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<sup>89</sup> If a plausible causal variable had a consistent direction in three times as many counties as it had a contrary direction, it was included in Table 5.7.

Table 5.3: Traits of Surveyed Owners that Predict* (and May Have Shaped) Whether Owners Expected Any of Their Agland to Be Developed in the Next 10 Years		
Category of Predictors	More Likely to Expect Development if:	Less Likely to Expect Development if:
Types of ag products raised on their owned land	<ul style="list-style-type: none"> <li>• Raised beef on their owned land in the county (<b>Ventura, Larimer</b>)</li> <li>• Raised grains (<b>Larimer, Fayette</b>)</li> </ul>	
Perceived sufficiency of production inputs		Less likely to develop if they had a sufficient supply of large-animal veterinarians ( <b>DeKalb, Burlington</b> )
Other aspects of the farm or ranch operation	Used seasonal labor ( <b>Dane, Madison, Burlington, Carroll, Larimer</b> )	
Conflicts with non-farmer neighbors over freedom to farm or ranch	<ul style="list-style-type: none"> <li>• More likely to develop if believed local governments tended to side with non-farmers (<b>Sonoma, DeKalb, Madison</b>)</li> <li>• If there had been a “change for the worse” in farming their land due to non-farmer neighbors (<b>Orange, Fayette</b>)</li> </ul>	<ul style="list-style-type: none"> <li>• Less likely if believed local government tended to be even-handed (<b>Larimer</b>)</li> <li>• Less likely if no “change for the worse” in farming their land due to non-farmer neighbors (<b>Ventura, Carroll</b>)</li> </ul>
Perceived effectiveness of public policies in helping farming or ranching		<ul style="list-style-type: none"> <li>• If right-to-farm legislation was effective (<b>Carroll, Palm Beach</b>)</li> <li>• If local zoning to protect agland was effective (<b>King, Dakota, Dane, Madison, Orange, Larimer</b>)</li> <li>• If purchase of development rights program was effective or desirable (<b>Dakota, DeKalb, Madison, Fayette</b>)</li> </ul>
Agland owner traits		If owner farmed full-time ( <b>Dakota, Orange</b> )

\*We used logistic regression to identify the predictor traits. All were statistically significant at the .125 level or better. For each predictor trait, Appendix 1 (at the end of this report) presents the significance level and a measure of the strength of relationship (the “odds ratio”) with the outcome variable. Included is the same information for predictors that qualified in just one county. Table 5.3 is limited to the same or related predictors that qualified in at least two counties.

Readers having positions in local government or willing to lobby officials may be encouraged by another set of findings in Table 5.3. They, too, indicate that *local government can make a difference in whether farmland owners plan to develop*. In six counties’ samples (Dakota, Dane, King, Larimer, Madison, and Orange), regression analysis found that, other things being equal, respondents who believed that local government zoning was effective “in maintaining an adequate supply of land for farming” were *less* likely to expect to development. Such zoning could have at least two relevant effects. If strictly administered in a particular zoning district where the surveyed owners have their land, its enforcement would make plans for development unrealistic. Also, if growth management tools are slowing down development or diverting it to other areas of the county, owners may tend to be optimistic about farming without interference and, hence, have better profitability expectations.

Related findings in Table 5.3 are the relationships in four counties (Dakota, DeKalb, Fayette, and Madison) indicating that owners supporting their local government’s use of its revenues for purchasing development rights (PDR) were *less* likely to have plans for development (other things being equal). As discussed in Chapter 3, such programs may reduce the pace of development or at least reshape it geographically to be less threatening

to the area's agriculture. The participating farmers are paid for their land's development value, which can be several thousands of dollars per acre. The PDR program may also create large contiguous areas of protected land, resulting in few non-farmer neighbors located close to agricultural operations and causing problems for them.

### **3. Investing in the Land's Agricultural Productivity**

A number of observers of the effects of urbanization on nearby agriculture have written about a phenomenon called "the impermanence syndrome" (Conklin and Leshner, 1977). William Lockeretz defined it as a set of attitudes that amount to not investing in the land's agricultural capabilities because the "farmers see land being developed around them and consider it inevitable that their land will be developed, too. . . . Given this expectation, it does not make sense to put in long-term improvements, or even to maintain existing capital facilities such as fences, buildings, irrigation equipment or drainage systems" (Lockeretz, 1989). Therefore, in each studied county we asked the surveyed owners, "Over the next five years, will you or the farmer of your land likely make any agricultural investments of the following types on your land in [named] County?"

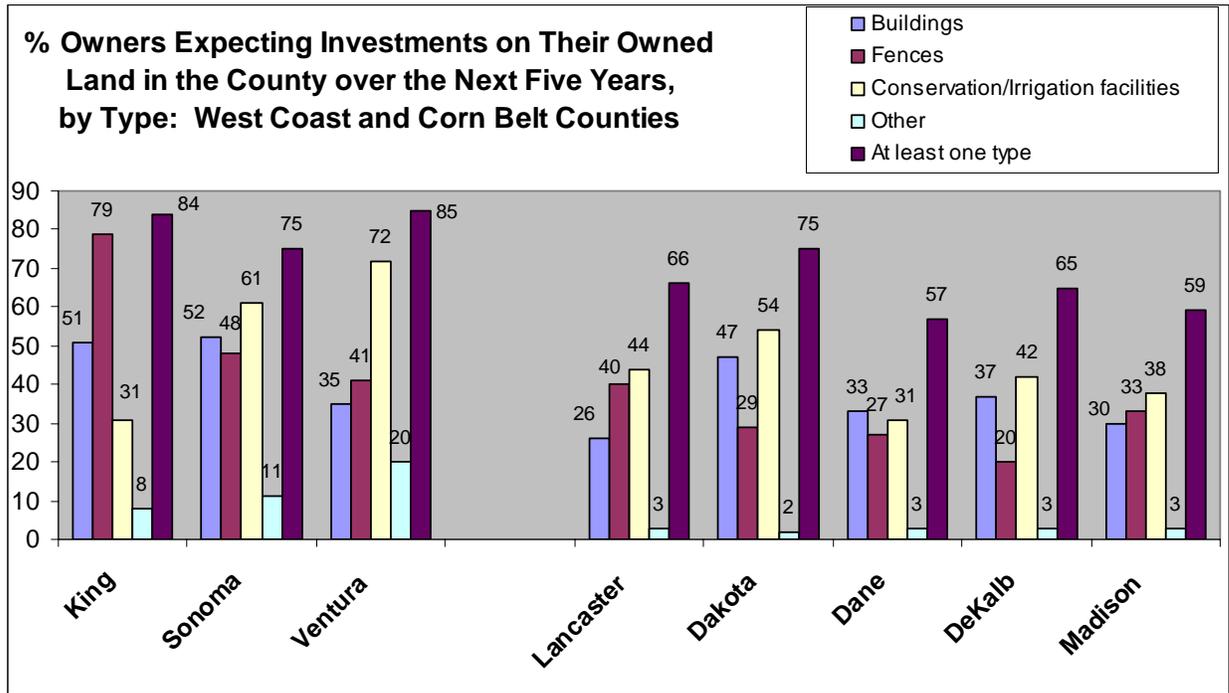
- "Erecting, replacing, or enlarging farm buildings;
- Building or extending farm fences;
- Installing or improving conservation or irrigation facilities;
- Other investments (please specify)."

Figures 5.3 and 5.4 present the responses to that question by type of investment and by group of studied counties. The percentage of respondents<sup>90</sup> reporting planned investments in farm buildings ranged from only 26% in Lancaster County to 54% in Burlington County, with a median value of 44%. The range was much wider for investment in farm fences—20% to 79%, but the median was the same. The difference came from two counties, King and Fayette, with high percentages of respondents expecting to spend money on fences—79% and 77%, respectively. They had the biggest percentages of respondents with large animals (i.e., hogs, dairy cattle, beef cattle, and sheep)—76% and 83%. Third ranking in both the fence-investing and large-animal-raising percentages was Carroll County. In Fayette County horses predominated. In fact, 84% of its respondents to the investment questions who planned to put money into fences also had horses.

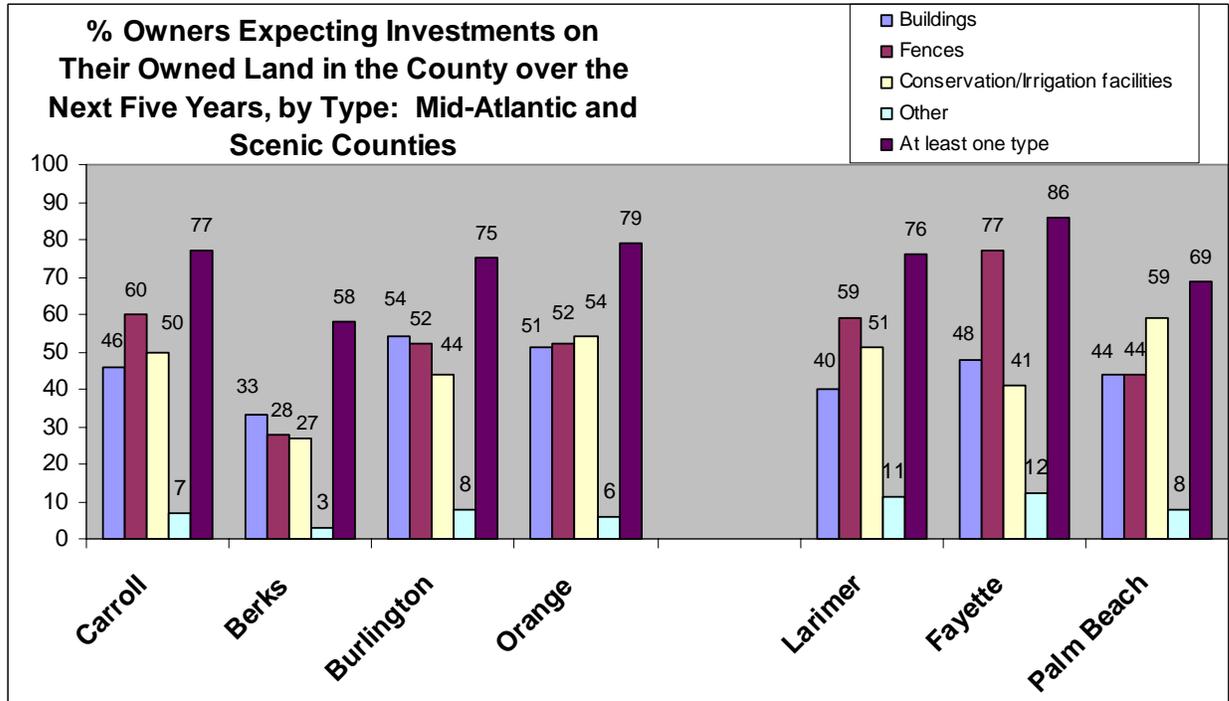
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<sup>90</sup> The respondents for these questions about planned investments consisted of surveyed owners who indicated that they expected to be farming in the county five or 10 "years from now" or who answered "yes" to this alternative response option: "Are you a non-farmer owner who expects to monitor closely for at least five more years how your land in the county is farmed?"

**Figure 5.3**



**Figure 5.4**



Entries for “conservation or irrigation facilities” in the two graphs ranged from 27% to 72%. The percentages for “at least one type of investment” (among these three specific

objectives plus “other investments”) totaled to a range of 57% (Dane County) to 86% (Fayette County). With more than a majority in each county reporting at least some kind of improvement, it looked as though a severe impermanence syndrome had not yet emerged in any of the 15 counties. However, our questioning on this subject was not comprehensive (e.g., no specific question about maintaining soil productivity), and the farm building percentages seemed low—only four counties with entries about 50% (King, Sonoma, Burlington, and Orange).

