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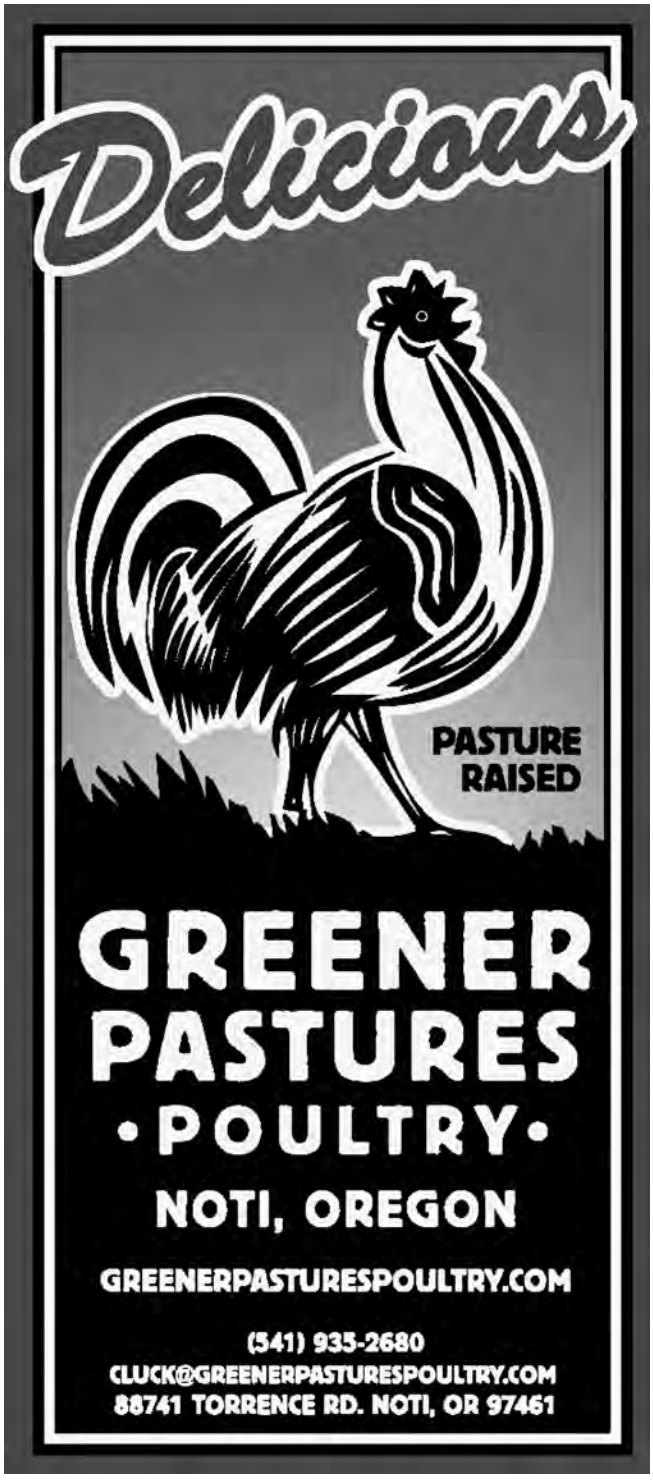
An Analysis of Food-Chain Demand for Differentiated Farm Commodities: Implications for the Farm Sector



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An Analysis of Food-Chain Demand for Differentiated Farm Commodities: Implications for the Farm Sector

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Executive Summary

Overall, a survey of the literature on food-chain demand for differentiated farm commodities demonstrates growth in demand for food with various characteristics, including locally produced, organic or otherwise differentiated farm products (DFP). However, desired core food characteristics, such as fresh, tasty, safe and healthy, must be present before consumers will consider additional characteristics like production practices or the food source. Strong growth in farmers' markets and direct-to-consumer marketing, such as the community supported agriculture (CSA) model, show that consumers are willing to spend time and money to support local food production. In general, however, only a small segment of consumers surveyed were willing to pay a premium higher than 10 percent for DFP.

As the result of sustained growth in demand of approximately 20 percent for organic foods over the past 15 years, organic products now make up between 2 and 3 percent of all food products. Consumers now purchase the majority of their organic products in conventional supermarkets (Dimitri and Greene, 2002), which represents a major change in their distribution — organics first were available only in specialty stores. With the recent entry of major chains in the organic market, including Wal-Mart and Safeway, and new organic versions of many brand-name foods, the organic market has clearly increased enough in size to warrant attention from major retailers. The organic market is also increasingly concentrated, and profit margins have fallen for some commodities, such as apples and grapes, as increasingly larger producers achieve organic certification (NBJ, 2004; Howard and Allen, 2006).

For consumers, price remains the number one obstacle when purchasing organic items. Prices for organic products have fallen — in 1995, prices on average were approximately double the price of comparable conventional products. But by 2002, prices for organic products averaged approximately 150 percent of their conventional counterparts (NBJ, 2004). This decline in the organic premium helps explain the sustained growth in demand. A comprehensive international literature review reports that, overall, most consumers are not willing to pay a price premium higher than 10 to 20 percent for organic food (Yiridoe et al., 2006). In 2006, Wal-Mart announced that it planned to market organic products at prices just 10 percent higher than the comparable conventional products. Today, it is already the largest seller of organic milk (Warner, 2006).

Recently, considerable research has been conducted on the organic consumer, but the conclusions within these studies are sometimes confusing. One national study states that baby boomer demographics are the single most powerful driver of organic demand (NBJ, 2004). In contrast, another national survey indicates that younger shoppers are increasingly buying organic, with 69 percent of organic shoppers under 50 years of age (HealthFocus International, 2003). Survey results are only as good as the researchers designing and interpreting the surveys. In this report, peer-reviewed journal articles have been cited to the extent to which they were available on this subject matter, but industry reports such as the ones previously cited are also included. Please see Appendix Table 1 for specific details on the studies examined in this report.

Consumers are beginning to understand the multiple appeals of locally produced foods, from reducing fossil fuel usage and strengthening their local economy to preserving farms in their region. Several recent

studies reveal a broader base of support for locally produced foods than for organic foods in the general population (Pirog, 2004; Schneider and Francis, 2005; Smith et al., 2006; Ostrom, 2006). "Locally produced" as a stand-alone attribute was ranked relatively low by respondents in a recent Washington state survey, with only 34 percent considering it very important (Ostrom, 2006). However, when this attribute was combined with helping local farmers and the local economy, the appeal of locally produced foods was strengthened dramatically, with 70 percent of respondents considering it very important. According to consumer surveys in Ohio, if locally produced items can stay within 125 percent of the cost of a comparable nonlocal product, 85 percent of the general population would be interested in purchasing these items (Smith et al., 2006). While just one-quarter of the general population felt local origin was an important purchasing criterion, over half felt that keeping a local farmer in business was important. Further research and education on the multiple benefits of local agricultural production may be warranted.

Given the growing proportion of American meals consumed outside the home, the importance of restaurant and food service markets should not be underestimated. In a survey of restaurant buyers, 73 percent felt that purchasing locally grown food had a positive impact on profitability (Food Processing Center, 2003). For these buyers, price was one of the less important characteristics in their food purchasing decisions. When consumers pay for restaurant or institutional meals, the price of the food itself may only be a small portion of the total cost. Increasingly, consumers are demanding fresher, higher quality, healthier food at work and in their hospitals and schools, preferably from local sources. While DFP could potentially fill much of this demand, much work remains to be done to create a viable alternative to the predominant commodity-based agriculture for midsize producers in this country.

This study was conducted by Kathleen Painter under a research contract (or research agreement) with Rural Development's Cooperative Programs. The views expressed are those of the authors and not necessarily those of Rural Development or USDA.

Introduction

In restaurants, grocery stores and corporate lunchrooms around the country, a growing number of consumers are choosing fresh local produce, pasture-raised meats and artisan breads and cheeses. Like organic foods, the attributes of these products are not necessarily apparent—labels may be needed to describe the details. Consumers want to know where their food comes from and how it is produced. A survey mailed to over 1,000 randomly selected consumers in five coastal California counties revealed that 59 percent wanted to know more about their food. Specifically, they wanted to know about food safety, nutritional content, how food animals are treated, environmental impacts, working conditions, wages and how far the food travels (Curlee, 2006).

Increasingly, consumers are saying they choose foods for social, environmental and long-term health reasons. The sustained 20 percent growth rate of the organic sector over the past 15 years indicates that consumers are dissatisfied with conventional offerings and are willing to pay more for alternative food. Recent studies have shown that consumers have a greater interest in locally produced food than organic products (Ostrom, 2006). In one study, consumers preferred food grown locally using some pesticides to foods grown organically (Pirog, 2004). In 2006, Whole Foods announced plans to significantly expand its local organic offerings in response to consumer demand. A *Time Magazine* article suggests that "the new activist slogan on campus is 'Eat Local'" (Roosevelt, 2005), and reported that 200 universities around the country were purchasing food from regional farmers, according to the Community Food Security Coalition (www.foodsecurity.org).

Price remains the most prominent barrier to increased consumption of organic products (Hartman Group, 2004). For most consumers, the relative price differential between a conventional and an organic item determines their purchasing behavior (Yiridoe et al., 2006). For dedicated organic food customers, price is relatively less important, and they will purchase organic products without much regard for cost (Hartman Group, 2004). However, as large discount retailers like Wal-Mart begin carrying inexpensive organic items, a new, larger group of organic food consumers can be expected.

Industry leaders believe that expanding market preferences and concerns can support multiple certification options (Exo, 2006). If consumers are looking for fresh produce grown without pesticides, then a viable alternative certification will need to reflect those desires. If the main concern for consumers is that dairy cows are not fed hormones, then it might be worthwhile for the dairy industry to produce this specific type of milk. Pressure from consumers and other

groups for rBST (Recombinant bovine somatotropin)-free milk has resulted in several companies producing for this label, including Safeway and Wilcox Dairy in the Pacific Northwest.

Can demand for higher quality foods help family farmers stay in business? Since institutional food service operations can use fairly large quantities, supplying high quality food to this channel holds some hope for mid-scale producers. Focused efforts to bring buyers and sellers together will be needed to coordinate these types of transactions. Alternative certification programs, such as Food Alliance or FamilyFarmed, both of which have Web-based background information and third-party certification, help guide businesses and consumers to producers who are catering to this market. FamilyFarmed caters primarily to organic producers in the Midwest, helping to connect them with consumers and commercial buyers (see familyfarmed.org for more information).

Demand for high quality, differentiated farm products (DFP) appears to be outpacing supply (Kirchenmann, 2006; Yee, 2006). While there is currently a window of opportunity, the timeframe may be limited. Large companies like Wal-Mart, Costco and Whole Foods already contract directly with farmers, using their house brands to market these products. Farmers need their own branding and marketing systems if they want to maintain more control and profit for themselves, but they may need extensive marketing assistance and processing and distribution facilities in order to do this. Organic Valley provides an excellent example of a market-savvy grower cooperative, with sales of over $330 million and participation by more than 1,000 dairy, vegetable, poultry, beef, and citrus farms in 2006.

In this report, the trend toward alternative, higher quality food, including organic, sustainably produced, local and regional origin, eco-labeled food and Fair Trade products will be explored, along with the potential implications for the farm sector. Literature on the organic marketplace will be examined as it relates to the market for DFP. In particular, this report examines how much consumers are willing to pay for DFP. Finally, the potential of marketing DFP for food service, restaurants and farm-to-school programs will be addressed.