### **Regression Findings**

We limited our hunt for causes of planned investments to the category “Erecting, replacing, or enlarging farm buildings” because the other two specific categories may lend themselves more, or as much, to promoting recreation and other lifestyle objectives rather than viable farming. Horse farm scenery is associated with attractive fences, and various conservation facilities (e.g., windbreaks, ponds, riparian buffers) add to the enjoyment or safety of rural living. The regression analysis for farm buildings identified six predictors of investment in farm buildings for the entire subsample, and each of the six qualified in the regression equations for at least two of the 15 individual counties.

<b>Table 5.4: Predictors of Whether “Over the Next Five Years,” Surveyed Owner or Farmer Will Likely Make Any Agricultural Investments of the Types “Erecting, Replacing, or Enlarging Farm Buildings”</b>	
<b>Predictor Trait of the Owner or the Farming Operation on Owner’s Land</b>	<b>Counties in Which the Trait Qualified as a Predictor</b>
Age (such as at least 55 years old)	The older the owner, the <i>less</i> likely such investment was expected in <b>Sonoma, Ventura, Lancaster, Dakota, Dane, DeKalb, Madison, Carroll, Berks, Burlington, Orange, Larimer, Palm Beach.</b>
Operators among them intended to stay farming in the county at least 10 years.	If operator intended to stay, the <i>more</i> likely was such investment in <b>King, Sonoma, Ventura, Lancaster, Dane, DeKalb, Carroll, Berks, Burlington, Orange.</b>
Operator had lined up a son, daughter, or grandchild to succeed him or her when operator retired from farming or ranching.	If operator had such a successor, the <i>more</i> likely was that kind of investment in <b>Dane, Madison, Carroll, Orange, Larimer, Fayette.</b>
Only hay was produced on the respondent’s owned farmland in the county.	If respondent produced only hay, the <i>less</i> likely was such investment in <b>King, Carroll, Burlington, Orange, Fayette.</b>
Grains were produced on the owned land.	If operator produced grains, the <i>less</i> likely was such investment in <b>Dakota, DeKalb, Madison, Carroll, Fayette.</b>
Nonfamily worked in the farm operation.	If operation had such workers, the <i>more</i> likely was that kind of investment in <b>Ventura, Berks.</b>

As Table 5.4 indicates, such investment was *less* likely in 13 of the 15 counties if the respondent was relatively older. Among the 743 surveyed owners (in all 15 counties) who were asked this question about investment in farm buildings and who were at least 55 years old, 32% expected such investments in the next five years, compared to 57% among their 544 counterparts who were less than 55. Presumably, many of the older owners believed that they would not farm or own the land long enough to benefit from spending money on farm buildings. Conversely, in 10 counties the operators among them who intended to remain farming in the county at least 10 years were *more* likely to expect such investments (Table 5.4).

A related, but statistically distinct predictor, was whether the respondent had a son, daughter, or grandchild lined up to succeed as the farmer or rancher. Regardless of age or intention to stay 10 years, surveyed owners in six counties who had such a successor were *more* likely to expect to invest in buildings. Presumably, such investments were more justifiable because the close relative would benefit from them.

In five counties (Table 5.4) if hay was the *only* agricultural product raised on the respondent's land in the studied county, the likelihood of expecting to invest in any farm buildings *decreased*. Hay is a perennial crop that typically requires relatively little field time per year. Hay alone may therefore not have needed (at least in 2006) many new square feet of building for machinery, crop storage, worker housing, or other purposes. Alternatively, it did not earn enough to cover the costs of new facilities.

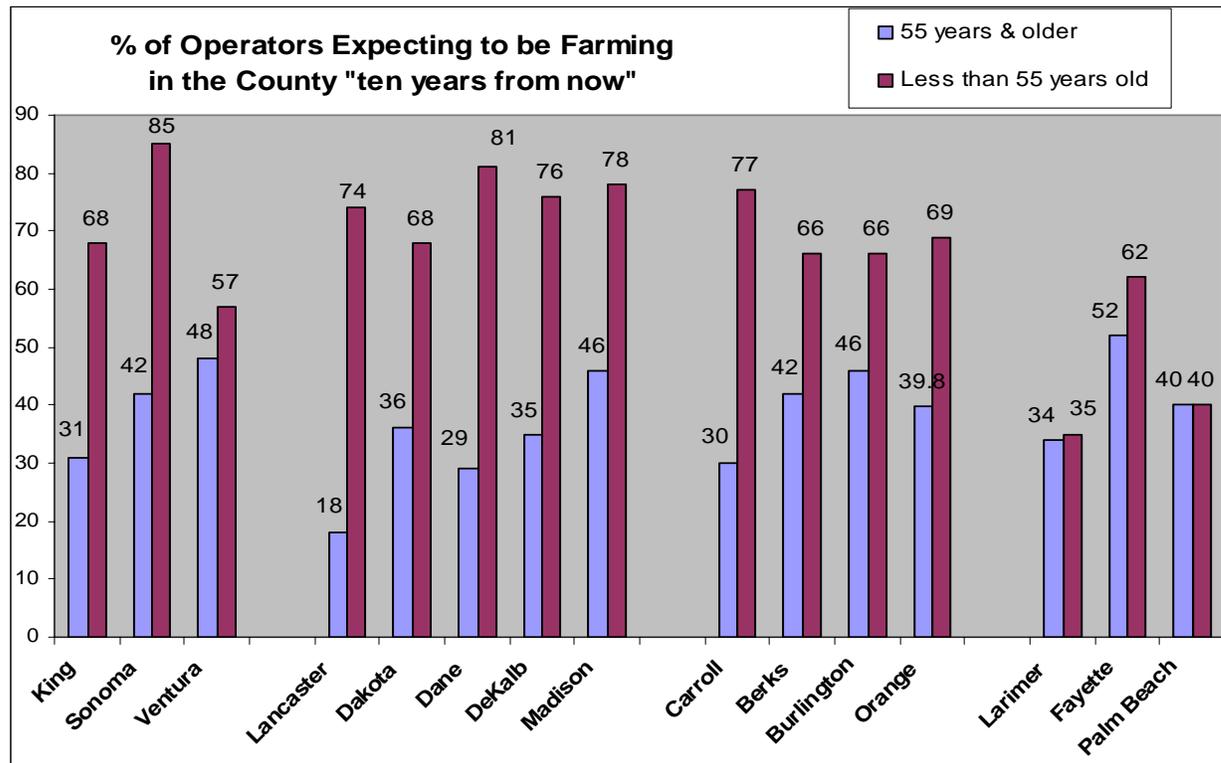
In five counties, too, grain production on owned land was associated with a *lower* probability of spending money on farm buildings. Also not normally a labor-intensive type of farming, raising grains in 2006 may have been seen as needing relatively little new enclosed spaces.

In two counties, if respondents reported having nonfamily labor, the likelihood of investment in farm buildings tended to *increase*. Perhaps the workers needed housing. The underlying cause was not gross sales (for which the presence of nonfamily labor might have been a proxy indicator). In both counties, we controlled for sales, and the predictor status of nonfamily labor persisted.

#### **4. Surveyed Operators' Expectations about Whether They Would Be Farming in the County in 10 Years (2016)**

Farmers planning to exit from agriculture in the county prematurely may signify trouble for the sector's viability. As "premature," we considered those cases where an operator was less than 55 years old but expected not to be farming in the studied county in 10 years or was unsure about his/her status at that time. Figure 5.5 shows that across the 15 counties, among the surveyed operators less than 55 years old, from only 35% in Larimer County to 85% in Sonoma County planned to stay at least 10 years. The median value was 68%. Among the respondents 55 and older, the range was narrower—from 18% (Lancaster County) to 52% (Fayette County), with 46% as the median. Larimer and Palm Beach counties stand out in Figure 5.5 in having relatively low values for both indicators and showing no or little distinction by age group. It looks as though most of the older as well as the younger operators were then planning to quit farming in the county.

**Figure 5.5**



**Regression Findings**

Like an earlier table on regression findings (Table 5.3), this one (Table 5.5) about farming another 10 years lists traits that qualified as statistically significant predictors in at least two counties and that were consistent in their causal “direction” (i.e., either always related to a higher likelihood or consistently linked to a lower probability).<sup>91</sup> Also included were single-county entries if that predictor was the opposite of another statistically significant variable and had the opposite kind of impact (e.g., local governments favoring farmers in right-to-farm conflicts versus siding with non-farmers).

According to the analysis, surveyed operators were *more* likely to expect to continue for another 10 years in Ventura and Palm Beach counties if they produced fruit (other things being equal). They were *less* likely to stay in Berks and Dane counties if they raised cows and calves and in Larimer and Lancaster counties if they produced two or more kinds of livestock. The differences may have derived from owner-operators’ satisfaction or dissatisfaction with the return on those products.

In two counties, Lancaster and Madison, having sufficient family labor was related to intending to stay at least 10 years, as was having adequate supplies of implements and related services in another two counties—Dane and Madison (Table 5.5). Then, in a total of eight counties, if a son, daughter, or grandchild was lined up to succeed the farmer as

<sup>91</sup> If a qualifying predictor variable had a consistent direction in three times as many counties as it had a contrary direction, it was included in Table 5.5.

operator, he or she was *more* likely to expect to continue for at least 10 years. Very close relatives as designated successors probably gave those farmers a strong motive to stick it out—such as to keep the operation in good shape for the heirs and perhaps also for the time when they, the current farmers, want to switch to working part-time with the heir-operators. This relationship between planning to stay 10 years and having a child or grandchild successor held up regardless of the respondents’ ages.

<b>Table 5.5: Traits of the Surveyed Operators and Their Operations That Predict<sup>†</sup> Whether They Expected To Stay Farming or Ranching for at Least Another 10 Years</b>		
<b>Category of Predictors</b>	<b>More Likely to Stay 10 Years if:</b>	<b>Less Likely to Stay 10 Years if:</b>
Types of agricultural products raised on their owned land	<i>More</i> likely if raised fruit ( <b>Ventura, Palm Beach</b> )	<ul style="list-style-type: none"> <li>• Less likely if raised dairy cows and calves (<b>Dane, Berks</b>)</li> <li>• Raised two or more kinds of livestock** (<b>Lancaster, Larimer</b>)</li> </ul>
Perceived sufficiency of production inputs	<ul style="list-style-type: none"> <li>• If had sufficient family labor (<b>Lancaster, Madison</b>)</li> <li>• Sufficient implements and related services (<b>Dane, Fayette</b>)</li> </ul>	
Other aspects of the farm or ranch operation	<ul style="list-style-type: none"> <li>• If expected a son, daughter, or grandchild to take over the operation (<b>King, Sonoma, Ventura, Carroll, Burlington, Orange, Fayette, Palm Beach</b>)</li> <li>• If their agland was located in a particular section of the county (<b>Palm Beach</b>)</li> <li>• Gross sales of at least \$100K (<b>Dane, DeKalb</b>)</li> </ul>	Less likely if their agland was located in a particular section of county ( <b>Sonoma, Berks</b> )
Conflicts with non-farmer neighbors over freedom to farm or ranch	<i>More</i> likely if local government favored farmers when resolving these conflicts ( <b>Burlington</b> )	Less likely if believed local governments tended to side with non-farmers ( <b>Dane, Carroll</b> )
Perceived effectiveness of public policies in helping farming or ranching	If purchase of development rights program was effective or desirable ( <b>King, Sonoma, Fayette</b> )	
Agland owner traits		Less likely if were relatively older, such as at least 55 ( <b>King, Sonoma, Ventura, Dane, DeKalb, Madison, Carroll, Berks, Burlington, Orange, Dakota</b> )

<sup>†</sup>We used logistic regression to identify the predictor traits. All were statistically significant at the .107 level or better. For each predictor trait, Appendix 1 (at the end of this report) presents the significance level and a measure of the strength of relationship with the outcome variable (the “odds ratios”). Included is the same information for predictors that qualified in just one county. Table 5.5 is limited to the same or related predictors that qualified in at least two counties.