Part I: An Examination of the Size and Scope of Consumer Demand for Differentiated Farm Products

Research has shown that consumers jointly evaluate a number of attributes as they make purchase decisions, with price, quality, convenience and brand familiarity typically being the most important factors (De Pelsmacker et al., 2005). Attempting to predict purchasing decisions based on abstract considerations, such as supporting sustainable production practices, will be more difficult than predicting behavior for observable characteristics such as color and size. The importance of ethical appeals such as environmental considerations will be more variable among individuals than typical product considerations. According to researchers, a minority of consumers purchase goods based on ethical considerations (Bird and Hughes, 1997).

Surveys report that there is a growing market for ethically produced products (Micheletti, 2003), but ethical intentions are not always borne out by consumer behavior. While consumer attitudes clearly influence behavior, "attitudes alone are generally poor predictors of buyer behavior (Cobb-Walgren and Ruble, 1995), especially in the social marketing area (Shaw and Clarke, 1999)" (De Pelsmacker et al., 2005). Reasons for this attitude-behavior disparity include desire by the interviewee to conform to social pressure and the reality of a limited budget. Researchers must confront these issues as they attempt to quantify consumer preferences showing willingness to pay for various attributes, particularly "credence goods," for which consumers must rely on the credibility of labels or other advertising claims (Caswell, 1998).

What Does Growth in the Organic Sector Imply for Differentiated Farm Products?

Currently, organic food makes up about 2.5 percent of total food expenditures in the U.S., based on an estimate of $14.6 billion in sales for 2005 (NBJ, 2006). Industry analysts feel that price premiums for organic foods would need to fall in order to penetrate the market much beyond the 2- to 3-percent share it currently holds (Oberholtzer et al., 2005). Demand is outpacing supply in this rapidly growing sector, resulting in an increase in organic imports (Quaid, 2006). In 2005, the U.S. Department of Agriculture (USDA) estimated that 10 percent of the nation's organic food was imported (Warner, 2005).

In 2002, organic products were available in 73 percent of all conventional supermarkets (Dimitri and Greene, 2002). Consumers now buy more of their organic products in these conventional supermarkets than in any other venue (Dimitri and Greene, 2002). Organic produce made up about 42 percent of total sales of organic foods in 2003 (Oberholtzer et al., 2005).

Average prices for all organic products have fallen from approximately double the non-organic alternative in 1995 to 150 percent of the nonorganic price in 2003 (NBJ, 2004). Organic price premiums have experienced considerable volatility due to fluctuations in supply and demand during this period of growth (Oberholtzer et al., 2005).

In the absence of a body of research on consumer preference for DFP, an examination of consumer demand for organic foods could be instructive. The organic sector has been the subject of numerous studies in recent years (see Yiridoe et al., 2006, for an excellent review of the literature in this area). The majority of consumers who purchase organic items do not purchase organic products exclusively (Hartman, 2004).

What are some of the reasons that organic products are rising in popularity? One study cites the increasing awareness of the mainstream customer; trigger points such as having children, pregnancy, aging and safety concerns; and organic products' greater retail accessibility (HealthFocus International, 2003). Younger shoppers are buying organic at increasing levels, with 69 percent of organic shoppers under 50 years of age (HealthFocus International, 2003). Another study showed that 68 percent of 18- to 24-year-olds buy organic foods at least some of the time when they shop, compared to approximately half of the nonsenior adults in the other age brackets in the survey, and just 37 percent of those in the 65-plus age bracket (Walnut Acres, 2001). Over three-quarters of this younger age group felt that consuming organic food and beverages was a smart choice for long-term health and well-being. That sentiment was echoed by 59 percent of adults overall in the survey (55 percent of 25- to 34-year-olds, 65 percent of 35- to 49-year-olds, 56 percent of 50- to 64-year-olds, and 43 percent of adults over 64). The top reasons cited for **not** purchasing organic food included lack of proof that organic foods are healthier (53 percent) and the fact that the consumer did not see any benefits to buying organic (49 percent) (Walnut Acres, 2001). Apparently, research that could provide scientific information on the pros and cons of organic products would be useful.

"The organic customer is no longer the stereotypical upper middle-class Caucasian. In fact, Asians and Hispanics consume more organic foods than their Caucasian counterparts, according to recent research (Hartman, 2004)." As discount retailers like Wal-Mart and Target begin to offer organic products with premiums as low as 10 percent higher than comparable conventional products, consumers of all types are willing to pay for the organic label. A comprehensive international literature review of this specific topic reports that, overall, most consumers are not willing to pay a price premium higher than 10 to 20 percent for organic food (Yiridoe et al., 2006).

Economic theory predicts that if the premiums for organic food decline, then consumption will increase. For processed foods such as cold cereals, switching to organic ingredients may be relatively inexpensive for the manufacturer, because the cost of the raw product is only a small fraction of the total cost. Organic premiums for unprocessed organic items such as produce will be proportionately higher relative to the conventional counterpart. Several national brands already are producing organic versions of packaged foods, such as Kraft macaroni and cheese and Kellogg's Rice Krispies. Critics see this strategy as simply a new way to differentiate processed food and gain market share; others see progress when mainstream products are available in an organic version.

Organic products command a premium relative to conventional products for two reasons. The first reason is that producing organic foods is typically more expensive, particularly when factoring in a three-year transition period (during which the grower cannot receive organic premiums).

There are a number of factors that contribute to the expense. Organic production requires growers to use organic seed, organic fertilizer and organic pesticides, among other restrictions. Inputs may be difficult to find and/or require considerable transportation costs, especially in the case of organic fertilizer. Additionally, labor costs may be higher, and longer rotations may be needed to control pests and diseases, which may be less profitable. Lower or more variable yields can occur for many reasons, particularly during the transition period (Temple, 2000; Oberholtzer et al., 2005). Furthermore, growers that sell more than $5,000 of organic products per year must be certified. Paperwork requirements for certification are another burden for organic growers.

Supply and demand fluctuations are the second reason for price differentials. As more firms enter the organic market with certified farmland, premiums will decline, all else being equal, until, theoretically, premiums simply represent cost differentials between the two types of production. Given the sustained growth in the organic sector, organic growers are likely to receive higher prices due to supply shortages in this sector. Price premiums for organic products have risen over time for many commodities (Yiridoe et al., 2006). Between 1995 and 2000, for example, producer price premiums for organic corn rose by 154 percent, premi-

ums for organic spring wheat rose by 91 percent, and premiums for organic oats rose by 103 percent (Bertramsen and Dobbs, 2001). However, these organic premiums are volatile relative to regular commodity prices and vary considerably by commodity; relative supply and demand for each organic commodity will determine the magnitude of the price premium. New, larger organic producers have contributed to an oversupply in some markets, reducing premiums and forcing out smaller growers. For example, in the organic apple, grape and kiwifruit industries, organic premiums have fallen significantly (CDS, 2006; Carman and Klonsky, 2004).

The organic market appears to be maturing, according to many analysts (CDS, 2006). Annual growth is predicted to trend downward to 10 percent by 2010, which is still much higher than the growth in non-organic foods. Baby boomer demographics are viewed as the single most powerful driver of organic demand (NBJ, 2004). New dietary trends include a growing consumption of high-fiber foods, including whole grains; nutraceuticals or functional food items, such as drinks fortified with antioxidants or the addition of omega-3 to milk, eggs, and other items; and sales of allergen-free foods, such as gluten-free baked goods.

In the rapidly evolving and increasingly concentrated organic food sector, organic farmers are vulnerable to price fluctuations. Many of the independent organic and natural food companies were sold to major corporations (see Figure 1). Currently, nine organic companies have organic sales of over $100 million per year (NBJ 2004). The top organic manufacturers include White Wave (Dean Foods), a manufacturer of refrigerated organic soy milk; Hain Celestial Group; Horizon Organic Dairy (acquired by Dean Foods in 2003); and Earth Bound Farm, a grower and packer of organic produce. These are followed in size in organic sales by General Mills (including its Cascadian Farm and Muir Glen brands), Amy's Kitchen, Stonyfield Farm and Organic Valley. Organic Valley, a growers' cooperative with participation by more than 1,000 dairy, vegetable, poultry, beef and citrus farms, had sales of $333.6 million in 2006, posting a record 38-percent growth compared to 2005. There are still a number of large independent companies, including Amy's Kitchen, Organic Valley, Nature's Path, Pacific Foods, Golden Temple, Eden Foods, Spectrum, Apple & Eve, Alvarado Street Bakery and Annie's Homegrown.

Consumers cite price as the number one barrier to purchasing organic goods (Walnut Acres, 2001; Whole Foods, 2004; Hartman Group, 2004). However, mainstream U.S. shoppers are increasingly willing to pay a "slight premium" for organics, up from 48 percent in 2000 to 53 percent in 2002 (HealthFocus International, 2003). Recently, many organic products have become more competitively priced relative to the comparable non-organic item, which has increased their organic market share as well (CDS, 2006). If the price for an organic product goes down (up) relative to its non-organic substitutes, consumers will purchase more (less). "Core" organic consumers, who consistently purchase organic products on a regular basis, are the exception to this rule, however. The buying behavior of these consumers is relatively insensitive to price (Yiridoe et al., 2006).

According to a survey of farmers' market managers across the country, while demand for organic foods was stronger near major urban areas, rural farmers' markets did well when well-priced, fresh, organic foods were provided, because these products were not available in their local stores (Kremen et al., 2004). Organic farmers were successful at farmers' markets when their produce was high quality, provided specialty varieties and the farmers provided excellent consumer service. The organic consumer typically was interested in the social and environmental issues within agriculture, including its relationship to human and animal health, sustainable development, water scarcity, environmental pollution and wildlife protection (Kremen et al., 2004). The quality of the product, as well as the integrity of the producers and their attention to customer service, will be critical to their success, whether the product is organic or is otherwise a DFP.

Interestingly, organic does carry a negative connotation for some consumers, although that perception is changing. Particularly in nonmetropolitan areas, farmers' market managers reported in a survey that advertising organic products would not be effective, due to negative perceptions or because organic was not "part of the community's vocabulary" (Kremen et al., 2004). Studies have also shown that consumers do not have a clear understanding of what constitutes organic food (Pirog, 2003). Consumers may perceive that organic food is too costly, so they may not even consider those products.