\*\*Two from this list, also adapted from the 2002 Census of Agriculture: “Hogs and pigs”; “Dairy cattle and calves”; “Beef cattle and calves”; “Poultry for meat or eggs”; “Horses”; “Sheep”; “Fish (trout, catfish, shellfish, etc.)”; “Other animals.”

Local governments’ perceived role in right-to-farm conflicts was a significant predictor of expecting to stay farming in three counties (Burlington, Carroll, and Dane). We saw the same kind of relationship in four other counties—regarding owners’ intentions to develop (Table 5.3). And according to regression analyses discussed a little later (Table 5.6), it helped to explain attitudes about the future of agriculture in six counties. Looking at all three tables (5.3, 5.5, and 5.6), we find that this kind of local government behavior

made a difference in shaping important attitudes in a total of 12 separate counties.<sup>92</sup> The obvious policy inference is that if those local authorities could be “even-handed” or pro-farmer in resolving the controversies—other things being equal—there could be less development of agricultural land, more farm operators staying on in the county, and more optimism about the future that motivates both the farmers with positive attitudes and the other people whom he or she influences (including the next generation of farmers).

Should government or private agencies interested in the viability of urban-edge agriculture also consider encouraging farmers to line up close relatives as successor operators? As mentioned above, having a son, daughter, or grandchild in that role made a difference in eight of our county samples regarding operators’ intentions to stay in the county at least 10 years. Obviously, there may be insurmountable constraints, such as no relatives either living in the area or interested in moving there for a farm career. However, some deliberate planning might help. Cross-tabulation analysis found that in 12 of our 15 counties (including the eight just cited), statistically significantly higher percentages of respondents had designated close family successors if they had also “developed a farm succession plan that arranges for the transfer of ownership and management of the land to a relative or other person.” For example, among the surveyed Palm Beach County operators without a plan, only 25% had successors lined up, but among those with a plan already developed, the percentage was 68%. Of course, it is not clear what came first—the relative willing to take over the farm or the planning process that led to agreement on who would succeed the operator whom we surveyed. However, the statistically strong relationships that we found suggest that plans may help.

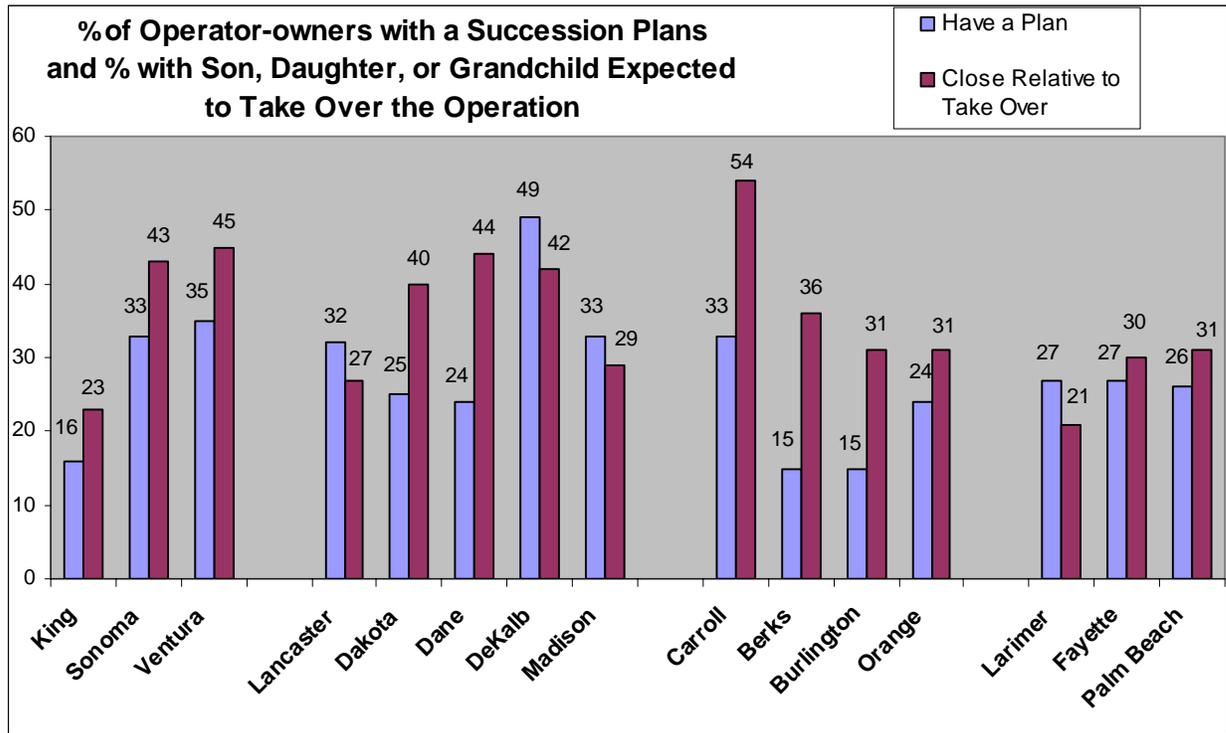
Figure 5.6 shows that there is room for improvement. Across the 15 county samples, from only 15% of the surveyed owner-operators in two counties (Berks and Burlington) to 49% in DeKalb County had developed plans. And from 21% (in Larimer County) to 54% (in Carroll County) had a son, daughter, or grandchild in line to take over the farm operation.

Table 5.5 on regression findings has two other sets of entries important to discuss. Not surprisingly, in 11 counties operators 55 years and older were *less* likely to expect to stay farming in the county for at least 10 years. Then in King, Sonoma, and Fayette counties, respondents who supported their county’s program of purchasing development rights to farmland were *more* likely to continue farming. As shown also in the findings for four counties about development expectations (Table 5.3), effective local programs to protect the agricultural land base seem to help shape positive farmer attitudes about the future. This next section of this chapter presents similar findings about use-value assessment, right-to-farm legislation, and zoning to protect agricultural land from conversion.

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<sup>92</sup> Since local government’s handling of right-to-farm controversies in Dane County qualified as a predictor in two tables, we count Dane County just once.

**Figure 5.6**

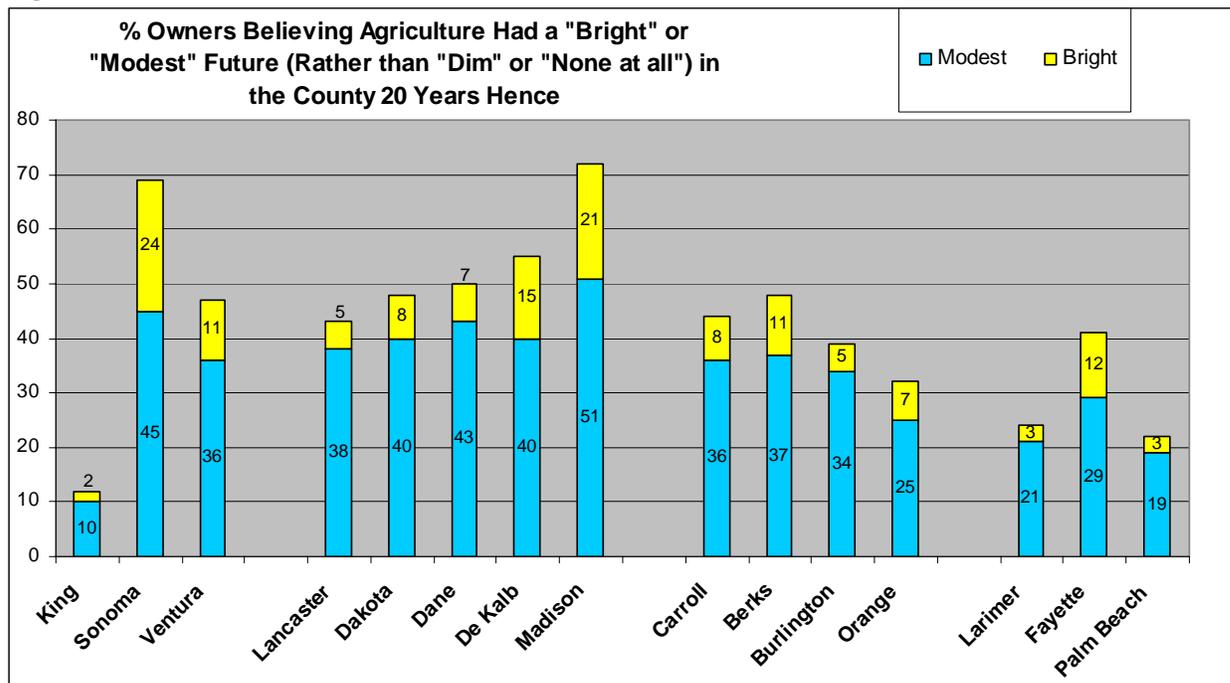


### 5. Surveyed Owners’ and Interviewed Local Ag Experts’ Predictions about the Future of Agriculture in the County (in 2026)

At the end of the survey of agland owners, we asked, “Thinking ahead 20 years, what kind of future do you see for agriculture in [named] County? Bright, Modest, Dim, None at all, Not sure.” Virtually the same question was asked of the local experts whom we interviewed. However, in a free-flowing interview the wording is unlikely to be completely uniform.

Figure 5.7 presents the percentages of respondents who answered “bright” or “modest.” Across the 15 counties, the “bright” percentages were rather small—ranging from just 2% in King County to 24% in Sonoma County, with a median of 8%. The “modest” predictions were somewhat larger—ranging from 10% in King County to 51% in Madison County, with the median value being 36%. In combining the “bright” and “modest” percentages, we get values stretching from only 12% in King County to 72% in Madison County. However, in 12 of the 15 counties, less than a majority of the surveyed owners saw either a bright or modest future for agriculture. The regression analyses we did for each county tried to explain why.

**Figure 5.7**



**Regression Findings**

Like its similarly structured predecessors (Tables 5.3 and 5.5), Table 5.6 presents the predictor variables (the exact same or closely related ones) that were statistically significant for at least two counties.

As shown in Table 5.5 on the future status as an operator in the county, respondents in two counties (Sonoma and Ventura) with fruit crops being raised on their land were *more* likely to expect a relatively good future (i.e., being either “bright” or at least “modest”). Also in two counties (Sonoma and DeKalb), raising beef was associated with *negative* predictions—a “dim” future (other things being equal).

Surveyed owners in four counties (Sonoma, Orange, Fayette, and Burlington) were *more* likely to be positive if they or the farmers of their land had enjoyed in the past year sufficient supplies of labor—seasonal, family, or nonfamily. Also not surprising was the relationship between being satisfied with the profitability of markets for their land’s ag products and predicting a positive future—an association found in four counties: King, Ventura, Dakota, and Carroll. Similarly easy to interpret was the association between satisfactory competitiveness of markets (in Burlington and Orange counties) and predictions of a relatively healthy ag sector in the future.

Again, as with our analyses of responses about planning to develop owned land or to stay farming in the county for at least 10 years, owners’ perceptions of how local governments handled conflicts with non-farmers made a difference. In the Carroll and Palm Beach county samples, if the local authorities were seen to favor farmers or at least be “even-

handed,” the surveyed owners were *more* likely to have a positive view of the future. Conversely, in four counties (Dakota, Dane, Berks, and Fayette), if respondents believed local government sided with non-farmers, they were *less* likely to regard the future favorably.

<b>Table 5.6: Traits of Surveyed Owners and Operations on their Agland That Predict<sup>1</sup> Whether They Expected Agriculture in the County to Have “Bright” or at Least “Modest” Future 20 Years Hence</b>		
<b>Category of Predictors</b>	<b>More Likely to be Positive about the Future if:</b>	<b>Less Likely to be Positive if:</b>
Farm or ranch products raised on their owned land	<ul style="list-style-type: none"> <li>• If fruit was raised on their owned land in the county (<b>Ventura—at least 36 acres, Sonoma</b>)</li> <li>• Raised hay (<b>Dane, Carroll—at least 29 acres</b>)</li> </ul>	If beef was raised on their owned land in the county ( <b>Sonoma, DeKalb</b> )
Perceived sufficiency of production inputs	<ul style="list-style-type: none"> <li>• If had sufficient seasonal labor (<b>Sonoma, Orange</b>)</li> <li>• Sufficient family labor (<b>Fayette</b>)</li> <li>• Nonfamily labor (<b>Burlington</b>)</li> </ul>	
Other aspects of the farm or ranch operation	Used bank or other credit ( <b>Ventura, Fayette</b> )	
Satisfaction with marketing outlets	<ul style="list-style-type: none"> <li>• If was satisfied with the profitability of markets for the ag goods from their land (<b>King, Ventura, Dakota, Carroll</b>)</li> <li>• If satisfied with markets’ competitiveness (<b>Burlington, Orange</b>)</li> </ul>	
Conflicts with non-farmer neighbors over freedom to farm or ranch	<ul style="list-style-type: none"> <li>• If believed local governments favored farmers when resolving these conflicts (<b>Palm Beach</b>)</li> <li>• If believed local governments were even-handed when resolving the conflicts (<b>Carroll</b>)</li> </ul>	<ul style="list-style-type: none"> <li>• If believed local governments tended to side with non-farmers (<b>Dakota, Dane, Berks, Fayette</b>)</li> <li>• If there had been a “change for the worse” in farming their land due to non-farmer neighbors (<b>King, Lancaster, DeKalb, Burlington, Larimer</b>)</li> </ul>
Perceived effectiveness of public policies in helping farming or ranching	<ul style="list-style-type: none"> <li>• If believed use-value assessment was effective (<b>Lancaster, Dakota, Dane, Madison, Orange, Palm Beach</b>)</li> <li>• Right-to-farm legislation was effective (<b>Ventura, Larimer</b>)</li> <li>• Local zoning to protect agland was effective (<b>King, Ventura, DeKalb, Berks, Fayette, Palm Beach</b>)</li> </ul>	

We used logistic regression to identify the predictor traits. All were statistically significant at the .119 level or better. For each predictor trait, Appendix 1 (at the end of this report) presents the significance level and a measure of the strength of relationship with the outcome variable (the “odds ratios”). Included is the same information for predictors that qualified in just one county. Table 5.6 is limited to the same or related predictors that qualified in at least two counties.

Another set of findings of direct application to local governments deals with three kinds of policies that they legislate, administer, or at least can shape through appeals to their counterparts in state government (see the relevant discussions of each policy type in Chapter 3). In six counties (Lancaster, Dakota, Dane, Madison, Orange, and Palm Beach), surveyed owners who believed that agricultural-use assessment had been “very helpful” or at least “moderately helpful” in “keeping property taxes on agland in [named] County at acceptable levels” were *more* likely to predict a positive future. Also, the likelihood of favorable views of the future *increased* when (other things being equal) respondents in Ventura and Larimer counties believed that their state’s right-to-farm law was “very helpful” or “moderately helpful” in “protecting farmers and ranchers against

unfair nuisance complaints.” The same kind of relationship was found in six counties (King, Ventura, DeKalb, Berks, Fayette, and Palm Beach), if the owners believed their local zoning was “very helpful” or “moderately helpful” in “maintaining an adequate supply of land for agriculture in the county.”

In sum, for 12 of the 15 counties, it looks as though the perceived effectiveness of one or more of these three types of land-use policies shaped agland owners’ predictions about the health of agriculture 20 years into the future. *These findings strengthen our conviction that the behavior of local governments can substantially affect the future of farming in their counties.*

### ***Interview Findings***

A total of 192 interviewed ag leaders provided input about the viability of their county’s agriculture 20 years into the future. The other interviewees either preferred not to give clear evaluations or were not asked the question. We added it a couple of months after the project’s interview phase had started. Table 5.8 presents the percentage breakdown of the opinions given for counties where at least 10 interviewees answered the question.

Although the interviewees tended to be more positive about the future than did the surveyed agland owners (compare Figure 5.7 and Table 5.7), with one county being an exception, less than a majority of the local experts believed that agriculture’s future was “bright” rather than “modest” or worse. Fayette County’s entry in the interviewee table is 58%. The next highest value is Sonoma County’s 47%, third ranking is DeKalb County’s 41%, and then Ventura County’s 30%. Only time will tell which group—the 10 to 25 ag sector leaders per county—or the 100 to 174 agland owners—predicted more accurately. However, from the interviewees we tended to get their reasons for opinions.

The following analysis of those reasons helps us to understand the importance—to the counties’ agricultural sector—of issues covered in earlier chapters, such as choice of products to raise on the urban edge and marketing outlets to use; the need for restrictive zoning and other farmland-protection tools; and the influence of climate, soil, and other geographic features. Included also were recommended ways to adapt to urbanization.

### **The Land Constraint**

The type of argument most frequently articulated by the interviewees concerned the sufficiency of land in the county for farming or ranching. Eighty-six of the 192 opinion-givers (or 45%) talked about the quantity of land and/or its affordability to farmers. Many were pessimistic, referring to the continued conversion of land out of agricultural use and to the existing or likely future lack of political will to preserve an adequate land base. However, others trusted their local governments to administer the current system of land-use controls with sufficient strictness and/or to place enough land under conservation easements.

**Table 5.7: Interviewed Agricultural Leaders' Predictions of the Future of Agriculture in their Counties 20 Years into the Future: Percentage of Respondents by Response Option**

County	Bright	Modest	(Bright or modest)	Dim	None at all	Not sure or unwilling to select one of the given options
King (n = 17)	29	29	(58)	29	0	13
Sonoma (n = 19)	47	42	(89)	5	0	6
Ventura (n = 10)	30	70	(100)	0	0	0
Lancaster (n = 14)	7	50	(57)	7	7	29
Dakota (n = 16)	12	69	(81)	13	0	6
Dane (n = 18)	0	50	(51)	28	0	22
DeKalb (n = 17)	41	53	(94)	6	0	0
Madison (n = 10)	20	40	(60)	0	0	40
Berks (n = 11)	9	45	(54)	18	0	27
Burlington (n = 10)	0	40	(40)	10	0	50
Larimer (n = 25)	0	33	(33)	<b>59</b>	8	0
Fayette (n = 19)	58	42	(100)	0	0	0

**Conversion of too much land out of agriculture:** Even interviewed leaders in counties with respected agricultural protection zoning policies (e.g., Dakota and DeKalb) and significant purchase-of-development-rights programs (Sonoma, Berks, and Larimer) were concerned about the cumulative effect of conversion of agland. Larimer County had the additional vulnerability that cropland needed rights to irrigated water, whose costs were increasing and whose delivery systems were jeopardized by loss of farm customers. If too many agricultural users “upstream” sold their rights, the water company might not be able to justify sending water down the irrigation ditches to the few remaining customers.

- “No future; farmers move from west to east Washington, where land is much less expensive, like \$1,500 an acre compared to [as much as] \$200,000 to \$250,000 here.” (King County)
- “A modest future because lots of land development is happening, so less land is available for agriculture.” (Sonoma County)
- “Dim, because of alternate uses of the land, and the prices of land will be too high to till it.” (Lancaster County)
- “Modest, I would say, mainly because of the impact of development. If we continue to grow like we are, we’ll look like California.” “Dim. I think the land will be sold for development as the price goes up. This is the key to my dim rating.” (Dakota County)
- “Modest. The culture is positive, but the developers battle and put significant pressure on landowners and the cities. The pressure is impossible to resist even with understanding and planning. Farmers are aging and will easily bow to the pressure. Zoning [which is by township] varies across county, so consistency becomes a problem.” (Dane County)

- “Modest. The county will most likely retain present zoning policies, but it’s unknown as to how those policies will be able to change the development patterns that are now firmly established to the east [closer to Chicago]. Will DeKalb County be different?”
- “Modest—this is because there is a lot of growth on the Front Range [in Colorado], and the price of land and water is too high.” “Basically, very bleak. The city needs water. The developer buys water, and then the water becomes very pricy. Farmers cannot compete with developers in buying the water rights.” “In case the two farms that are my neighbors will quit farming, then I won’t get irrigation . . . because there are not enough people who ask for it, and then my farm will be good only for graze pasture.” (Larimer County)

***Importance of land-use controls:*** As discussed in Chapter 3, several counties (King, Sonoma, Ventura, Dakota, DeKalb, and Fayette) and certain townships in Berks County had the political will to legislate and implement effective zoning protection. Moreover, in all or nearly all those cases, there was successful cooperation with cities whose annexations might otherwise have frustrated the agricultural zoning for unincorporated areas. In our interview data about the future of agriculture, the DeKalb County entries stand out for the extent to which local leaders who predicted a “bright future”—six of the seven—based their expectations entirely or in part on the continuing success of the county’s pro-agriculture zoning policies. However, in DeKalb County and elsewhere, interviewed leaders were aware of the dependence of these land-use controls on the electorate’s continuing acceptance of them.

- “Bright. There’s a commitment by the community. The chances now of sprawl are very low to none.” (Sonoma County)
- “Modest. SOAR [Save Open-Space and Agricultural Resources] will keep us here [farming] as long as it continues. If that zoning disappears, look for quick changes in the county to development and failure of agriculture. We’ll end up being estates really fast, and it will be the death knell for us all.” (Ventura County, right next to Los Angeles County in California)
- “Modest. It really depends on whether they enforce [40-acre] zoning or not. If they do, there will be opportunities for farming.” (Dakota County)
- “Bright. The county has done a good job to restrict development adjacent to existing municipalities.” “Modest to bright. If our county board does what they are supposed to do with our comprehensive plan, the future will be good. If they let subdivisions pop up all over, we will have a problem.” (DeKalb County)
- “Modestly optimistic.” “Philly [Philadelphia] developers are starting to move in—for example, into Exeter. A lot depends on the local officials and how they deal with agricultural zoning.” (Berks County)

***Hopefully, long-term protection through purchase of development rights (PDR):*** Antidevelopment easements attached to deeds should keep land in farming or available for agricultural use for many years, if not in perpetuity. As with our findings on other policy tools, we are reporting observations from only a small number of counties. We cannot generalize about the tools’ effectiveness, but only suggest that what we found in those counties may be helpful to citizens there and be worth checking out in other

communities with the same type of program. For example, as suggested in the quotations below, PDR programs may make a significant difference in the long-run supply of land for agriculture. However, as mentioned in two of these quotations, effective zoning may be a necessary partner with PDR.

- “Bright. The future of agriculture in Fayette County is bright. I think that because there are permanent efforts to ensure farming in perpetuity. The goal of the PDR program is to have 50,000 acres in conservation easements. This represents more than one-third of the rural land available in Fayette County.” “Bright. There is enough awareness and effort from the different groups in the county to maintain agriculture in the future. The PDR program is the one that will make the difference for our county.” (Fayette County)
- “Modest at best. I think the easement program [begun in 2003] may have an impact on this.” (Dakota County)
- “Dim, unless something happens that does something about growth. No matter how much land you preserve, though, most of it [the county’s entire land base] will turn into houses.” (Carroll County)
- “Modest. There will be enough land for farmers who want to stay. The preservation program and municipal zoning will keep a lot of that ground from residential use.” (Burlington County)
- “Modest. We will still be here because we have a lot of eased land. But it does depend on whether the zoning is upheld or not, and whether there are farmers—we know that the markets are here.” (Berks County)

Section 5 of Chapter 3 has more discussion of local experts’ opinions about the long-term effects of PDR in Carroll, Berks, and Burlington counties.