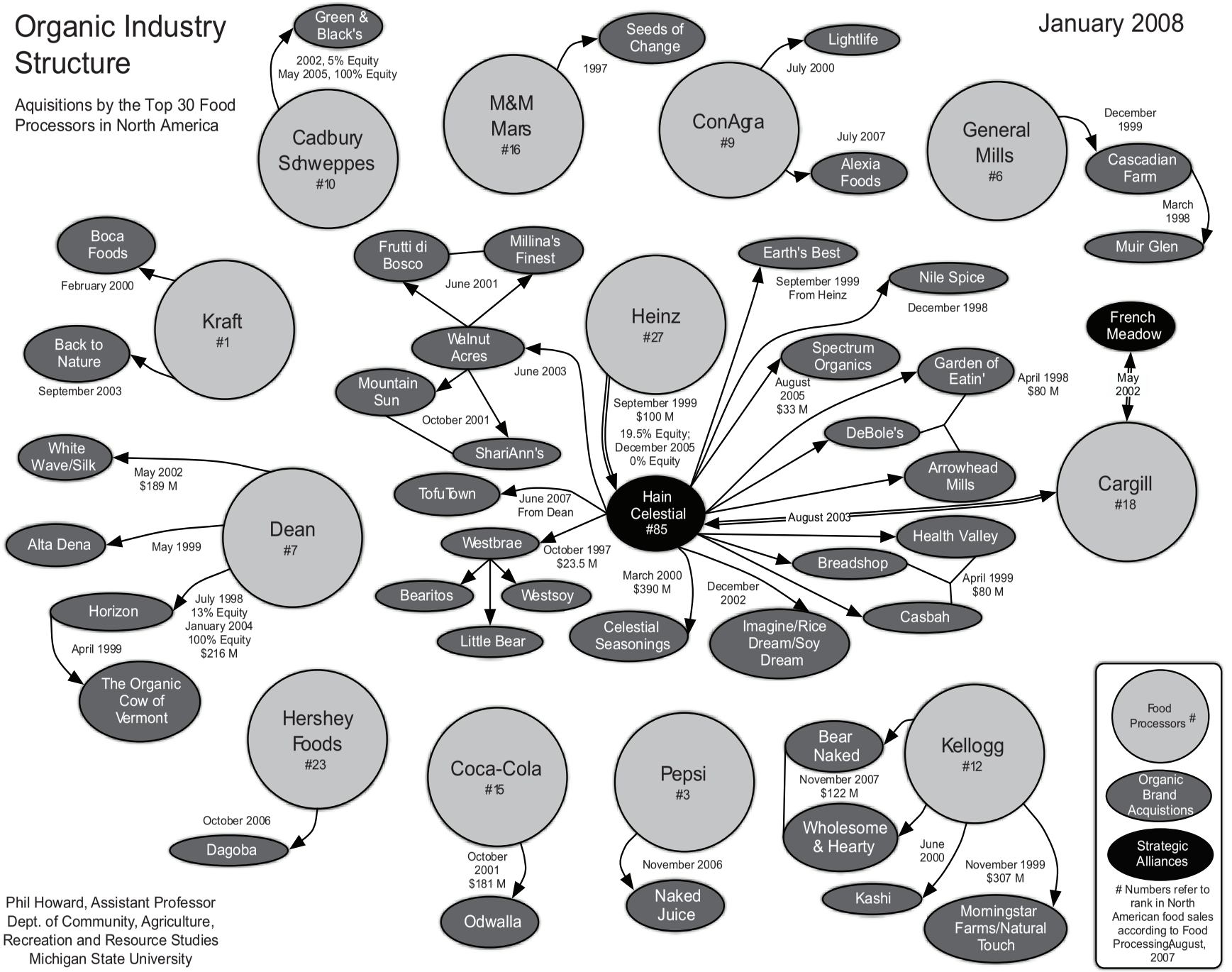
Consumer Demand for Organic Dairy Products

Dairy has been one of the most rapidly growing segments of the organic market (Dimitri and Greene, 2002). Purchases of organic dairy products comprised 13 percent of the organic food market in 2003 (NBJ, 2003) and is predicted to grow by more than 15 percent

Organic Industry Structure

Aquisitions by the Top 30 Food Processors in North America

January 2008



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per year through 2008 (NBJ, 2004). Substantial conversions to organic production are needed to supply this growing market. Clearly, there is consumer demand for hormone-free, antibiotic-free, pastured dairy products, but large organic dairy producers are now dominating the market for these types of products.

In non-organic dairies, concerns over BST supplements for cattle seem to underlie much of the recent rise in consumer demand for organic dairy products. Consumers' perceived concerns include rBST's potential impact on rates of human breast and prostate cancer (Stewart, 2004) as well as the earlier onset of puberty in children, which now occurs approximately one year earlier (at age 9 to 10) compared to 10 years ago (Kaplowitz, 2004). Authorities have refuted the earlier puberty claim, stating that the hormones would have to be ingested, not digested, to affect changes in puberty rates, and that higher body mass indices were more closely linked to early puberty (Kaplowitz, 2004). Nevertheless, consumers surveyed clearly disliked the idea of "their kids eating hormones" (Hartman, 2004). Consumers may simply consider the use of rBST supplementation for the purpose of increasing milk production as unnatural and possibly inhumane, as the higher induced production does increase mastitis, which is related to milk production levels (Smith, 1996).

Demand for organic milk surged ahead of supply in late 2004 and early 2005, causing a large price premium for organic milk. Organic producers were receiving about double the price of conventional milk during that period, which ranged from $9 to $12 per hundredweight, a 12-year low. Continuing cycles of volatile prices for organic milk can be expected to continue, given the 15-percent or higher projected annual growth rates through 2008 (CDS, 2006). The industry is dominated by two players, Horizon Organic (acquired by Dean Foods in 2003) and Organic Valley, a growers' cooperative. Together they sell three-quarters of all organic milk (NBJ, 2004).

Consumer Demand for Organic or Natural Meat and Poultry

With a 78-percent growth rate, meat represented the fastest growing category of organic food in 2003 (NBJ, 2004). Demand for organic meat, fish and poultry are expected to grow at a rate of 43 percent through 2008. Currently, there is a shortage of organic meat due to the recent rapid rise in demand, the time and cost of becoming organically certified, shortages of organic feed and a relatively long production cycle, particularly in the case of beef.

Demand for "natural" brands is also very strong in the meat and poultry categories. Restaurants and food service are using natural offerings, including several restaurant chains. Burgerville USA, in the Pacific Northwest, features Oregon Country Beef (now Country Natural Beef). The Panera Bread Company uses natural chicken, and the Chipotle restaurant chain uses meat from the Niman Ranch. Consumers are increasingly interested in breed-specific meats, such as Angus beef, particularly if they are raised as natural or organic. These meats are perceived as gourmet or premium items.

According to a 2001 phone survey of 500 randomly selected respondents from Nebraska, Iowa, Wisconsin and Missouri (Food Processing Center, 2001), organic and natural meats are perceived as safer and "cleaner" than conventionally raised meats that can use antibiotics, steroids or growth hormones. Other important consumer concerns include the environment, animal safety, sourcing and traceability. Consumers also state that natural and organically raised meat tastes better (CDS, 2006).

Strong consumer demand is evident in the organic poultry and egg categories as well. Wholesale prices for organic poultry averaged more than 350 percent of conventional poultry from January 2006 through June 2006, while wholesale prices for organic eggs were more than four times higher than prices for conventional eggs for the same period (USDA-Economic Research Service [ERS], 2007).

Potential for Crossover Demand from Organic to Other Differentiated Farm Products

Will consumers who buy organic food be interested in buying differentiated farm products? If these products can cater specifically to consumers' main concerns—such as that products be free of genetically modified organisms (GMO) or grown without broad-spectrum pesticides—then consumer demand should be higher, particularly if these characteristics can be provided at a lower cost than the organic product. However, in one survey, "grown locally, some pesticides used" received more than twice as many first choice votes than "organically grown, origin unknown" (Pirog, 2004). Consumers also chose locally grown options over certified organic choices, even if

Figure 1 (opposite page). The organic industry is increasingly concentrated, as small private firms are being purchased by large corporate brands, whose ranks in global sales are indicated in each circle (Phil Howard, Michigan State, 2006).

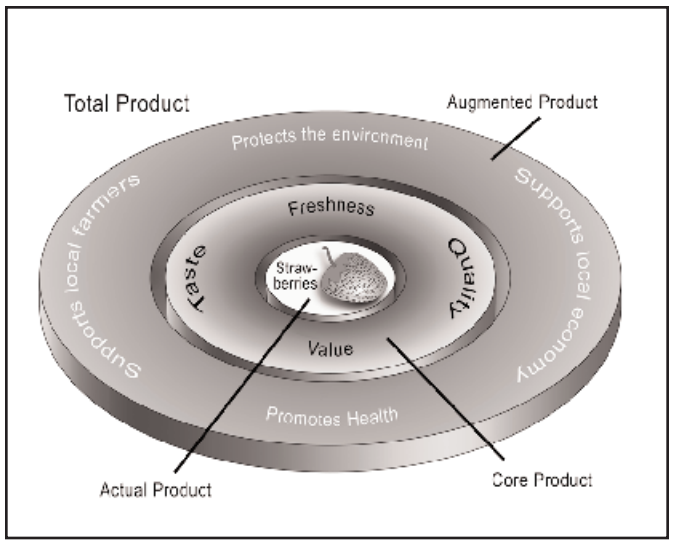

Figure 2. Total product characteristics include core product characteristics (taste, freshness, quality, value) and augmented product characteristics (environmental benefits, support for local farmers, support for the local economy, health benefits).

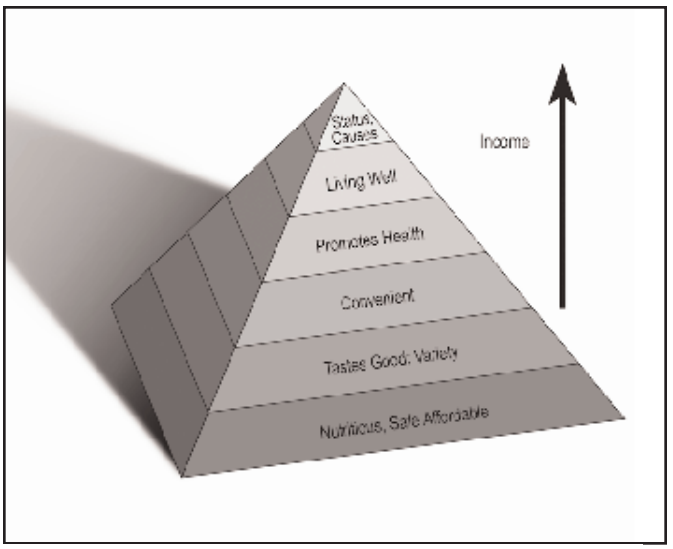

Figure 3. The Hierarchy of Consumers' Food Preferences is a spin-off of Maslow's model of human motivation, which is a hierarchy of five levels of human needs: physiological, safety, love/belonging, esteem and self-actualization.

they were locally grown. Either "organic" carries a negative connotation or consumers do not understand the term "certified organic."

DFP may be able to fill a specific niche, perhaps in terms of being more locally responsible and accountable, and possibly without the expenses incurred by organic guidelines. The required three-year organic transition period can be a substantial economic barrier for producers interested in producing organic commodities. A recent poll suggests that the appeal of "grown locally by family farmers" is very broad. In that poll, 75 percent of the consumers and 55 percent of food business respondents chose these terms as their first choice for produce or meat products (Pirog, 2003). A Roper poll conducted for Organic Valley, a growers' cooperative headquartered in Wisconsin, revealed that the majority of Americans trust smaller scale farms to produce safe, nutritious food in ways that won't harm the environment. Growers could address concerns over global warming caused by fossil fuel emissions by using local sources for animal feed and fertilizer rather than importing organic ingredients. They could also address regional concerns. For example, producers for Shepherd's Grain flour all use direct seeding practices to protect the soil, because they live in an area prone to severe soil erosion.

If farmers can provide fresh, locally grown, sustainably produced products, can they interest the growing segment of consumers who are purchasing organic? About two-thirds of the consumers in a recent study purchased organic foods for health and nutrition reasons (Hartman, 2004). Other reasons included taste (38 percent), food safety (30 percent) and the environment (26 percent). In marketing terms, characteristics such as freshness, value, taste and quality are described as core product characteristics (see Figure 2), while characteristics including environmental quality, supporting local farmers or the local economy and healthiness are designated as augmented product characteristics (Pirog, 2004). Core product characteristics are the drivers behind consumer purchasing decisions. Augmented product characteristics typically include product guarantees and additional benefits. Core characteristics must be in place before customers consider augmented characteristics. As income rises, consumer demand for various food attributes grows.

The consumer food demand pyramid in Figure 3, developed by Jean Kinsey of the University of Minnesota (Western Extension Marketing Committee, 2005), presents a consumer choice process beginning with basic needs, such as the "Safe" and "Affordable" categories in the base of the triangle, and culminating in purchasing foods for "Status" or "Causes" at the top of the triangle. As income rises, consumers demand more luxuries such as convenience and health-promoting foods, then gourmet foods as shown in the "Living Well" category toward the top of the pyramid. This hierarchy of food needs is a spin-off of Maslow's hierarchy of needs, which includes five levels of human

needs (physiological, safety, love/belonging, esteem and self-actualization) as a model of human motivation. The basic concept here is that lower needs must be met before the individual moves on to the next level.