### **Types of Enterprises Promising Future Success**

In explaining their predictions about the future of agriculture in their counties, the interviewees’ second most frequent type of argument was about the kinds of agricultural enterprises that were likely to do well. Twenty-eight percent provided such input. These arguments fell into three main groups—advocating or questioning the viability of (1) smaller farm operations, (2) those producing food for local consumers, and (3) those emphasizing high-value crops. Of course, the same farm may have all three of these traits. A potentially critical advantage for the smaller operation is that it probably needs less of the most expensive kind of input in an urbanizing context—land.

#### ***Smaller farm operations:***

- “Bright. There’s a bright future for small-scale, sustainable farms.” “Bright, niche farming will be at the high end, with organic and value-added.” “Modest. Small farms with higher intensity for niche markets will do well, as will ag tourism farms.” “Modest. The organic small farms doing direct marketing will prevail.” “Dim. Smaller farms will not help. People need to pay more for produce.” (King County)
- “Bright or dim. For smaller farms—those converting to urban uses—such as horse farms, organic vegetables, orchards—I see a bright future. For the large grain and dairy farms, I see a dim future.” (Dane County)
- “Your hobby farmers are going to start to pop up a lot.” (Orange County)

- “Bright also for the hobby farmers.” “Bright for the small ones because they can still make some profits, and they also have other sources of income. Dim for large-scale farmers due to growth.” (Larimer County)

***Farms producing for local food customers:*** In the several studied counties located near to very large population concentrations, the total potential clientele for local food production was encouraging.

- “Very bright. The metro area [Seattle] will get together to create markets that will bring local farm products to table on a 12-month basis.” (King County)
- “Bright. A lot of consumers are in the area [San Francisco Bay Area] for farmers to sell goods to.” (Sonoma County)
- “Modest. Local foods will help us hang in there. I farm lemons and avocados, [and am] experimenting with some alternative citrus crops for local sales.” (Ventura County)
- “Modest. Even 20 years from now the vegetable segment will still have operations in existence, taking a short trip to a very demanding but very profitable market outlet [the northern sector of the greater New York City area].” (Orange County)
- “Dim. I see very little farming in the future for large or small farms. There may be some future in garden plots where farmers raise their own produce and sell it at farmers’ markets. These types of operations are surviving.” (Dane County)

***Examples of statements about high-value products for wholesale or direct marketing:***

Urban-edge farms may have no comparative advantage in producing many crops with high per-unit values like wine grapes and vegetables for processing. However, horse farming near population concentrations can mean sizable clienteles for accessory enterprises like boarding and recreational riding. Also, wine grape farmers within a Saturday or Sunday afternoon ride from urban areas can enhance income through establishing their own wineries, sales rooms, and tasting facilities. And if the farmland has high amenity values and some member(s) of the household is willing to learn hospitality-industry skills, the operation can add a bread-and-breakfast component. These entrepreneurs join other farmers who see the often-wealthy new residents to their county as customers for specialty agricultural products.

- “Bright, because of wineries. Otherwise dim; but organics are good.” “As long as wine demand continues, this area will continue to prosper. I am actually bullish because of demographics. The core wine drinkers are the baby-boomer group, and we are getting older, and our kids love wine. They have seen it on the table [at home], and they are oriented toward it.” “I am blessed with a wealthy market for the B&B, for the grapes, and any vegetables that I might grow.” (Sonoma County)
- “Modest. The future of our county’s ag will be determined by international markets. Some are changing to strawberries because they cannot ship them from other countries. It is a U.S. niche.” (Ventura County)
- “Rather modest; dim for others. It will only be bright for the few who can raise specialty crops. There will be new opportunities, different crops for different reasons, and DeKalb County farmers will adapt if they are interested.” “Will see an increase in more intense operations, and the higher incomes coming in from

the east [Chicago] will support agriculture, such as pick-your-own operations.” (DeKalb County)

- “We have wealthy, high-class people who think that horses are appropriate for them: jumping stations, boarding. The racing horses make up about one-third, but they earn much more money.” (Burlington County)
- “Money is moving up from New York City, and everybody’s got to buy their daughter a \$20,000 horse.” (Orange County)
- “Modest. There is still interest to help sustain some level of agriculture in the county, although I expect to see more of the specialty-type crops, more value-added products. However, for the traditional agriculture, the future is dim.” (Larimer County)

### **Governmental Regulations that Hinder Agriculture**

The third most common type of reason given by interviewees for their predictions for the future consisted of complaints about governmental regulations that hinder agriculture in their counties. Eleven percent of the total respondents discussing the predictions gave this kind of argument. They can be divided into two subgroups: those concerned about environmental regulations and those complaining about neighbors’ objections to what the survey respondents regarded as necessary farming practices. Several of the former kinds of arguments arose from King County sources who objected to water-quality regulations that particularly affected livestock and other livestock operations. However, both kinds are “right-to-farm” issues, and give support to the regression findings discussed earlier in the chapter about how local governments’ handling of such issues can make a difference in farmers’ attitudes toward the future.

#### ***Examples of statements about environmental restrictions:***

- “Dim. Authorities are doing everything against saving the ag sector. Turn around fences off creeks [mandatory setbacks for fences]; disallow number of cows on the land because of per-acre manure rules.” “You just don’t see people farming under ever-increasing restriction from Seattle.” (King County)
- “The only problems that I fear for our future are regulatory. Specifically, excessive and pointedly hostile environmental regulations.” (Sonoma County)
- “Modest. People are skeptical about land-use planning and manure regulations. People are ‘holding their breath’ to see what will happen with these issues.” (Dane County)

#### ***Neighbors seeking to limit what they perceived to be farm nuisances:***

- “Modest. Because of regulations and more homeowners, there’s a risk that agriculture will move where it is less difficult.” (King County)
- “Dim. There has been talk of a local senator throwing out the [state] right-to-farm law. This has farmers worried. Farmers fear they could get sued for anything.” (Dane County)
- “Bright. One of my biggest concerns is a farmer’s rights as to what one can do on his property, such as wind power, livestock, and roadside stands. There is apt to be a lot of controversy by people who don’t have a right to dictate to a farmer.” (DeKalb County)

- “Some of them [local farmers] view complaints by non-farmer neighbors as the beginning of the end.” (Burlington County)

### **Favorable or Problematic Geographic Features**

The last group of arguments to be considered (from just 7% of the relevant respondents) focused on geographic features of the county. Not surprisingly, Sonoma interviewees pointed to the special climatic conditions that supported their wine-grape growers. At the other end of the spectrum, experts on Larimer County’s agriculture lamented the chronic lack of rainfall and growing competition from urban users.

- “Bright. There is only one Sonoma County in the world, and we grow world-class Pinot Noir and Chardonnay. We have going for us the climate. That’s a huge thing.” (Sonoma County)
- “Modest. We have good soil and a 365-day growing season.” (Ventura County)
- “Bright. I think we are in a good position for several types of markets—rail, ethanol, Chicago processing, and exports.” (DeKalb County)
- “Modest. There is too much population growth and tremendous challenges with the water and land. The main problems are prices of land, and availability of land and water is the worst.” (Larimer County)

## **6. Would Local Experts Recommend That Young People Farm in the County?**

Although, as discussed in Chapter 4, some new farmers may be transplants from other counties nearer urban centers, many may need to be young people who will start and/or mature their agricultural careers in the counties we have been studying. They will gain knowledge of local conditions, personal connections, and friends who provide information (and perhaps emotional support) to help them survive, if not flourish, in an urbanizing environment. Therefore, we aimed to ask virtually all the interviewed leaders this question: “Would you recommend that a smart, hard-working young person with an agricultural background be a farm operator in [named] County? Why or why not?” The traits “smart,” “hard-working,” and “with an agricultural background” were specified so that responses would concentrate on other causal conditions, such as the availability to younger farmers of land and credit and also the kinds of operations with which they should start.

A total of 219 interviewed leaders answered this question, and very few made unqualified positive or negative recommendations. Table 5.8 presents the percentage breakdowns of the opinions given for counties where at least 10 interviewees addressed the question. The “yes” values ranged from zero to 15%, with a median of zero, while the entries for unqualified “no” values extended from zero to 62%, with a 7% median (Table 5.8). In all except one county (Larimer), majorities of respondents—67% to 100%—gave conditional answers, amounting to “yes, if they do this” or—in some cases—“no, unless they have this trait.” However, Larimer County, with 29 interviewees, had only a third conditional responses, and 62% were clearly negative. Here are three examples:

- “No, I would recommend them to go to a county close by where the price of land is much cheaper, and there is more availability of water. In Larimer County there

- is not enough ground and water. This makes the cost of operation higher. There are more taxes on the land, [and] the water is more scarce and more expensive.”
- “I see a lot of the established farmers, younger farmers, saying ‘I’ve had enough of this.’ They are going up to northeastern Colorado or Pine Bluff, Wyoming, or over to Nebraska, taking them back to traditional agricultural settings where you don’t have a lot of hassle with the urban fringe. It’s a good use of their assets; sell here and buy land that costs half the price there. And have an environment more conducive to farming and have more rainfall.”
  - “Absolutely not, because they cannot afford the ground. Even if they inherit the land it doesn’t pay off to do agriculture on the land given the return on investment.”

**Table 5.8: Interviewed Agricultural Leaders’ Recommendations Whether “A Smart, Hard-Working Person with an Agricultural Background Should Be a Farm Operator” in County: Percentage by Content Type of Response**

County	Unqualified “yes”	Qualified “yes” or “no”	Unqualified “no”	Gave information but no clear opinion
King (n = 15)	7	67	26	0
Sonoma (n = 15)	13	80	7	0
Lancaster (n = 16)	0	100	0	0
Dakota (n = 16)	0	69	31	0
Dane (n = 20)	5	75	15	5
DeKalb (n = 14)	0	100	0	0
Carroll (n = 10)	10	80	10	0
Berks (n = 13)	15	77	8	0
Burlington (n = 11)	0	91	0	9
Orange (n = 19)	0	95	5	0
Larimer (n = 29)	3	34	63	0
Fayette (n = 23)	0	78	22	0

***The Land Constraint and Solutions***

In each county and overall, the type of causal condition most frequently mentioned was the land constraint, which in low-precipitation areas like Larimer County included water rights attached to the land. Sixty-three percent of the 219 interviewed leaders who addressed our question about the future of young farmers gave some condition about land. No other type of input of production was mentioned by more than three interviewees. Presumably, the near-absence of comment about manufactured or processed inputs (e.g., ag chemicals, implements, seeds) reflects both the saliency of the land constraint and the largely satisfactory levels of supply as of the period of our fieldwork. Contributing to that perceived status may have been the various adaptations that both suppliers and farmers made to the closings and consolidations of retail outlets for those inputs (see Section 7, Chapter 4).

The very limited mention of labor problems (just three comments) in the context of recommendations to young farmers may reflect not the lack of such problems (see Section 2, Chapter 4) but perhaps the interviewees’ assumption that young people starting out in farming would be limited largely to their own labor and that of spouses.

As indicated just above in the Larimer County quotations and below in interview materials from other counties, some respondents simply lamented the high cost of land and urged young people to move to less-urbanized areas. As also discussed below, others interviewees examined the benefits and limitations of various solutions, particularly the assistance that farm families can provide to their young people.

Agricultural protection zoning, purchase of development rights, and other tools to slow or shape the pattern of development were also relevant. They were seen as helping to keep the supply of farmland ample enough (relative to demand) that prices did not become impossibly high.