Consumers are increasing their consumption of fresh foods, which they believe provide better taste, health and nutrition (Reynolds-Zayak, 2004). In a *Fresh Trends 2004* report, consumer panelists reported on their current use of fresh produce compared to five years earlier (Barton, 2004). Consumption of fresh organic produce had increased by 20 percent for 18- to 37-year-olds, and by 22 percent for those with household incomes greater than $85,000. Overall, consumers reported purchasing an average of 18 percent more fresh produce compared to five years earlier. Households with children under age 6 reported an increase of 36 percent in their fresh produce consumption, and 18- to 37-year-olds reported a 34-percent increase. Increasingly, fresh fruit is consumed as a snack to increase fresh produce intake (25 percent of respondents). Use of washed, cut and bagged produce increased overall by 27 percent; households with 13- to 17-year-olds led the trend with a 36-percent increase. In another survey, "fresh" was considered an extremely or very important food label claim by 68 percent of the U.S. participants (HealthFocus International, 2003). "Grown without pesticides" was extremely or very important to 51 percent of the participants, while "certified organic" was extremely or very important to 31 percent.

If non-organic farmers can grow foods without the use of pesticides, they may address one of the consumer's most serious concerns. A successful example of this type of approach is the certified pesticide-free tomatoes produced by Eurofresh, a U.S. corporation in Arizona with the single-largest glass greenhouse system in the world (Western Extension Marketing Committee, 2005). The company is committed to producing a high-quality, consistent, highly nutritious, flavorful tomato year-round. Eurofresh claims that its varieties have more cancer-fighting lycopene than any others. The company's products are certified by the Nutriclean program of Scientific Certification Systems, which performs random checks and requires stringent recordkeeping.

Another example is the pasture-raised poultry label Greener Pastures Poultry (Figure 4). This company successfully developed a devoted clientele for its premium pasture-raised poultry using intense direct marketing efforts. After weighing the costs and benefits of various certification schemes, Greener Pastures Poultry producers decided against the use of third-party certification. Sadly, the company ceased operation after five years, due to the inability to develop a processing facility of the appropriate scale for economic feasibility. Greener Pastures Poultry producers still hope to revive the company at some future time.

Consumer Demand for Sustainably Produced Foods

Although research concerning consumer demand and interest in organic products abounds, few studies examine consumer demand for non-organic alternative food production practices. One exception is a study,

Figure 4. Greener Pastures Poultry consisted of several farming families near Eugene, Oregon, who produced premium pasture-raised poultry to serve the growing demand for responsibly raised, delicious poultry (see greenerpasturespoultry.com for more informa-

conducted in metropolitan grocery stores in Minnesota (Robinson et al., 2002), of consumer willingness to pay for sustainably produced food. The study, which involved 547 participants, showed that consumers care about sustainable practices, such as protecting the environment and humane treatment of animals, but consider basic qualities of freshness, taste, safety and healthfulness much more important, as would be expected based on the marketing information presented earlier. On a scale of six for extremely important to one for extremely unimportant, these characteristics were rated as follows:.

Practices to protect water quality	3.96
Practices to maintain or improve natural resources and the environment	3.62
Practices to protect soil quality	3.52
Produced by farmers earning a living wage	3.47
Low price	3.30
Produced locally (defined as within the Midwest)	1.96
Produced organically	1.75

The following graph created from data in the consumer survey cited above illustrates consumers' willingness to pay (WTP) for various food categories if they are produced "in a way shown to maintain or improve the environment, community life and the livelihood of local farmers." In Figure 5 below, those who were willing to pay a 10- to 30-percent premium were grouped together, as were those willing to pay 40 percent more. Three-fourths of the respondents were willing to pay a premium for sustainably produced fruits and vegetables, which was the highest ranked category. Respondents were least willing to pay a premium for lunch meats, with 57 percent willing to pay 10 to 30 percent more for this highly processed product. Consumers are consistently willing to pay higher premiums for organic food with a short shelf life (Yiridoe et al., 2005), so similar results for sustainably produced foods are not surprising.

Although the Robinson et al. study, conducted in the fall of 2000, shows limited interest in organic and local products as a specific category, like many other studies, it does reveal a strong desire for fresh, tasty, safe and healthful food. However, more recent studies discussed in the next section of this report show that consumers are increasingly interested in obtaining their food locally. As discussed earlier, strong growth in consumer demand for organic foods continues. In addition, rising demand for farmers' markets and other direct-to-consumer marketing channels, such as CSAs show, that consumers are willing to spend time and money to increase the quality of their food and support farmers in their area. Development of new marketing organizations and channels, including grower cooperatives, as well as further research on consumer demand for DFP, will be necessary to coordinate DFP production with consumer demand. Research on consumer needs should be conducted in accordance with standard marketing theory on con-

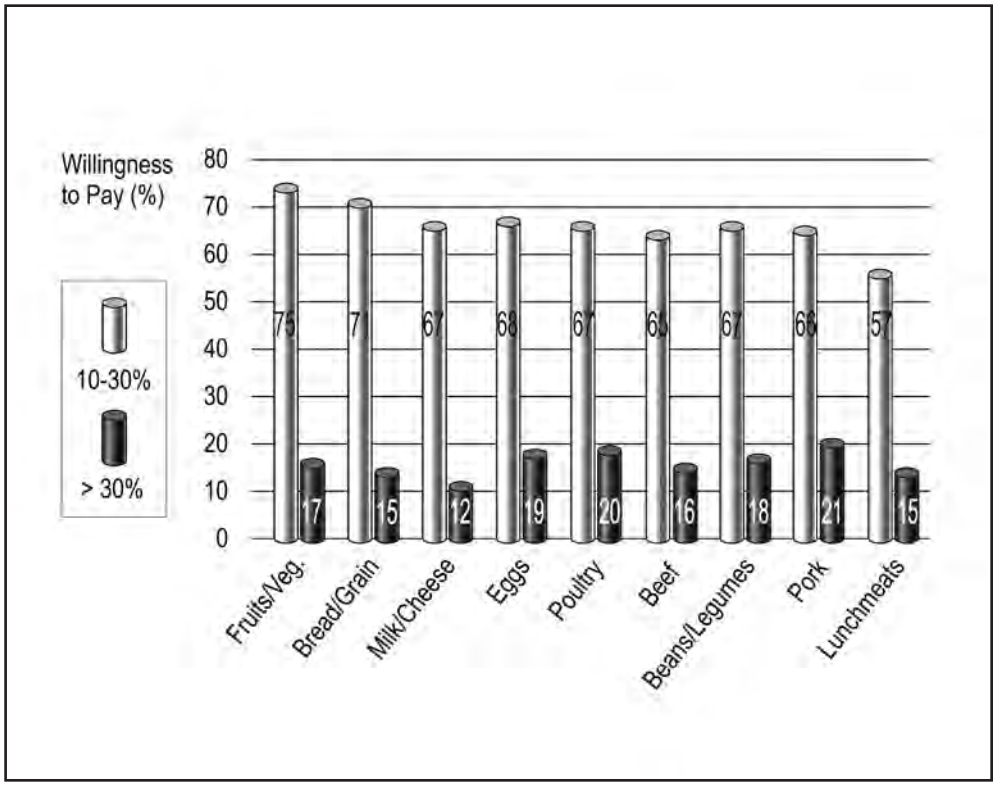

Figure 5: Consumer WTP for Sustainably Produced Products (figure derived from Robinson et al., 2002). While surveyed consumers were frequently willing to pay from 10- to 30-percent more for sustainably produced foods, depending on the individual category, only a minority were willing to pay more than 30 percent more for these products.

sumer preferences, as discussed earlier, while avoiding the common pitfalls of hypothetical responses given by consumers in surveys.

The Promise of Local: Fresh, Healthy, and Good for Your Local Economy

*"The Buy Local movement is quickly taking us beyond the promise of environmental responsibility that the organic movement delivered, and awakening the U.S. to the importance of community, variety, humane treatment of farm animals and social and environmental responsibility in regards to our food economy."**

"Buying local" is one way for consumers to support local agriculture while eating fresher, less processed foods and reducing energy spent on transporting food. Food security issues that arose following 9/11, as well as recent scares such as the nationwide *E. coli* outbreak, have made consumers more aware of food safety issues. A Midwestern "food miles" study indicated that, on average, produce travels about 1,500 miles before it is consumed (Pirog and Benjamin, 2003). Eating local foods helps preserve distinctive regional cuisine and varieties, such as the Jersey tomato. In fact, consumers all over the world have been shown to prefer food that is obtained locally (Yiridoe et al., 2005).

While reviewing literature regarding consumer preference for locally produced foods, Schneider and Francis (2005) found studies revealing weak preferences for the "locally produced" quality attribute (Govindasamy et al., 1997; Kezis et al., 1998; Thomson and Kelvin, 1996; Lockeretz, 1986; and Eastwood et al., 1987). In the studies they reviewed, they found that other quality attributes were more important and/or that local production was perceived as an unimportant characteristic. In other studies, which tend to be more recent, and possibly reveal a trend, a stronger preference for locally produced foods is noted. In particular, consumers shopping at farmers' markets and other direct markets show a distinct preference for locally produced foods, as might be expected (Gallons et al., 1997; Kezis et al., 1998; Ross et al., 1999).

Through interviews with 500 residents of Nebraska, Iowa, Missouri and Wisconsin by telephone in a 2001 random sample survey, Food Processing Center found positive preferences for locally produced foods. The respondents stated their top three reasons for purchasing local food were freshness, better taste and supporting local farmers. They expressed a high level of interest in purchasing local foods from grocery stores, farmers' markets, directly from farmers and in restaurants and cafeterias. While small town and rural residents indicated the greatest interest in buying locally grown food, suburban and urban consumers were also more willing to pay a premium for these foods (Food Processing Center, 2001).

Consumers in a random sample mail survey in Nebraska were strongly supportive of locally grown or produced food, with over half of respondents citing this as an extremely or very important characteristic (Schneider and Francis, 2005). While product quality, taste, nutrition and price were by far the most important characteristics, rated "very to extremely important" by 90 percent or more of the respondents, the categories of "Nebraska grown" and "locally grown/produced" were considered "very to extremely important" by 53 and 52 percent of respondents, respectively. "All-natural food" and "organic" were considered "very to extremely important" by just 33 percent and 28 percent of respondents, respectively. However, this interest in local food did not translate into much in terms of willingness to pay. More than half of the participants (58 percent) were not willing to pay any premium for locally produced food; 34 percent were willing to pay 10 percent above the typical price, and only 2 percent were willing to pay 25 percent or more above the typical price. Research shows that producers who charge a premium for their locally produced foods must meet the number one consumer criterion of quality if they want to attract consumers. The study results indicate that locally produced products were more appealing to consumers than organic or all-natural products. The study results also indicate that interest in locally produced products would translate into purchases if producers stay within about 10 percent of the price of conventional products. Given the general lack of small processing facilities and the expense of custom processing, producers are going to need some help in order to bridge this gap.

Maynard et al. (2004) used an experimental approach to elicit consumers' willingness to pay for

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* *This quote from the LocalHarvest Web site highlights the complex implications that the food system has for society as a whole. LocalHarvest.org features a natoinal director of stores, restaurants, farms, CSAs, farmers' markets and an online shop connecting organic and local growers with consumers. It was founded in 1998 by Guillermo Payet, a software engineer in Santa Cruz, Calif., wo is committed to generating positive social change via the Internet. About 9,000 members use this site, which is growing at the rate of about eight members per day.*

two differentiated meat products: beef that was certified locally produced (within the state), and guaranteed tender steak. Their method was designed to avoid common pitfalls of food product valuation studies, including: 1) determining WTP for a single unit rather than enough to feed a family; 2) not including appropriate substitutes when determining demand; and 3) inflated values for hypothetical situations (Cummings et al., 1995). Maynard et al. present an excellent review of the literature on these WTP issues, including a paper by Lusk and Schroeder (2002) that found nonhypothetical values for steak products to be about 80 percent of hypothetically determined values. In other words, if consumers were actually purchasing the products, the value of their purchases would be only about 80 percent of the hypothetical value they gave in the survey.

The experiment for Maynard's study involved a representative sample of 227 consumers in Lexington, Kentucky, who were given an actual budget of $20 to purchase any of five different meat products. The price of USDA Choice was fixed at $9.10 per pound. The prices for the other cuts were selected randomly with prices ranging from $8 to $12 per pound for locally produced meat, from $9.10 to $12 per pound for lean and guaranteed tender meat, and from $10 to $12 per pound for premium quality meat. Locally produced steak was chosen by 55 percent of the participants (Table 1). Premium quality steak (with the highest price) was purchased by 45 percent, while 37 percent chose USDA Choice steak with the lowest price. Certified tender steak was purchased by 36 percent; while lean steak was purchased by 24 percent. Additional results of this study showed demand for locally produced meat was highly sensitive to price. If the locally produced meat was available at the same price as steak produced elsewhere, 88 percent of respondents said they would buy it often. If the locally produced steak cost $1 more per pound than its alternative, 20 percent would buy it, but if it cost $2 more per pound only 4 percent would purchase it. These results contrast with a previous study by Maynard et al. (2003) using standard contingent valuation (CV) techniques showing that 52 percent of participants would be willing to pay a 20 percent premium for locally produced meat. The more recent study uses methods to correct for the typical overstatements by survey participants in hypothetical situations. The 2004 study also showed that consumers' interest in locally produced meat was highly contingent on the product being available in regular supermarkets.

Table 1. Meat purchases by category for surveyed Kentucky customers

Meat product	Percent
Locally produced steak	55%
Premium quality steak (highest price)	45%
USDA choice steak (lowest price)	37%
Certified tender steak	36%
Lean steak	24%

A recent national study of consumer perceptions of place-based foods, food chain profit distribution and family farms was distributed via e-mail to a random sample population and received 851 responses (DeCarlo et al., 2005). Place-based foods are defined as differentiated food made from locally grown products, which enjoy a heritage of being handed down from generation to generation with a story to explain their connection to a particular place. Respondents were willing to pay more for local products that provided economic benefit to the farmers and investors in their own community; this was the most important factor in their decisionmaking. They also would like to see farmers receive a higher percentage of profit than other partners in the food chain (reported by 65 percent). When asked if they believed that a region's geographic characteristics, such as type of soil, drainage and other natural resource characteristics, influenced the taste and quality of foods such as meat, produce or dairy, one-third thought it likely. In terms of WTP for place-based foods, 56 percent of respondents were willing to pay more for place-based foods grown in their state, and a third were willing to pay more for place-based foods grown in other states. Thirty percent were willing to pay up to 10 percent more for place-based foods from their state, and another 20 percent were willing to pay up to 20 percent more. When asked if a label signifying the product came from a family farm would have a positive influence on their buying behavior, 83 percent replied that a “family farm” label would have a positive effect.

In a two-part random sample survey conducted in 2002 of consumers and farmers in Washington state, Ostrom (2006) attempted to elicit definitions of what constituted “local” and to determine the importance of that characteristic relative to other attributes. Nearly one-third of consumers surveyed (5,200 consumers were chosen in four diverse counties, with a response

rate of 23 percent) defined their county plus adjoining counties as their "local foodshed." Just under one-quarter of the respondents defined food grown in their own county as locally produced, and another 21 percent felt that food produced within Washington state should be defined as local. For farmers, food produced within their county or bordering counties was also the most common response, with nearly one-third giving this response. Similar to the consumer survey, their own county (23 percent) and Washington state (18 percent) were given as the next most common definitions of locally produced food.

These consumers surveyed ranked the characteristic "locally produced" quite low relative to other food qualities when considered as a stand-alone quality (Ostrom, 2006). However, when this characteristic was linked with helping local farmers, its ranking changed dramatically, from 34 percent considering "locally produced" as very important to over 70 percent. Other characteristics that consumers ranked as very important included freshness (94 percent), taste (90 percent), nutritional value (77 percent), and convenience (74 percent). Helping local farms was ranked very important by 70 percent of the consumers. Appearance, price, and the environment were ranked very important by 62 percent, 59 percent and 45 percent of the respondents. Grown in Washington, grown locally, and grown organically were considered very important by 41 percent, 34 percent, and 16 percent, respectively, of the respondents. However, this study concludes that the concept of locally produced food is closely associated with freshness, quality and idealized images of local farmers. When purchasing fresh, local, high-quality food is tied to helping local farmers and the local economy, its appeal is strengthened dramatically.

A comparison of a random sample survey of consumers in Ohio with a targeted survey of consumers actively involved in food system issues shows significant differences in attitudes toward organic and local foods as well as health and farming issues (Smith et al., 2006). Motivated Consumers (MC), defined as those belonging to two different organizations actively involved in alternative foods, had on average three more years of education, and most defined themselves as liberal (88 percent) compared to just 26 percent of those surveyed in the general population (GP). In the GP, 8 percent stated that they frequently buy organic, compared to 73 percent in the motivated group. In terms of WTP, 59 percent of the general population was not willing to pay more for organic foods. Nearly all (95 percent) in the MC group said they would be willing to pay more for organic products.

This Ohio study also examined respondents' stated preferences for local foods. Consumers in the motivated group were supportive, with 51 percent frequently purchasing local foods, compared to 31 percent in the general population. In the motivated group, 92 percent stated they would be willing to pay more for locally produced foods, compared to 59 percent in the general population in that region. Of the respondents who said they would be willing to pay more for local foods, close to half said they would pay 10 percent more for local products in both of the surveyed groups (52 percent of MC and 48 percent of GP). Another one-third of MC and 11 percent of the GP would pay 25 percent more for local foods. These results indicate a broad base of support for locally produced foods, broader than the demand for organic alone. Organic local produce will appeal to the consumers who buy organic, but not necessarily to the broader group that only occasionally purchases organic products. Local products that can stay within 125 percent of the comparable nonlocal product would be of interest to 85 percent of the general population, according to this survey.

Challenges for local food systems may come more from the supply side than the demand side. A Nebraska study showed that few farmers in Washington County were interested in producing food crops; rather, the majority was heavily invested in the production of feed and commodity crops (Schneider and Francis, 2005). Producers at existing farmers markets were hobbyists, vegetable growers or retired farmers. However, even a small conversion in acreage might be sufficient to meet consumer demand in a particular region.

Given that consumers may not be willing to pay much above conventional prices for local products, farmers may need to (a) find specialty products for which they can command larger premiums; (b) deal with food service suppliers that are willing to support them for various reasons and who can afford to pay more and buy larger quantities; and/or (c) work together in cooperatives or other marketing organizations to determine how to differentiate and promote their products. Adding value through some sort of processing is one way to differentiate local farm products and increase profits. Nelson Farms, a nonprofit company affiliated with Morrisville State College in Morrisville, New York, helps producers develop recipes, and package and distribute more than 200 dif-

ferent value-added products (Gregory, 2005). A fee is charged to cover labor and other production costs. For example, honey producers can get more money for their product by creating a honey barbeque sauce; cabbage producers can shred their product and command a higher price per pound; strawberry vinegar can be produced with fresh produce that does not get sold.

The Impact of State Marketing and Promotion Programs

As of 1999, about 23 states had established programs of some sort to promote their own agricultural products (Patterson et al., 1999). Massachusetts's program, called "Be a Local Hero," has an associated Web site that lists restaurants promoting local food (buylocalfood.com/Restaurants.htm). The "Pride of New York" program was established by then-Governor Pataki in 1996. It currently has 1,500 members who market food grown or processed in New York. The program Web site, available at www.prideofny.com, includes a listing of "Pride Restaurants," a guide to restaurants in the state that feature local products. California's "Buy Fresh, Buy Local" campaign, sponsored by the Community Alliance with Family Farmers (www.caff.org), provides an interactive guide to restaurants, farmers' markets, CSAs, U-pick, grocers, etc., by region on their Web site at www.buylocal-ca.org. Consumers were largely unaware of their state agricultural promotion programs in Arizona (*Arizona Grown*) and Missouri (*AgriMissouri*), despite the fact that they were supportive of locally produced products (Patterson et al., 1999; Brown, 2003).

In Washington state, producers received a price premium by using the Washington Apple label when advertising their products, indicating that the apple industry in Washington benefits from its historical reputation for quality apples (Quagrainie et al., 2003). Price premiums and marketing data were used in a dynamic multiple-indicator multiple-cause (DYMIMIC) modeling approach to estimate the collective reputation of Washington apples as a dynamic latent variable.

In New Jersey, Govindasamy et al. (1997) reported that 77 percent of consumers surveyed were aware of the Jersey Fresh label and state-sponsored program. In 2000, the state spent $1.16 million promoting the program. The statewide economic impact of this program was estimated at $63 million, based on increases in fruit and vegetable receipts and related economic activity within the state (Govindasamy, 2004). Adelaja et al. (1990) conducted an analysis of the state's efforts to promote locally grown tomatoes. They found that consumers perceived Jersey Fresh tomatoes to be a superior quality product.

The recent surge in interest in local food has created a relatively small but growing demand for locally produced food. Given our vast production potential as a country, local food systems will not be a panacea for the decline of the family farm, but we as a country could eat higher quality food produced in a way that preserves our environment and helps our economy. Farmers wishing to cater to local outlets would probably need marketing and product development assistance in order to determine what types of products might be successful, given the characteristics of their farm and their location. As in any new business venture, there is inherent risk. A strategically located farm with adequate capital, land, labor, entrepreneurial skills and a successful product could be successful—unless the market is flooded by others with the same idea.

Assessing the Impact of Eco-Labels on Consumer Demand and WTP

An eco-label identifies environmentally preferable products based on an environmental impact assessment of the product compared to other products in the same category.[1] The environmental impact assessment includes the entire lifecycle of the product, from production through disposal. While eco-labels require compliance to standards, they are still considered market-oriented because they are not directly regulated by the government. Food labeled as organic, on the other hand, must comply with the national standards for organic food that were established by USDA on October 21, 2002. According to the USDA, in order to be certified organic, food must be produced without the use of most conventional pesticides, fertilizers made with synthetic ingredients or sewage sludge, bioengineering or ionizing radiation.

Eco-labels have been developed in response to a wide range of public concerns. Many of these public concerns relate to environmental health, including aspects such as wildlife preservation, biodiversity and sustainability. One function of eco-labels for marketing and promotion is to reward producers who make a conscious effort to use sustainable practices.

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1 See the Consumer's Union (CU) Eco-label Web site (http://www.eco-label.org/home.cfm) to learn more about how eco-labeled products compare to conventional products and CU's report card for specific eco-labels.

Agricultural sustainability incorporates the preservation of agricultural productivity while protecting the environment and remaining economically viable.

Individual eco-labels may represent one or more aspects of sustainable agricultural practices. They provide a mechanism for communicating these practices to consumers, who can then demonstrate their support by purchasing the product. For the eco-label to be successful in economic terms, it must increase consumer demand. While a number of studies have examined consumers' apparent willingness to purchase products with certain environmental characteristics, there has been little examination of actual impact in retail markets.