### **Affordability of Land**

- “If he is a son or daughter of an established farmer, or marries into land, or has money from another career, you can try it. But there are very few self-made farmers any more. It’s a 10th of 1 percent who can do it. (Sonoma County)
- “Hell, no. I wouldn’t even suggest my children to get into it [farming in the county]. How would I say for someone else to get into it? They would have to own the land. Renting is hard to find and costly.” (King County)
- “Yes, but you really have to own the farm or have a relative in it. Very expensive land. Maybe best if you go somewhere where land is cheaper” (Ventura County)
- “No, unless you have family in farming here. Move to adjacent county or elsewhere.” (Lancaster County)
- “Not likely. Depends on their financial status with money or relatives to help. There are young farmers here now that love it, but I’m not sure they will be able to make it work in the future unless they have land to sell in the north [of the county] and can buy in the south [away from the metro area, where prices were cheaper per acre]. If it was one of my boys, I’d tell them it wouldn’t work.” (Dakota County)
- “If a young person does not have family ties, I recommend going north and trying to farm in a different county where the land values aren’t as high.” “The price of land [here] is so high, you have to be in an established family, either born or married into.” (Dane County)
- “If land is currently selling for \$8,000 [per acre], then there is a tremendous investment to get enough acres to make a grain farm profitable. This would make purchasing land and succeeding very difficult.” (DeKalb County)
- “No, farm ownership is almost impossible here. You need a 200-acre base for a new farmer. . . . If you are just renting, it won’t work. I would have somebody go up to western Pennsylvania or western New York.” (Carroll County)
- “No, I wouldn’t tell them to do it. The money to start the farm would kill them. He would have to start small and fight for acreage all the way along. And the acreage would be spread out and not in one place.” (Berks County)
- “Not many [new people] entering; the price of real estate is an obstacle. Because the amount of agricultural land is decreasing, it’s difficult for young farmers to break into the agricultural sector.” (Burlington County)

- The future of dairying in Orange County is zero, unless dad owns the farm and gives it to you and you have no debt.” (Orange County)
- “Yes, if they have the capital to start or if they inherit an existing operation. They can get good money from the horses. However, for general agriculture or for people that do not have the money or the land, I wouldn’t advise anybody. The land is just too expensive.” (Fayette County)

### **Needed Support from Family**

Interviewed leaders described a variety of types of family support that young people needed to get established, including the gift or bequest of land, discounted prices for purchasing and renting land, the loan of equipment, and sharing “grapevine” information. In several cases, the interviewees were thinking of the extended family, such as grandparents, uncles, and aunts.

#### ***“Deals” for land purchases:***

- “Many that are going into farming are using their parents’ land and equipment, and the parents are cutting them deals.” (Dane County)
- “If I was a son or daughter of a current farmer, maybe I’d take over from my parents—if the land was reasonably priced by my parents. Otherwise, if I really wanted to set myself up in a profitable business, I would look at Pennsylvania or New York. Carroll County is just too close to Baltimore. Acres are selling at \$5,000 to \$6,000 [per acre] and upwards of \$10,000. We are not running out of farmland; it is just too expensive.” (Carroll County)
- “If he stays, my grandson will eventually get the farm. We’ll make a deal with him.” (Burlington County)

#### ***Discounting or sharing cost of rents:***

- “[He needs] low rent from parents.” (Sonoma County)
- “It depends on his/her capital structure. . . . Unless he has that resource from a family standpoint or someone willing to sell or rent land at a reasonable price, it won’t be lucrative. (Dakota County)
- “I would say they need to be related to someone already in agriculture in the county or vicinity who can sponsor them in a support capacity. Rents may easily be \$180 an acre; so, even if the young operator was willing to only rent land, it may not be affordable. I would be much more encouraging to the young person if he was a child of an existing DeKalb County farmer.”

#### ***Where does a rented-only operation lead?***

- “Guys start off renting, buy some cows, and after three to four years they start to buy equipment. We’ve had a bunch of young kids, 20 to 24 years old, rent here and start up, but they can’t buy the land. They go elsewhere. They need fathers or other family members to let them inherit the land.” (Orange County)
- “For some people, leasing might help them get started, but for small acreages.” (Larimer County)
- [Not owning the land, the interviewee will not have that resource to cash in at retirement time. Therefore, he is looking for an operator to buy the business]. “I

would like to set up a direct agreement with the new operators. They would end up paying us over a period of time. Like a reverse mortgage for as long as we live.” (Sonoma County)

***Share the “insider” or “pecking order” status:***

- “Because the amount of agricultural land is decreasing, it’s difficult for young farmers to break into the agricultural sector. The established farmers have relationships with landowners, and they get first crack.” “In our area, there is almost an unwritten . . . ‘pecking order’ that determines who the next successors are after the current farmer dies or gives up the lease. Farmers who ignore this are often shunned by other farmers and considered ruthless and cutthroat.” (Burlington County)
- “The exception to this would be a young person whose grandfather owns land in the north, sells that land, granddad gets money, and the kid buys land in the south. You cannot do this as an outsider and take a loan and buy land.” (Dakota County)
- “Yes, if they can find a spot to do it. If they are not from the area, it will be hard to find land to rent or buy.” (Larimer County)

***Become a partner or full owner gradually:*** Several interviewees recommended or at least speculated about young farmers working toward part or full ownership through contributions to the business that owners reward with equity shares of some kind.

- “There is a fair amount of leasing of vineyard land. There are a lot of people who don’t want to tinker with it. They want to sit there with their wine and watch others take care of it. Start with leasing five acres, earn sweat equity, [and] borrow from mom or dad. But ownership is tough. We [the bank] want about a third down.” (Sonoma County)
- “Yes, but they will have to be mentored by an older farmer. Land value may be too high. Must have desire and sweat equity.” (Lancaster County)
- “Their best opportunities may be in working into a transition ownership with an existing or retiring farmer. . . . It takes training, education, job experience, business skills, and a real desire.” (DeKalb County)
- “There is the chance that you could work with a relative and work your way into a farm situation. I do know a few instances where that occurred, but it is difficult.” (Carroll County)
- “Occasionally, an older farmer wants to retire, and a young farmer buys in gradually. After five years, he’ll buy a piece. Two or three [cases] so far. Not sure if they get the land at a discount. Could be intra-family.” (Burlington County)
- “How to get started? Lease or rent to own, with sweat equity. They work, and uncle pays them a salary. But the difference between what they get and what they really provide to the uncle pays for 10% of the farm a year. Until nephew or junior has some equity, would any bank look at him?” (Orange County)

**Choosing Suitable Product Mixes and Marketing Outlets**

The apprenticeship-type learning implied in most of the above quotations about becoming partners or full owners reminds us that financial support from family would not likely be a sufficient condition for success. As with any other kind of entrepreneur, the

young farmer must choose suitable product mixes and marketing outlets. Thirty-two percent (or 70) of the 219 interviewees who addressed our question about young farmers made recommendations about what to raise. The most frequently endorsed kinds (by 74% of this group of the 70) were products of likely appeal to urban and suburban consumers. They were variously titled: organics, “niche market” foods, high value or value-added products, vegetables, and fruits.

Two-thirds of the same interviewees who encouraged this grouping of products also recommended that they be directly marketed. The primary justification for promoting both was the higher expected revenue per acre from the relatively small operations that the young farmers were likely to have:

- “Yes, [there are] great role models in the area that have made it successful. . . . But access to land is the biggest hurdle. Must be a marketer, people person. Must lease land and do direct marketing.” (King County)
- “Yes, two scenarios . . . Either you have a family with land, or you rent and do direct marketing of some sort. Lots of opportunities with urban agriculture.” (Lancaster County)
- “Direct marketing is better suited for urban development. . . . People from Larimer, Fort Collins area, support direct-marketing initiatives.” (Larimer County)
- “Direct-marketing opportunities are more appropriate for a young farmer that would like to start in Fayette County because they just need a small acreage operation and there is a lot of demand.” (Fayette County)

In a separate but related interview question, we asked the local leaders about changes in the types of farm enterprises they expected to be operating in the county 10 years hence. Presumably, anticipated increases indicated the kinds of operations that buyer demand, input conditions, and other causal circumstances would support. At least from the perspective of 2005–2007, they represented potential opportunities for younger as well as older farmers. Table 5.9 lists the most frequently mentioned types of expected changes from left to right. For some counties, the second- or third-ranked changes comprise subgroups of the first or second group. An example is King County leaders who predicted an “increase in farms producing for niche markets” were members of the larger first group who anticipated more “small operations.”

The farm consolidations predicted by some experts for four Corn Belt counties, as well as for Berks, Burlington, and Fayette counties, would seem irrelevant to younger farmers, except if they worked their way up to becoming operators’ heirs or hired managers. More attainable in the short or medium term should have been becoming operators of some of the new niche-market farms expected in King, Dane, and the four Mid-Atlantic counties. In addition to the growing urban and suburban markets, they frequently had the advantage of modest land requirements.

However, in some land markets, buyers seeking to be hobby farmers may have current income and/or savings sufficient to outbid the young buyers.<sup>93</sup>

- “I expect more farms . . . just raising a few pleasure horses. These are people who have another source of income, stable and high—such as doctors and lawyers.” (Fayette County)
- “There are successful people interested in part-time farming. Their well-being has been established, though they’re not getting into it for a tax write-off. They want to be profitable. They’re growing in our area, primarily the horse industry.” (Orange County)
- “[More] niche farming. . . . Rich people from New York will buy the preserved land and lease it out.” (Berks County)

<b>Table 5.9: Interviewed Agricultural Leaders’ Predictions about Changes in Types of Farm Enterprises Likely to Be Operating in the County 10 Years in the Future: Most Frequently Mentioned Changes, by Percentage of Total Interviewees Mentioning Them*</b>			
<b>County</b>	<b>Most Frequently Mentioned Change</b>	<b>Second Most Frequently Mentioned</b>	<b>Third Most Frequently Mentioned</b>
King ( <i>n</i> = 12)	Increase in number of small operations (mentioned by 75% of the interviewees)	Increase in farms producing for niche markets (e.g., organic, goats, sheep, vegetables, fruits) (42%)	More hobby farms (17%)
Sonoma ( <i>n</i> = 10)	More small farms (60%)	Also, more farm consolidations (30%)	
Lancaster ( <i>n</i> = 19)	More farm consolidations (e.g., corn and soybean farms absorb others) (68%)	More small operations (37%)	More hobby farms (16%)
Dakota ( <i>n</i> = 12)	More farm consolidations (33%)	More small farms (25%)	
Dane ( <i>n</i> = 14)	More consolidations (64%)	More small farms (50%)	More farms for niche markets (29%)
Madison ( <i>n</i> = 14)	More consolidations (80%)	More small farm (36%)	
Carroll ( <i>n</i> = 10)	More small farms (60%)	More farms for niche markets (e.g., u-pick, grapes, nursery, custom beef and pork) (40%)	More large farms (40%)
Berks ( <i>n</i> = 14)	More consolidations (e.g., dairy, hogs) (71%)	More smaller operations (e.g., fruits and vegetables, hay, potatoes) (71%)	More farms for niche markets (57%)
Burlington ( <i>n</i> = 12)	More operations oriented toward the growing population (nursery, sod, vegetables, horses) (67%)	More farm consolidations (25%)	
Orange ( <i>n</i> = 13)	More farms for niche markets (e.g., nursery, ethnic vegetables, organics, goats, sheep, cheese, specialty herbs) (62%)	Horse farms for growing upscale population (31%)	
Larimer ( <i>n</i> = 20)	More small farms (100%)	More hobby farms (55%)	More farms for niche markets (20%)
Fayette ( <i>n</i> = 21)	More consolidations (33%)	More small farms (19%)	

<sup>93</sup> Said one Fayette County respondent, “I expect more farms . . . just raising a few pleasure horses. These are people who have another source of income, stable and high—such as doctors and lawyers.”

\*Included in this table are only the counties where at least 10 local leaders answered the question about expected changes. Percentage entries per county may sum to more than 100% because the same interviewees may have mentioned more than one kind of change. Also, in some counties, the second or third entry is a subgroup of the first (or second).