In Europe, the environmentally friendly marketing movement is successful and growing rapidly. Nearly 4,000 certified products use the German eco-label, Blue Angel (left), introduced in 1978. It has become a successful instrument in both environmental protection and marketing. The Euro Daisy eco-label (right), launched in 1998, regulates and sets common standards for all eco-labels in the European Union countries. In addition, it provides scientific information to consumers. Eco-labeling programs are flourishing in the U.S. food industry as well. From the Pacific Northwest to the Northeastern United States, one can find eco-labeling programs associated with the production of environmentally sound fruits, vegetables and milk. In addition, many regional sustainable agriculture programs use labels to ensure acceptance in regional niche markets for "green" products.

In general, eco-labels increase consumers' WTP for a particular product. A random sample telephone survey by Blend and van Ravenswaay (1999) examines willingness to pay for eco-labeled apples in the continental U.S. They concluded that at a $0.40 per pound premium, over a third of households surveyed would be willing to buy eco-labeled apples.

Loureiro et al. (2001) assessed consumer choice from among eco-labeled (certified by the Food Alliance), organic and regular apples. Randomly selected produce shoppers, 285 in all, were surveyed at two grocery stores in the Portland, Oregon, area, during weekend and weekday hours using trained interviewers. Characteristics of eco-labeled and organic apples appeal to a similar group of consumers concerned about food safety and environmental quality, but this type of consumer would prefer to buy organic when both products are offered at equal prices. Perceived quality of eco-labeled apples significantly increased the probability of their purchase. Some of the factors that have a positive and significant effect on the probability of organic choice (concerns over food safety and the environment, and the presence of children in household) have a negative impact on the probability of the eco-label choice. Consumers may feel that organic apples are safer, as Food Alliance-certified products can use reduced levels of pesticides, and they may be more familiar with the organic label.

Premiums for Food Alliance-certified products tend to be relatively small, reflecting the overall difficulty of garnering a premium based on "environmentally sound" practices. Complicating eco-label valuation is the fact that eco-labels may work better for some products than for others, implying that a general recipe to stimulate green markets may not work. In a relevant study, Wessells et al. (1999) found that consumers do not value all certified fish and seafood species in the same way. For example, consumers gave higher values for subjective willingness to pay for certified salmon than for cod. Further, consumers from different countries may respond differently to the same eco-label. Johnson et al. (2001) investigated differences in consumer preferences for eco-labeled seafood across the United States and Norway. They found that consumer preferences differed by price premium, species, consumer group and certifying agency.

A recent random sample mail survey of consumers in the Central Coast area of California examined what consumers want to know about their food (Howard and Allen, 2006). Food safety and nutritional content were their two main concerns, but they also wanted to know about how food animals were treated, the environmental impacts of the production process, working conditions of the food handler, their wages, the influence of large corporations how far the food traveled (Curlee, 2006). Consmers were asked to rank the importance of five criteria, including humane treatment of animals, locally grown, U.S.-grown, small-scale production and living wages. Humane treatment was chosen as the most important cause by 30 percent of the participants, followed by locally grown (22 percent), and living wage (16.5 percent). U.S.-grown and small scale were considered the most important criteria by less than 6 percent of the respondents (Howard and Allen, 2006). Women were almost twice as likely as men to choose humane treatment of food animals as the most important criterion among these five choices.

In a mail survey of 2,400 randomly selected households (of which 1,200 responded, a very respectable 50-percent response rate), Onozaka et al. (2005) examined consumer preferences for various attributes of organic food in the Sacramento area. They found that consumers who do not regularly purchase

organic produce were willing to pay between 10 and 19 percent more for pesticide-free produce for the four produce items in the study, while regular organic food consumers were willing to pay from 17 to 34 percent more for pesticide-free versions. The regular organic consumers were much more willing to pay for produce that was environmentally friendly than the nonregular consumers, ranging from 20 to 39 percent for the four produce items, while the nonregular organic consumers were willing to pay 4 to 7 percent more for "environmentally friendly" produce. For the "No Genetically Modified Organisms (GMO)" organic characteristic, regular organic food consumers were willing to pay from 13 to 27 percent more, but one-third found this characteristic unappealing (negative WTP). The consumers who did not regularly purchase organic foods were only willing to pay 3 to 7 percent more for GMO-free foods. The survey used "choice experiments," a more rigorous and consumer friendly alternative to hypothetical WTP procedures.

After several years of market prices hovering below break-even points, potato growers in the San Luis Valley of Southwestern Colorado were desperately looking for some way to differentiate their product and add value. Researchers at Colorado State University conducted a random sample survey of Colorado consumers to elicit their willingness to pay for various characteristics, including Colorado grown, organic, and GMO-free (Loureiro and Hine, 2002). Using an improved contingent valuation method with a multiple-bounded probit model that fits payment card data, they found that consumers were willing to pay the highest premium for Colorado Grown, but the potatoes had to be linked to a certain quality level to earn the $0.09 per pound premium. While wealthier consumers with higher education levels were willing to pay more for organic and GMO-free potatos, they were not willing to pay a premium for Colorado Grown.

Overall, these studies highlight the difficulties of marketing products with credence characteristics. First of all, consumers need to understand the issues. The previous studies of the importance of GMO-free foods is a case in point; if consumers do not know the impact that GMOs will have on them and the environment, how will they know how to value them? For some of these issues, the scientific community is still unsure of their impacts. Marketing theory contends that core product characteristics must be met before consumers will be willing to pay for augmented characteristics like eco-labels.

Impact of Fair Trade/Fair Labor Practices on Consumer Demand and WTP

The Fair Trade label, certified by TransFair USA in this country, signifies that farmers have worked under fair conditions and received a fair price to ensure them a minimum standard of living. Many coffee brands use fair trade labels (pictured at left) in their marketing strategies. TransFair USA reports that fair trade coffee is experiencing a 72-percent average annual growth rate in this country (Howard and Allen, 2006). Global Exchange, a human rights organization, convinced Starbucks to start serving fair trade coffee in 2000 (Straus, 2000). In 2005, McDonalds began to test-market fair trade coffee. Fair trade labels have also been used for cocoa, bananas and sugar. There is little academic literature available that examines consumer response toward labeling that signals socially conscious or socially correct production practices.

A Belgian survey of college employees conducted online and through the mail (De Pelsmacker et al., 2005) examined consumers' willingness to pay for fair trade coffee. This study used a conjoint analysis technique that simulates the situation in a real supermarket and thus is a better predictor of consumer behavior than contingent valuation techniques that use hypothetical values. The average WTP for fair trade coffee across the sample of 808 respondents was a 10-percent premium, well below the actual fair trade premium of 27 percent. Ten percent of the sample would pay the actual premium. Coffee brand was the most impotant attribute, followed by flavor and then the fair trade label.

Loureiro and Lotade (2005) analyzed consumer preferences for ethical and environmentally sound labeling programs for coffee. Valuation questions regarding fair trade, shade-grown and organic coffee labels were asked using a payment card format. Results suggested that consumers are very receptive toward both fair trade and shade grown coffee labels, and consequently are willing to pay higher premiums for these labeling programs than for organic coffee.

Part II: Food Chain Demand for Sustainability and Local Food: Restaurants and Institutional Food

Institutional food and food service customers are increasingly searching for fresher, healthier and more appetizing food choices. In a survey of food business representatives, respondents chose "grown locally" as the most frequent consumer request for produce and meat items, compared to four organic choices, including "organic, grown locally" (Pirog, 2003). Many large

national food service suppliers, including Sysco, Sodexho and Bon Appétit, have begun sourcing from organic and local suppliers. In fact, loss of small and mid-sized farms worries Rick Schneiders, chief executive officer and chairman of Sysco (Halweil, 2004). Scheiders said that he wonders how he will source the products his customers are demanding, such as pasture-raised beef, heirloom vegetables, free-range chickens and salad mixes, without these smaller growers (Schneiders, 2004). Sysco uses Food Alliance-certified products (see next section), a voluntary certification and eco-labeling program launched in Portland, Oregon in 1998.

Sometimes all it takes is one committed leader to start an avalanche of change. This was the case with Bon Appétit, a food service provider that provides onsite restaurants and catering for universities and corporate accounts across the country. When CEO Fedele Bauccio heard that his Monterey Bay Aquarium restaurant was serving only seafood that was on the approved-for-consumption list published by the aquarium and based on sustainable seafood consumption, he extended the list to all of his restaurants. This initiative was followed by a host of other sustainable measures. All across the country his chefs serve fresh, locally sourced food, including cage-free chicken eggs, antibiotic-free meat, free trade coffee and rBST-free milk. At the Intel campuses, chef Joe McGarry organizes farmers' markets for employees to buy fresh produce, then often buys any leftover produce for use in his kitchens. Nearly a ton of kitchen scraps a week are generated by the kitchens at Intel, so chef Micah Cavolo partnered with an area farmer to have the scraps composted. Bon Appétit favors direct relationships with farmers. Signs over the salad bar at an onsite restaurant indicate the sources for various items, "Basil from Siri Farms," "Mushrooms from Yamhill.".

This type of authenticity resonates with consumers, according to a research consultant (Demeritt, interview, 2006). They like to know the story behind their food. If it's a local source, they can see the benefits to themselves as part of a larger community, e.g. Puget Sound Fresh. Consumers want a brand that makes identification easy and quick. Consumers were most responsive to simpler eco-labels in an internet survey testing various formats for eco-labels (Pirog, 2003). Too much information can get confusing; most consumers don't have time to study every food choice carefully.

Dr. Preston Maring, with Kaiser Permanente in California, wanted to do something very basic—bring healthy food to the staff at their huge medical center in Oakland. Meanwhile, local growers wanting to sell at the farmers' market had a two- to three-year waiting list. In May 2003, he launched the first Friday Fresh Farmers' Market in the parking lot. It has been a resounding success; Kaiser Permanente has set up 30 farmers' markets in medical center locations around the country (members.kaiserpermanente.org/redirects/farmersmarkets/).

Maring's next step is to bring healthy foods to the patients in their hospitals by working directly with growers who are too large for direct marketing and too small for wholesale markets. "Kaiser is big enough and orders enough food to make a difference," Maring said.

Anya Ferald with Community Alliance with Family Farmers (www.caff.org), a nonprofit based in Davis, California, is developing the pilot project for Maring (Ness, 2006). She is working mainly with H'mong, African American and Latino farmers' groups in the area to contract directly with Kaiser, at prices slightly above the current wholesale price. They had to arrange to deliver their produce to the Sysco-owned distributor, Lee-Ray Tarantino of South San Francisco, which then delivers all of the products to Food Service Partners, the maker of patient meals for Kaiser. Tarantino says the focus on small farmers is new—and he feels that it could potentially be huge. Both the University of California Santa Clara and the University of San Francisco are interested in the pilot program.

Another alternative distribution system in southern California, the Growers Collaborative, has successfully funneled small farmers' crops to Ventura public schools, the Getty Museum and Bon Appétit clients like Dream Works and Sony (Ness, 2006). The Ventura program kept a 20-acre strawberry farm owned by two brothers in business. Their harvest became too little for the wholesale market but too large to sell at farmers' markets.

Food Alliance: Providing Sustainability Certification and Education, Forging Business Relationships

The Food Alliance program is experiencing tremendous growth. Scott Exo, Food Alliance executive director, says that current demand for Food Alliance products continues to exceed supply. In 2006, an estimated $87 million (farmgate value) of Food Alliance-certified products were sold to distributors, restaurants and grocery stores. The company now has a Midwest location, in St. Paul, Minnesota, as a joint project with the Land Stewardship Project and

Cooperative Development Services. In March 2007, a California program manager, David Visher, was added to the staff.

Food Alliance currently certifies 250 producers in 19 states and Alberta, Canada, who farm just over 4 million acres (Exo, 2006). Certified farms must provide safe and fair working conditions; provide healthy and humane care for livestock; eliminate the use of hormones and subtherapeutic antibiotics; eliminate the use of GMOs; reduce pesticide usage and toxicity through Integrated Pest Management (IPM); conserve soil and water resources; and protect and enhance wildlife habitat (see www.foodalliance.org). In a 2004 survey, farmers and ranchers in the program reported an average 8-percent premium. They have a number of formal "market partnerships" with regional businesses, including Bon Appétit, ARAMARK, Sodexho and Sysco Corporation. Over half of these market-side partners report increases in sales directly attributable to their participation with the Food Alliance (www.foodalliance.org).

The Food Alliance provides a certification program that is sensitive and flexible enough to address regionally specific environmental problems. For example, Shepherd's Grain (www.shepherdsgrain.com) is made up of a group of grain growers who use direct-seeding (also called no-till) techniques to farm in the highly productive, highly erodible, grain growing region of eastern Washington, eastern Oregon, and northern Idaho. Growing organic grain would be very challenging in this region, due to fertility and pest control issues. In fact, organic practices, such as hauling manure into the region for fertility and typical tillage practices for weed control, are not sustainable in terms of fuel usage and soil erosion. These farmers are conserving carbon by not disturbing the soil and reducing emissions by eliminating tillage. Their unique flour blends and, more recently, baked goods from a regional bakery have been very well received. Several state and private universities, as well as corporate lunchrooms at Intel and Adidas, use Shepherd's Grain flour exclusively. In August 2006, Shepherd's Grain milled

HotLips Pizza Brand: Selling Points Include Sustainability and Locally Sourced Foods

David Yudkin, a member of the Chef's Collaborative and owner of HotLips Pizza, a four-store chain in Portland, Ore., has differentiated his restaurant with his focus on sustainability. He pursued the National Step sustainability framework (see www.naturalstep.org) and has incorporated its principles into his business. Working with students from Portland State University to analyze his impact on the environment, he has impressively reduced CO_2 emissions from his business by reducing energy consumption and by converting delivery trucks to more fuel-efficient models. His restaurants feature local, seasonal produce and organic ingredients.

Yudkin's commitment has paid off; HotLips Pizza has an annual growth rate in gross revenue of 18 percent. But it requires a great deal of work, he explains. It's much more complicated to source local ingredients, and it's more expensive—about a 3-percent increase in food expense, he estimates (Yudkin,personal interview, 2006). It takes a commitment all the way up and down the line, from the accountant to the chef. He emphasized that you need to be flexible. Products change throughout the season. But he loves to work with the growers; it makes it worth going to work everyday, he says. His goal is to leave a better world for his children in terms of the environment, the economy and our food choices.

In terms of a model for other restaurants, he feels that branding is key, In other words, customers associate HotLips with environmental responsibility, organic and local ingredients and sustainable practices, as well as high-quality, tasty food, This concept of the importance of a store's image or branding is shared by Jack Graves from Burgerville, a burger chain that sources local and Food Alliance-certified ingredients, and Brian Rohter from New Seasons Market in Portland (Stevenson, 2005). They expressed a strong belief that the primary and most powerful influence on customers was the business itself. Customers have come to t rust the businesses to maintain high standards for thier products, and to address customers' concerns in a responsible manner. For example, when concerns over BSE in meat arose, store personnel can point to the Food Alliance certification, which does not allow feeding of animal by-products and only uses U.S. beef.

37,000 bushels of grain from 17 growers, compared to the preceding 12-month period, when 34,000 bushels of grain from 10 growers were milled (Kupers, 2006). (This is approximately equivalent to half the annual output for one small- to medium-sized family farm.) The company has been able to "de-commodify" its product and make it work for participating growers, because the pricing system is based on the cost of production. In 2006, when yields were down and fuel and fertilizer costs had risen significantly, prices paid to producers had to reflect these facts. For once, farmers were able to pass on their costs of production, albeit for a small fraction of their product.

One of the more promising developments in terms of sustainable certification is the Food Alliance's handler (or processor) certification. In a new program begun in 2006, firms that process Food Alliance products, like Truitt Brothers of Salem, Oregon, can also be certified (www.truittbros.com/sustainability.htm). They had to meet comprehensive standards requiring them to:

- Create natural products considering purity and nutritional value
- Ensure quality control and food safety
- Responsibly manage water and energy resources
- Responsibly manage waste with an emphasis on recycling and reuse
- Provide a safe and fair work environment
- Commit to continuous improvement of these sustainable practices

Four other companies were certified in 2006, and several more are working on the process. The exciting aspect of this type of certification is that these companies will need more Food Alliance-certified growers as they expand, so they might be providing the incentive growers need to become certified also (Exo, 2006). This reduces the risk to growers of changing practices and getting certified without knowing with certainty that they will receive any return on their investment

Selling to Restaurants: Farmer-to-Chef Collaboratives

In 2005, an estimated 48 percent of our annual food dollar, or about $420 billion, was spent on food eaten away from home (USDA-ERS, 2006). Marketing to the food service industry could become a lucrative outlet for midsize growers. While food service is currently a relatively small purchaser of organic, natural, and local foods, rapid growth is expected. Natural and organic sales are predicted to grow from $330 million in 2002 to almost $2 billion by 2007 (Natural Foods Merchandiser, 2004). While restaurants may seem to be a fairly limited high-end purchaser of agricultural products, it is becoming increasingly common for middle-class restaurants to differentiate themselves with their commitment to sourcing local food, such as HotLips Pizza and Burgerville,

Featuring local ingredients is a fashionable new trend in upscale restaurants. The Chef's Collaborative organization (www.chefscollaborative.org) has chapters around the country, forming partnerships with local farmers, ranchers and artisanal producers. Founded in 1993, the Chef's Collaborative "inspires its members to embrace seasonality, preserve traditional practices and agricultural diversity, and support local economies." An impressive national list of member restaurants is posted on its Web site. They also have regional chapters, such as the Portland, Ore., chapter, that help publish a regional directory of local and seasonal products available in Washington and Oregon (www.farmerchefconnection.org), in collaboration with Ecotrust and the Washington State Department of Agriculture. This guide matches "farmers, ranchers, and fishermen with chefs, retailers, institutions, caterers, and other food buyers who are looking to purchase locally grown food products."

Purchasing locally grown products is considered profitable by nearly three-quarters of the respondents in a recent survey of Chef's Collaborative members (Food Processing Center, 2003). Their reasons for purchasing locally grown products included their superior quality, freshness, positive relationships with producers, customer requests and the availability of unique or specialty products. More than half of the respondents preferred to purchase directly from a farmer. Commonly stated obstacles included consistent availability, reliable supply, knowing what is available in the area, complicated ordering procedures and too many purveyors. Price of the product was one of the less important characteristics in their food purchasing decisions. Results from this research project show that some type of grower clearinghouse is needed—perhaps a system that could help facilitate standardized ordering and billing for a group of local growers such as a business-to-business Web site.

Web sites serve as an inexpensive method for bringing buyers and sellers together, reducing transaction costs and supplying valuable firsthand marketing information. Higher value farm products, such as the range-fed beef used by the Burgerville chain, appear to be a more feasible product for many growers than, for instance, greenhouse production or specialty vegetables. For example, Country Natural Beef (formerly

Oregon Country Beef), which is Food Alliance certified, markets beef raised on over four million acres by more than 100 ranch producers in Hawaii, Nevada, Nebraska, New Mexico, California, Colorado, Oregon, Washington, Wyoming and Idaho. A list of more than 20 restaurants that serve its beef is listed on its Web site at www.oregoncountrybeef.com

A guide produced by Iowa State University Extension for farmers who wish to sell to the restaurant industry discusses opportunities, potential pitfalls and helpful organizations and resources (Strohbehn and Gregoire, 2002). This Iowa State Extension guide makes some recommendations including cooperative efforts and use of nonprofit organizations, such as the Practical Farmers of Iowa, who can serve as an intermediary for farmers. As one person put it, when mid-size farms try to compete in the food marketplace, they are up against the "big guys" and they could use some help!

Farm-to-School Programs: Feed My Kids How I'd Like To Feed Them!

Young people today may live less healthy and possibly shorter lives than their parents due to the life-shortening effect of obesity (Olshansky et al., 2005). Current trends in obesity in the United States may end the steady increase in life expectancy over the past two centuries. To address this public health crisis, federal legislation now requires that all schools with federally-funded school meal programs must develop nutrition and physical activity programs for reducing childhood obesity and promoting student health (S. 2507, the "Child Nutrition and WIC Reauthorization Act of 2004").

This legislation presents a great opportunity for initiating farm-to-school programs. In 2004, some 400 school districts in 22 states already had programs linking farmers with school cafeterias, according to one report (Orenstein, 2004). Some schools are inviting farmers into the classroom to provide a closer link with agriculture for their students. Educational opportunities are a natural extension of the farm-to-school programs.

Farm-to-school programs have taken many different forms around the country (www.foodsecurity.org/farm_to_school.html#cases-tudies). Probably the oldest example is the New North Florida Cooperative (NNFC), consisting of farmers in Florida, Georgia, Alabama, Mississippi and Arkansas, who have been providing fresh produce to school in 72 different districts since 1995. In Michigan, over $1 million in funds from the Department of Defense Farm to School Program have been used to purchase apples, pears and nectarines from Michigan farmers. Also through this program, North Carolina has purchased $4.5 million of apples, carrots and potatoes from farmers in their state. Funding sources, organizing tips and more can be found on the Community Food Security Coalition Web site (www.foodsecurity.org/farm_to_school.html#cases-tudies). Some programs have been initiated by farmers, some by parents, some by principals and staff, but the more inclusive the process, the better chance of success it has.

A program called Rethinking School Lunch developed by the Center for Ecoliteracy (www.ecoliteracy.org/programs/rsl.html) has produced a comprehensive guide to improving school lunches, academic performance, ecological knowledge and the well-being of children. The farm-to-school model is an essential element of this program. The program provides an integrated curriculum on agriculture, sustainability, food waste, food policy and human health. Alice Waters, founder of Chez Panisse and the Edible Schoolyard, a 10-year-old program that established an organic garden and kitchen classroom in a poor urban middle school, also collaborated on this project.

In New York, Governor Pataki signed a Farm-to-School Program into law in 2002. The program helps procure N.Y. apples, cider, baby carrots, pears, potatoes and even cookies made with butternut squash. It helps growers meet specifications for the school district. For example, a yogurt producer was able to adjust his product to meet the specification and be awarded the school contract. This past summer, the City University of New York sponsored a forum entitled "Schools and Food: Innovation, Opportunity, and Wellness." Over 400 school food advocates attended the conference.