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## **7. Policy Inferences for Promoting Healthy Agricultural Sectors on the Urban Edge**

From this chapter's discussion of predictions by interviewed local leaders and surveyed agland owners in the 15 counties, we derived five main policy inferences that were applicable to the period of our field research—early 2005 to mid-2007. Then came the marked downturn in urban and suburban real estate values and fluctuations in market prices for agricultural products and inputs like fuel. The future policy applicability of these inferences will therefore depend on factors that we now cannot know or weigh. However, this chapter has emphasized findings about causal relationships, many or most of which do not completely disappear. Rather, the scope and strength of their influence varies over time.

### ***Local Governments Help to Prevent or Resolve Conflicts between Farmers and Non-farmer Neighbors***

Regarding *what causes owners to plan to convert their land out of agricultural use*, we found in four counties that respondents were *more* likely to develop if they thought that their local government sided with non-farmers in conflicts between them and farmers and that they were *less* likely to have any plans for conversion if they believed the opposite (Table 5.3).

The same type of relationship emerged from the analyses for three counties about whether operators planned to stay farming in the county for another 10 years (Table 5.5). And we found it also in six counties when identifying predictors of whether surveyed agland owners held positive opinions about the future of agriculture in the county 20 years hence (Table 5.6). In all, perceptions of how local authorities handled conflicts between farmers and non-farmers made a difference for one or more of these three expectations or opinions in a total of 10 separate counties out of the 15. The obvious policy inference is that, if local authorities try their best to be even-handed or pro-farmer, they may shape behaviors conducive to healthy agricultural sectors.

Such efforts may of course also settle problems that have already arisen and discourage neighbors from making complaints in the first place. Since this policy stance is likely to become politically less feasible as more non-farmers populate the landscape and the voter registration rolls, effective land-use controls can help by minimizing the building of new homes for non-farmers in agricultural areas.

### ***Land-use Controls***

#### **a. Local Governments Practice Effective Agricultural Zoning.**

Owners in six counties were *less* likely to plan for development of their agland if they evaluated local zoning to be effective in “maintaining an adequate supply of land for agriculture in the county.” In six counties also, believing that their zoning was successful in that same respect was associated with the surveyed owner-operators being *more* likely

to expect to remain farming in the county for another 10 years. Yet again in six counties, respondents were *more* likely to be positive *about the future of agriculture in their county* if they thought that zoning helped to maintain an adequate supply of land for farming. Evaluations of local zoning appeared to shape one or more of these three types of attitudes in a total of 12 of the 15 studied counties. Then there were the interviewed leaders in five counties who argued that effective enforcement was necessary to the continued viability of their ag sectors.

**b. State Governments Enable, and Local Authorities Operate, Effective Programs for Purchasing Development Rights to Farmland.**

In a total of six counties, affirmative opinions about purchase of development rights (PDR) were associated with respondents being *less* likely to plan to convert any of their land out of ag use and/or *more* likely to continue farming in the county for at least 10 years.

**c. Encouraging Intergenerational Transfer of Farm Resources**

Regarding conditions that encouraged owner-operators *to plan to invest in farm buildings*, the likelihood of such plans *increased* in six counties if a son, daughter, or grandchild was lined up to succeed the surveyed operator. The same kind of relationship was found in eight counties during our search for the determinants of *plans to stay in farming or ranching in the county for at least 10 years*. Also regarding the conditions for encouraging *hard-working young people with agricultural backgrounds to farm in the county*, we found many interviewed leaders arguing that membership in local farm families was indispensable to young people's success. Among the desirable and perhaps essential forms of family assistance were gifts of land, discounted prices for purchasing or renting agland, sharing information from the "grapevine" about when land comes up for sale or lease, sharing of equipment, and mentoring in farm management.

The findings summarized in the previous paragraph suggest a need to provide public agencies (like Cooperative Extension) and private organizations (like FarmLink) with the resources to facilitate intergenerational transfer or sharing of farm resources (including management knowledge). It may be a challenging objective. In our interviews we heard about sons who changed their minds after promising to take over the farm, about parents wanting to give the farm to one son but hard-pressed to compensate the other two or three of their children who did not wish to farm, and about a successful farmer with two children neither of whom—he concluded—was suited to head the family farm operation.

Chapter 4 has information on programs (FarmLink, University of Wisconsin's School for Beginning Dairy and Livestock Farmers) that could help with transfers from retiring farmers to nonfamily members. However, as seen above, our interviewed experts emphasized intra-family succession.

***Encouraging Farm Enterprises That Are Likely to be Profitable on the Urban Edge***

Once a young person is persuaded to try farming in an urbanizing county, what types of farm enterprises should he/she be encouraged to operate (at least given the conditions we studied in 2005–2007)? With the diversity of the 15 study counties, it is not surprising

that no one recipe was appropriate for all or most. Where soils, rainfall, and/or other geographic features give the county's agriculture a comparative advantage, our interviewed experts urged young farmers to raise the advantaged products. Growing wine grapes was promising in Sonoma County, as was working up the management ladder in a thoroughbred horse farm in Fayette County and raising corn and soybeans in DeKalb County. Relative smallness in total acres may make sense given the pervasive land constraint. Among our total of 1,237 surveyed agland owners who also were operators, 199 were 44 years old or younger. And among those 199, a quarter of them farmed (owned and/or rented) no more than 12 acres (the 25th percentile) and half farmed 41 acres or less.

In the interview segments about whether to urge young people to farm in the county, 16% of the total ag leaders giving input on this issue recommended direct marketing. One commonly given reason was that, compared to wholesaling, the net income from smaller landholdings could be larger if food, flowers, and other products were sold directly to urban and suburban consumers. Among our 199 young or relatively young surveyed owner-operators, 26% did some kind of direct marketing.

### ***Overcoming Labor Shortages***

Omitted from this discussion of assistance to beginning farmers are of course conditions that affect the viability of more mature farm operations, particularly the labor constraint that was explored in Chapter 4. For example, across the 15 counties, from 47% to 79% of the surveyed owners reported using nonfamily labor, but the median value of those satisfied with the supply was only 53%. Policy makers need to consider ways to improve the quantity of farm workers, their productivity, or the availability of effective mechanical substitutes. One solution that interviewed experts offered for the quantity problem was to make the federal guest worker program more effective in getting sufficient help to farms when needed.

### ***Encouraging Metro-area Farmers to Adapt to Reduced Aggregate Demand in Their Localities for Agri-service Dealers***

Chapter 4 presented also our interview findings about how both agri-service businesses and their farmer customers in metro areas responded to the closing of many local dealerships. While the dealers remaining in one or two counties away developed effective delivery programs, farm operators learned how to use the Internet to order supplies and how to do some of their own equipment repairs and to meet other service demands. If need be, Cooperative Extension or other public agencies could encourage these necessary adaptations, such as with information brochures and workshops.

## Cited References

ACDS, LLC, 2004. *Technical Report: Orange County Economic Development Strategy* (Goshen, NY: Orange County Department of Planning), 68 pp.

Agricultural Commissioner, Sonoma County, 2008, *2007 Sonoma County Crop Report* (Santa Rosa, CA), 20 pp.

Agricultural Commissioner, Ventura, 2008, *Ventura County Crop Report, 2007* (Santa Paula, CA), 10 pp

Allen, Janet, 2004. "Here's A 'Behind the Scenes' Look at the 2002 Ag Census," *USDA News: 2004, USDA's Employee News Publication*, 63 (1).

American Association for Public Opinion Research (AAPOR), 2004. *Standard Definitions: Final Dispositions of Case Codes and Outcome Rates for Surveys*, 42 pp.

American Farmland Trust, Farmland Information Center, 1998. *Fact Sheet: Agricultural Protection Zoning*, [http://www.farmlandinfo.org/documents/29478/FS\\_APZ\\_9-98.pdf](http://www.farmlandinfo.org/documents/29478/FS_APZ_9-98.pdf) (accessed July 21, 2008).

American Farmland Trust, Farmland Information Center, 2003. *Fact Sheet: America's Agricultural Land Is At Risk*, [http://www.farmlandinfo.org/documents/28562/Why\\_Save\\_Farmland\\_1-03.pdf](http://www.farmlandinfo.org/documents/28562/Why_Save_Farmland_1-03.pdf). (accessed December 19, 2008).

American Farmland Trust, Farmland Information Center, 2006. *Fact Sheet: Agricultural Conservation Easements*, [http://www.farmlandinfo.org/documents/27762/ACE\\_06-10.pdf](http://www.farmlandinfo.org/documents/27762/ACE_06-10.pdf) (accessed June 21, 2008).

Blobaum, R. 1982. Remarks at Food and Agriculture Symposium (AAAS Annual Meeting. Washington, D. C.).

Bogue, Donald J., 1956, "The Spread of Cities," *The American Economic Review*, 46 (2): 284-292.

Brown, A., 2001. "Counting farmers markets" *Geographical Review*, 91(4): 655-674.

Bryant, C. R., and T. R Johnston, 1992. "The nature of agriculture in the City's Countryside: a synthesis." *In Agriculture in the City's Countryside* (Toronto: University of Toronto Press).

California Department of Conservation, Division of Land Resource Protection, 2008. *Williamson Act: Questions and Answers*, 2 pp., <http://www.conservation.ca.gov/dlrp/lca/Pages/Index.aspx> (accessed June 30, 2008).

Clancy, K., Higgins, E., and Lydia Oberholtzer, 2001. *Making changes: Turning local visions into national solutions. Agriculture and rural development policy recommendations from the Agriculture Policy Project.* (Arlington, VA: Henry A. Wallace Center for Agricultural & Environmental Policy at Winrock International), 76 pp., [http://extension.usu.edu/files/publications/publication/pub\\_1046514.pdf](http://extension.usu.edu/files/publications/publication/pub_1046514.pdf) (accessed December 19, 2008).

Clouser, Rodney L., 2005. *Issues at the Rural-Urban Fringe: Methods to Sustain Agricultural Land – Use-Value Assessment* (Gainesville, FL: University of Florida, IFAS Extension), 4 pp.

Conklin, Howard E., and William G. Leshner. 1977. “Farm-value assessment as a means of reducing premature and excessive agricultural disinvestment in urban fringes,” *American Journal of Agricultural Economics*. 59: 755-759.

Coughlin, Robert E., John C. Keene, J. Dixon Esseks, William Toner, and Lisa Rosenberger, 1981. *The Protection of Farmland: A Reference Guidebook for State and Local Governments* (Washington, DC: National Agricultural Lands Study), 284 pp.

Cowan, Tadlock., 2001. *The Changing Structure of Agriculture and Rural America: Emerging Opportunities and Challenges* (Washington, D.C.: Congressional Research Service), 57 pp.

Dakota County [Minnesota], 2002, *Dakota County Farmland and Natural Area Protection Plan* (adopted January 2002), 80 pp.

Dane County [Wisconsin] Planning and Development Division (2008). *Component Town Plans*, <http://www.countyofdane.com/PLANDEV/planning/townComponents.aspx> (accessed May 1, 2008)

.Daniels, Tom, 2008. *Farmland Preservation in Growth Management: Lessons for Florida* (2008 Florida State University De Voe Moore Center Critical Issues Symposium), 49 pp.

Daniels, Tom, and Mark Lapping, 2005, “Land Preservation: An Essential Ingredient in Smart Growth,” *Journal of Planning Literature*, vol. 19 (3): 316-329.

DeKalb, Mike, and Sara Hartzell, 2006. “Rural Development in Lancaster County,” March 26, 2006 (Lincoln, NE: Lancaster County Planning Department), PowerPoint Presentation.

Esseks, J. D., Jessica Nelson, and Monica Stroe, 2006. *Evaluation of USDA’s Farm and Ranch Lands Protection Program (FRPP) through A Survey of Random Sample of Owners of Agricultural Land Whose Development Rights were Sold in Part through the FRPP* (Lincoln, Nebraska: Center for Great Plains Studies, University of Nebraska), 55 pp.

Esseks, J.D. and Brian J. Schilling, 2008. *Burlington County, New Jersey: One of 15 Case Studies for the Research Project, Farm Viability in Urbanizing Counties* (Lincoln, NE: Center for Great Plains Studies, University of Nebraska-Lincoln), 71 pp.