In Chicago, a nonprofit organization called Seven Generations Ahead (SGA) has established a Fresh From the Farm program to improve school meals and educate schoolchildren on the connection between agriculture and their food (www.sevengenerationsahead.org/fresh_from_the_farm.html). In March 2006, an SGA Healthy Lunch Forum drew more than 70 school superintendents, parents, food service directors, school board and Parent-Teacher Organization members to learn about successful healthy lunch program models, both locally and around the country. Healthy diets affect both student learning and academic achievement, they feel. They have developed an eight-week curriculum with modules on nutrition, earth-friendly agriculture and global food traditions. They

tour local organic farms and also have classroom visits from farmers. Local chefs demonstrate cooking techniques for creating healthy food and discuss nutrition. Fresh from the Farm serves as a resource, advocate and procurement coordinator for school districts wanting to incorporate healthier foods, from local sources if possible. The program supports implementation of pilot healthy school lunch fundraisers to find vegetables, fruits and grains. They sponsor Parent-Child Healthy Eating Nights to teach families about healthy eating in a fun atmosphere. Newsletters are available on their Web site. A market basket program by a partner organization delivers fresh produce to the schools for purchase by parents and community members. The produce is grown by the Rainbow Farmers' Cooperative, consisting of Wisconsin farmers, H'mong immigrant farmers and African American family farmers from Southern states. Further case studies and materials can be found at www.sevengenerationsahead.org/school_case_studies_resources.html

A study in England involving a project to source local and/or organic food for school lunches encountered some interesting problems that might be instructive to U.S. programs (Berkshire Food Group, 2004). Below are some conclusions from the study:

- Chronic produce shortages in some parts of the country would make it difficult to supply schools.
- Few farmers could meet the required price specifications or other requirements, such as delivery schedules.
- Small businesses cannot necessarily meet the necessary health and safety requirements.
- A great deal of effort and commitment is needed for the school lunch supplier. In order to remain viable, suppliers need to provide healthy food that is appealing to children while meeting parents' approval
- Parents were highly interested in what their children were being fed, and many wanted all processed foods to be removed from the menus. Most said they were willing to pay more for local and/or organic food
- This project successfully engaged the children, their parents and the school lunch staff in the subject of healthy eating and sustainable sourcing
- The decline in knowledge and cooking skills in the kitchen staff needs to be reversed in order to improve the quality of school food

Various farm-to-school programs are in place around the country and provide different models, from focusing on local food sources to health education to agricultural sustainability. Schools in moderate climates may be able to grow some of their own food or buy from local farmers, but the school year may not coincide well with the growing season in many areas. With sufficient planning and will, most schools should be able to purchase at least some of their food from local sources and perhaps provide local businesses with a value-added opportunity.

Conclusions and Future Research

In examining consumer preference for DFP, consumers clearly demand that food quality considerations be met before they will consider purchasing a product for non-observable characteristics such as sustainable production or fair labor practices. This was particularly important for socially responsible and eco-labeled products. Local concerns have considerable appeal in terms of supporting the local agriculture, the local economy and the local environment. Local also carries the connotation of products that are fresher, more likely to be traceable and delivered via less transportation. Appealing to consumers' broader self-interest in protecting laborers in developing countries and other less tangible products also has consumer appeal, but to a smaller segment of society.

Two models of consumer purchasing behavior were presented: a triangular hierarchy of consumer needs based loosely on the Maslow hierarchy of needs, and a circular model using core and periphery characteristics. While the models differ, they both show that basic core attributes of a product, such as fresh, tasty and healthy, must be present before consumers will consider purchasing a product for additional attributes, such as method of production. When consumers make a purchase, they are buying a set of product attributes. Labeling or educational campaigns linking additional attributes to core product attributes will help sell these differentiated products to consumers. For example, one study showed that the Jersey Fresh state promotion program generated over $60 million in economic activity while spending $1.16 million per year. If consumers realize that purchasing local produce can help their state economy, they may make an effort to buy more in-state products.

This survey of the literature reveals a broadening base of support for locally produced foods, with more widespread appeal than the organic label. Locally grown or produced was considered very to extremely important by 52 percent of respondents in a consumer survey in Nebraska, whereas organic production was very or extremely important to 27 percent of those sur-

veyed (Schneider and Francis, 2005). In one survey, locally produced was ranked relatively low at 34 percent as a stand-alone quality (Ostrom, 2006). When combined with helping local farmers and the local economy, the appeal of locally produced foods was strengthened dramatically to 70 percent. Linking these impacts to local production was necessary for respondents to understand the ramifications of supporting local production. Local products that can stay within 125 percent of the comparable nonlocal product price would be of interest to 85 percent of the general population, according to a random sample survey of the general population in Ohio (Smith et al., 2006).

The strong growth in consumer demand for organic foods has several lessons for farmers interested in producing differentiated farm commodities. Sustained high premiums for organic food resulted in intense competition as larger players entered the organic marketplace. Price premiums have fallen over the last decade, causing some of the smaller organic farms to go out of business. To avoid industrialization of the organic label, producers need to educate consumers on the importance of supporting conscientious farmers.

Midsized producers or producer groups that can identify niche markets and market to them might well be able to garner more than the typical 10 to 20 percent maximum premium expected from the general population. Businesses spend millions in marketing research dollars to identify profitable niches; farmers will need to capitalize on their unique advantages, whether it is humane treatment of animals, local production or some type of environmental stewardship that only they can provide.

The Colorado Potato Growers Association's (CPGA) market research project provides an excellent example for other commodity organizations (see Loureiro and Hine, 2002) to consider modeling. CPGA hired researchers from Colorado State University to determine consumers' willingness to pay for three differentiated farm products: organic potatoes, GMO-free potatoes, and Colorado Grown potatoes. Only wealthier consumers would pay a premium for organic or GMO-free potatoes. The general population was willing to pay a premium of $0.09 per pound for Colorado Grown potatoes, but only if the potatoes met certain quality standards. Thus, a small segment of the population would support organic (which is by definition GMO-free) potato production while broader support can be expected for locally grown potatoes. This type of collaboration warrants strong support, as both farmers and consumers benefit.

An upsurge in interest in farmers' markets and other direct-to-consumer marketing channels such as CSAs show that consumers are willing to spend time and money to increase the quality of their food and support farmers in their area. Development of new marketing organizations and channels, including grower cooperatives, as well as further research on consumer demand for DFPs will be necessary to coordinate DFP production with consumer demand. Continuing support is highly recommended for successful nonprofit organizations, such as the Food Alliance, Chef's Collaborative, Local Harvest and FamilyFarmed, that have forged the way for many exciting new partnerships among farmers, food processors, restaurants and food service companies and consumers. Finally, consumer needs research should be conducted in accordance with standard marketing theory on consumer preferences, as discussed earlier, while avoiding the common pitfalls of hypothetical responses given by consumers in surveys.

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Appendix Table 1: Description of surveys from cited literature

Author, date	*Description*
Blend and van Ravenswaay, 1999	National random sample telephone survey conducted by the Institute for Public Policy and Social Research at Michigan State University; 972 interviews were completed, response rate of 67%.
Brown, 2000	Random sample mail survey of 544 households in southeast Missouri on consumer preferences for locally grown food.
De Pelsmacker et al., 2005 (Belgium)	Survey of faculty and staff at Gueph College via computer (4,664) or mail (550), with a response rate of 16%. Examines willingness to pay for fair trade coffee using conjoint analysis.
DeCarlo et al., 2005	National random sample via email; rec'd. 851 responses for a 24% response rate.
Eastwood et al., 1987	Random sample interviews of consumers in Knox County, Tennessee, studied consumer preference for locally grown vs. out-of-state produce.
Food Processing Center, University Nebraska, 2001	Random sample telephone survey of heads of household, 100 each in Nebraska and Iowa, 150 each in Wisconsin and Missouri. Goals of project included estimating size of current and of potential market for: (1) locally grown, produced and labeled food, (2) locally grown pastured and free-range chicken, (3) market for organic and all-natural.
Hartman Group 2004	National study of organic trends: Internet survey of 5,000 respondents, weighted to be nation ally Hartman's Interactive Consumer Panel: 353 of the 15,000 consumers from their self-selected online consumer panel, weighted to be nationally representative and corrected for pro-health and wellness nature of self-selected consumers.
Health Focus Inter. 2003	National random sample of approx. 2,000 qualified respondents chosen from a random prerecruiting phone call; 12-page, self-administered written questionnaire of public attitudes and actions toward shopping and eating. Conducted every two years to identify current issues in consumer health and nutrition behavior and attitudes, and to assess the trends in consumer priorities regarding nutritional issues.
Howard and Allen, 2006	Mail survey to more than 1,000 randomly selected households in San Mateo, Santa Clara, Santa Cruz, San Benito, and Monterey counties; 48% response rate.
Loureiro and Hine, 2002	Payment card method used to solicit WTP from 437 consumers randomly selected in various supermarkets in Colorado.
Loureiro and Lotade, 2005	Personal interviews conducted in supermarkets in 4 locations in Colorado and over various times of the day; 284 completed surveys.
Loureiro et al., 2001 & 2002	Randomly selected consumers were interviewed in supermarkets in Oregon using trained interviewers and across multiple timeframes.
Maynard et al., 2003	Used a focus group, a consumer taste-testing and WTP survey, and a restaurant survey. The consumer experiment involved 61 panelists who completed the survey before the taste-testing in a lab. This relatively low number is typical of taste-testing experiments.
Maynard et al., 2004	Experiment conducted in a lab involving 227 consumers recruited from various sources to obtain a representative sample.
Onozaka et al., 2005	Random sample mail survey with 1,200 responses (50% response rate) examined consumer willingness to pay for organic food.
Ostrom, 2006	Farmer and consumer surveys in Washington state to study meaning of locally produced foods and importance of various characteristics. Random sample mail survey sent to 10% of farmers in Washington; 1,201 responses (49% response rate). Random sample telephone survey of consumers in 4 counties; 950 completed surveys (23% response rate).
Pirog, 2003	Internet survey of 7,000 consumers in 10 states (Ill., Ind., Iowa, Kan., Minn., Mo., Neb., Wisc., Wash., Mass.) returned 1,600 surveys. Conducted by surveymonkey.com.

Author, date	*Description*
Pirog, 2004	Internet survey of consumers in Iowa, Omaha, Neb., Quad Cities (Ill. and Ia.) returned 580 surveys. Conducted by www.surveymonkey.com. Smaller WTP survey sent to 1,500 e-mail addresses; 230 surveys were returned.
Organic Valley, 2002, 2004	Random sample telephone survey of 1,000 adults (Roper poll) on food preferences. Conducted every two years.
Robinson et al., 2000	Survey of 550 customers in three stores in St. Paul, Minn., area; self-selected, paid $10 for participating. Studied impact of eight-week campaign promoting MWFA certified apples in three grocery stores.
Schneider & Francis, 2003	Conducted both a farmer and a consumer survey on interest in locally grown foods. Random sample mail survey of 567 consumers (Dillman method). Survey of farmers: sent to all 507 farmers registered with the Farm Service Agency in Washington County, Neb.; 35% response rate.
Smith et al 2005	Motivated Food Consumer: survey of 600 members of alternative food systems in Ohio; 73% response to mail survey (Dillman) Survey of general population in central Ohio: random sample mail survey looking at food, ag and environmental issues (also Dillman method).
Whole Foods, 2002	Online survey, random sample, 1,000 respondents, nationally representative.
Wilkins et al., 1994	Random sample phone survey of 500 consumers in upstate New York; conducted by Cornell's Survey Research Facility.

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Rural Business–Cooperative Service (RBS) provides research, management, and educational assistance to cooperatives to strengthen the economic position of farmers and other rural residents. It works directly with cooperative leaders and Federal and State agencies to improve organization, leadership, and operation of cooperatives and to give guidance to further development.

The cooperative segment of RBS (1) helps farmers and other rural residents develop cooperatives to obtain supplies and services at lower cost and to get better prices for products they sell; (2) advises rural residents on developing existing resources through cooperative action to enhance rural living; (3) helps cooperatives improve services and operating efficiency; (4) informs members, directors, employees, and the public on how cooperatives work and benefit their members and their communities; and (5) encourages international cooperative programs. RBS also publishes research and educational materials and issues *Rural Cooperatives* magazine.