Ferguson, Louise, Jackie Burns, Kitrin Glozer, Carlos Crisosto, Vanessa Bremer, William H. Krueger, and Richard Rosecrance, no date, "Mechanical harvester efficiency and damage evaluations": <http://ucce.ucdavis.edu/files/filelibrary/6297/35688.pdf> (accessed November 12, 2008),

Goldfarb, Alan, 2008, "Moving toward mechanical: high-end winemakers warm slowly to machine harvesting, *Wines & Vines*, March, [http://findarticles.com/p/articles/mi\\_m3488/is\\_3\\_89/ai\\_n25156534/pg\\_1?tag=artBody;col1](http://findarticles.com/p/articles/mi_m3488/is_3_89/ai_n25156534/pg_1?tag=artBody;col1) (accessed November 12, 2008).

Greene, Richard P., and John Stager, 2001, "Rangeland to cropland conversions as replacement for prime farmland lost to urban development," *The Social Science Journal*, 38 (Winter): 543-555.

Hall, Jeff, Will Snell, and Craig Infanger, 2000. *Kentucky's (Phase I) Tobacco Settlement Funding Program* (University of Kentucky, College of Agriculture), 5 pp., <http://www.uky.edu/Ag/TobaccoEcon/publications/kysettlefund.pdf> (accessed January 8, 2009).

Handel, M.E., 1999. "Conflict on the Urban Fringe," a chapter in *California Farmland and Urban Pressures: Statewide and Regional Perspectives*, edited by A. Medvitz, A.D. Sokolow and C. Lemp (Davis, CA: Agricultural Issues Center, University of California), pp. 51-70.

Hart, John Fraser, 2002, *Specialty Cropland in California* (Minneapolis, MN: University of Minnesota, Department of Geography), 26 pp.

Heimlich, Ralph E., and William D. Anderson, 2001, *Development at the Urban Fringe and Beyond: Impacts on Agriculture and Rural Land* (US Dept. of Agriculture, Economic Research Service, Agricultural Economic Report No. 893), 88 pp.

Heinrich-Schilling Joint Venture, 2004. *Agriculture in Burlington County's Route 206 Farm Belt: Current Industry Status and Trends* (Madison, NJ, prepared for the Burlington County Department of Economic Development and Regional Planning, Mount Holly, NJ), 354 pp.

Heurer, Robert, 2006, *Urban-Edge Agriculture: A Farm Credit System Perspective* (Evanston, IL.), 51 pp.

Jackson-Smith, Douglas and Jeff Sharp, 2008. "Farming in the Urban Shadow: Supporting Agriculture at the Rural-Urban Interface," *Rural Realities*, 2 (4): 11 pp.

Johnston, T. R. and C. R. Bryant, 1987. "Agricultural Adaptation: The Prospects for Sustaining Agriculture Near Cities." A chapter in *Sustaining Agriculture Near Cities*, William Lockeretz, ed. (Ankeny, IA: Soil and Water Conservation Society), pp. 9-21

Kandel, William, 2008. *Profile of Hired Farmworkers: A 2008 Update* (Economic Research Report No. 60, Economic Research Service, U.S. Department of Agriculture), 59 pp.

King County [Washington], 2006. *2004 King County Comprehensive Plan with 2006 Amendments*, Chapter 3, pp. 3-35,  
<http://www.kingcounty.gov/property/permits/codes/growth/CompPlan/2004.aspx>  
(accessed November 1, 2008).

King County Agricultural Commission, 2008. "Draft Restrictive Covenants for Farmland,"  
<http://www.kingcounty.gov/environment/waterandland/agriculture/commission.aspx>  
(accessed June 28, 2008).

King County, Department of Natural Resources and Parks, 2006. *Measuring for Results: King County Fourth Annual DNRP Performance: Performance Measures, Community Investment*, p. 117,  
<ftp://dnr.metrokc.gov/dnr/library/2006/KCR1964/0601perfMEAS10pmCOMM.pdf>  
(accessed November 1, 2008).

Lapping, Mark, and M. Pfeffer, 1997. "City and Country: New Connections, New Possibilities," in W. Lockeretz, ed., *Visions of American Agriculture* (Ames: Iowa State University Press), pp. 91-104.

Larimer County [Colorado] Open Lands Program, *Annual Report, 2006*,  
<http://www.co.larimer.us./openlands/> (accessed June 26, 2008).

Lexington-Fayette Urban County Government, 2008. *Frequently Asked Questions about PDR*, <http://www.lfucg.com/pdr/FAQ.asp> (accessed June 26, 2008).

Lexington-Fayette Urban County Government, Division of Purchase of Development Rights, *Fayette County's Purchase of Development Rights Program*,  
<http://www.lfucg.com/pdr/index.aspx> (accessed October 29, 2008).

Lisansky, J., and G. Clark, 1987. "Farmer-Nonfarmer Conflicts in the Urban Fringe: Will Right-to-Farm Help?" A chapter in *Sustaining Agriculture Near Cities*, edited by W. Lockeretz (Ankeny, IA: Soil and Water Conservation Society), pp. 219-230.

Lockeretz, William, 1989. "Secondary Effects on Midwest Agriculture of Metropolitan Development and Decreases in Farmland," *Land Economics*, 65 (3): 215-216.

- MacDonald, Fraser, 2007. *Farm Viability on the Floodplain in Lancaster County: An Undergraduate Thesis* (Lincoln, NE: The Environmental Studies Program at the University of Nebraska-Lincoln), 55 pp.
- Madison County Commissioners [Ohio], 2000, *Madison County, Ohio Comprehensive Plan, February 2000* (London, Ohio), 75 pp.
- Madison County Commissioners [Ohio], 2005, *Madison County, Ohio Comprehensive Plan, 2005* (London, Ohio), 75 pp.
- Maryland-National Capital Park and Planning Commission, 2005, *The Future of Agriculture in Prince George's County, Maryland* (Upper Marlboro, MD: The Maryland Capital Park and Planning Commission), 52 pp.
- Merriam-Webster Collegiate Dictionary, 2006.*
- Menard, Scott, 2000. *Applied Logistic Regression Analysis*, 2<sup>nd</sup> ed. (Thousand Oaks, CA: Sage Publications), 94 pp.
- Monke, Jim, 2005. *Farm Credit System* (Washington, DC: Congressional Reference Service, RS21278), 6 pp.
- New Jersey Department of Banking and Insurance, 2006. *The New Jersey Pinelands: A Success Story*, <http://www.state.nj.us/dobi/pinelands/pinelandssuccess.htm> (accessed October 19, 2006).
- New Jersey Pinelands Commission, 2006. *The Pinelands Comprehensive Management Plan (CMP)*, <http://www.state.nj.us/pinelands/cmp/> (accessed July 27, 2006).
- New Jersey State Agricultural Development Committee, 2004, "Recommendations of the New Jersey Farmland Affordability/Availability Working Group," September 24, 2004 (Trenton, NJ)
- Nickerson, Cynthia, 2001, "Smart Growth Implications for Agriculture and Urban Fringe Areas," *Agricultural Outlook* (USDA Economic Research Service), April: pp 24-27.
- Palm Beach County Commissioners, 2006. "Position on Property Tax Reform," <http://www.propertytaxreform.state.fl.us/docs/Meeting111706/NewellMods.pdf> (accessed June 30, 2008).
- Palm Beach County Land Use Advisory Board (Local Planning Agency), 2007. Minutes of the March 9, 2007, Meeting, p. 2, <http://www.co.palm-beach.fl.us/pzb/planning/luab/minutes030907.pdf> (accessed October 25, 2008).
- Reidhead, Jim, 2006, "A Review of The Rural Land Use Process: Larimer County Board of Commissioners Work Session, April 17, 2006," PowerPoint presentation, 69 slides.

Schutt, Russell K., 1999. *Investigating the Social World: The Process and Practice of Research*, 2<sup>nd</sup> ed. (Thousand Oaks, CA: Pine Forge Press), 622 pp.

Sokolow, Alvin, D., 2006. *A National View of Agricultural Easement Programs: Measuring Success in Protecting Farmland—Report 4* (DeKalb, IL: Center for Agriculture in the Environment, the American Farmland Trust), 68 pp.

Sokolow, Alvin D., and Anita Zurbrugg, 2003. *A National View of Agricultural Easement Programs: Profiles and Maps—Report 1* (DeKalb, IL: Center for Agriculture in the Environment, the American Farmland Trust), 184 pp.

Sonoma County Agricultural Preservation and Open Space District, 2008a. *Protected Lands*, [http://www.sonomaopenspace.org/Content/10134/view\\_by\\_area.html](http://www.sonomaopenspace.org/Content/10134/view_by_area.html) (accessed October 21, 2008).

Sonoma County Agricultural Preservation and Open Space District, 2008b. “Small Farms,” [http://www.sonomaopenspace.org/Content/10120/small\\_farms.html](http://www.sonomaopenspace.org/Content/10120/small_farms.html) (accessed October 21, 2008).

Sonoma County Agricultural Commissioner, 2000, *1999 Sonoma County Agricultural Crop Report* (Santa Rosa, CA), 17 pp., [http://sonoma-county.org/agcomm/pdf/1999\\_crop\\_report.pdf](http://sonoma-county.org/agcomm/pdf/1999_crop_report.pdf) (accessed December 10, 2008).

Sonoma County Agricultural Commissioner, 2008, *2007 Sonoma County Agricultural Crop Report* (Santa Rosa, CA), 20 pp., [http://www.sonoma-county.org/agcomm/pdf/2007\\_crop\\_report.pdf](http://www.sonoma-county.org/agcomm/pdf/2007_crop_report.pdf) (accessed December 10, 2008).

Strochlic, Ron, and Crispin Shelley, 2004. *Community Supported Agriculture in California, Oregon and Washington: Challenges and Opportunities* (Davis, CA: California Institute for Rural Studies), 37 pp.

Sumner, Daniel A., Henrich Brunke, and Jose E. Bervejillo, 2004. “The 2002 Census of Agriculture: A Wealth of Useful Data,” *AIC Issues Brief* (Agriculture Issues Center, University of California), Number 26 (August 20024), 4 pp.

University of Wisconsin, School for Beginning Dairy and Livestock Farmers, 2008. “Helping New Farmers,” <http://www.cias.wisc.edu/wsbdf/accomplishments.htm> (accessed August 31, 2008).

US Census Bureau, *American Community Survey*, <http://www.census.gov/acs/www/index.html> (accessed July 31, 2008).

US Department of Agriculture, National Agricultural Statistics Service, 2008, *The Census of Agriculture: Frequently Asked Questions*, [http://www.agcensus.usda.gov/Help/FAQs/General\\_FAQs/index.asp](http://www.agcensus.usda.gov/Help/FAQs/General_FAQs/index.asp) (December 19, 2008)

U.S. Department of Agriculture, Natural Resources Conservation Service, Kentucky, 2008. *Farm and Ranch Land Protection Program Helps Entity Reach Milestone*, [http://www.ky.nrcs.usda.gov/news/FRPP\\_LFUCG.html](http://www.ky.nrcs.usda.gov/news/FRPP_LFUCG.html) (accessed June 26, 2008).

U.S. Department of the Treasury, Internal Revenue Service, 2008. *Like-Kind Exchanges—Real Estate Tax Tips*, <http://www.irs.gov/businesses/small/industries/article/0,,id=98491,00.html>: (accessed June 11, 2008).

Whittaker, William G., 2006. *Farm Labor: The Adverse Effect Wage (AEWR)* (Washington, DC: Congressional Reference Service, Library of Congress), 7 pp.

Zurbrugg, Anita, 2003. *Less-than-Perpetuity and Agricultural Conservation Easements* (DeKalb, IL: American Farmland Trust, Center for Agriculture in the Environment), 14 pp.