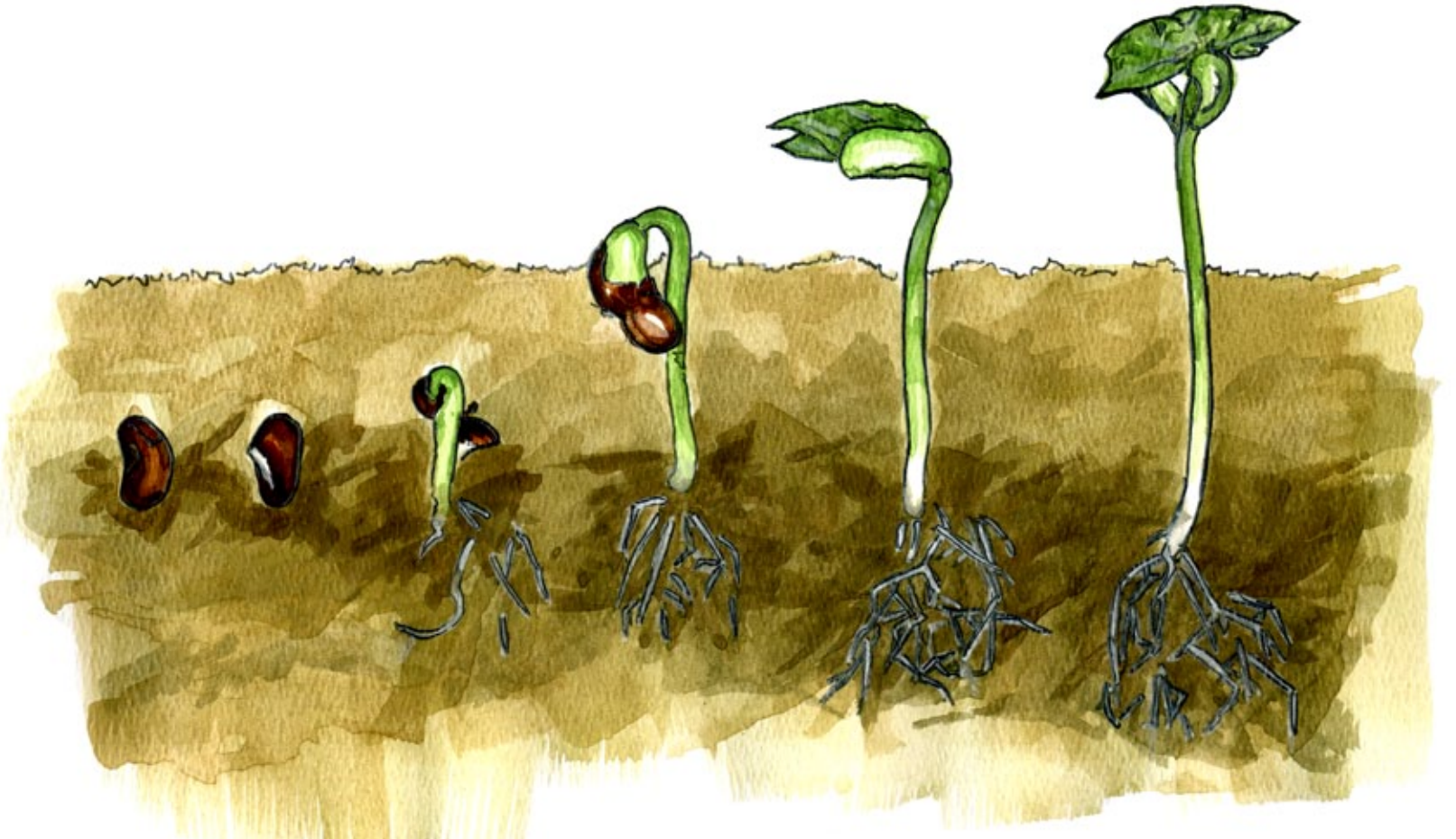
American Farmland Trust

PLANTING THE SEEDS:
Moving to More Local Food in Western Washington

American Farmland Trust | December 2012



PLANTING THE SEEDS:

Moving to More Local Food in Western Washington

American Farmland Trust | December 2012

Contents

Introduction

This report summarizes findings of the Western Washington Foodshed Study, a project conducted in 2011-2012 by American Farmland Trust and a planning studio at the University of Washington. The study investigated two big questions:

1. How local is our food supply now?
2. How could we make our food supply more local?

Local is a slippery term. Used to describe food, it can mean anything from down the block to within the western United States. For the purposes of this project, we define local as within the 19 counties in western Washington (Figure 1). Local food, for us, is what is produced and consumed in these counties.

Figure 1.
The Western Washington Foodshed

It is surprisingly difficult to identify what we produce and eat in these 19 counties, much less figure out how to grow more of what we eat. The study would have been impossible without the work of the 12 graduate students (Lindsay Fromme, Andrea Gousen, Megan Horst, Tom Lang, Matt Maria, Alex Martinsons, Katie O'Mara, Aran Osborne, Lindsey Reh, Eva Ringstrom, Beth Rocha and Sofia Salazar-Rubio) in the planning studio who worked on the project for two quarters. The studio group was very capably guided by University of Washington faculty Dr. Brandon Born and Kara Martin, as well as the support of Anne DeMelle, Graduate Program Coordinator for the University's Program on the Environment. We'd also like to express our appreciation for Whole Foods Markets and PCC Farmland Trust for co-funding the studio project. The team at American Farmland Trust has included Ann Hoogenboom, Emily Sloane, and Dennis Canty.

We were assisted throughout the project by an advisory board for the project, whose membership included:

Mary Embleton
Cascade Harvest Coalition

Diane Dempster
Charlie's Produce

Phyllis Shulman
City of Seattle

Viki Sontag
EcoPraxis

Andrew Stout
Full Circle Farms

Kathy Creahan
King County Ag. Programs

Rebecca Sadinsky
PCC Farmland Trust

Lucy Norris
Puget Sound Food Network

David Hedlin
Skagit County farmer

Tim Crosby
Slow Money NW

Linda Neunzig
Snohomish County

Denise Breyley
Whole Foods Market

We start with the question of why local matters.

It's not easy to make our food supplies more local, and it's important that we begin with a solid foundation in why doing so is important, and perhaps even necessary. We then look at what we grow and what we eat in western Washington, asking the question, "How much of what we eat comes from what we produce here? Not to spoil the surprise, but local food makes up a pretty small part of our diet. The bulk of this report is an analysis of four ways we might be able to develop a more local food supply for the region.

WHAT'S A FOODSHED?

A foodshed is an area around a population center that supplies food to that population center. It's a little like a watershed, except that part of the food supply for an area like western Washington can come from other states, and even other countries. While a foodshed might really include all of those suppliers, near and far, most foodshed studies draw an artificial boundary around an area in order to evaluate supply and consumption. For this study, the foodshed is assumed to include the entirety of the western part of the state, from the Pacific Ocean to the crest of the Cascades.

Why Local?

There are dozens of good arguments for why it makes sense to grow and eat locally. Our favorites are:

Local food supports local farmers.

Farming in western Washington is a bit precarious at the moment. We've lost more than half of our farmland since the 1950s, and the number of farms and the amount of land in agriculture continue to decline. The average age of farmers, a key indicator of recruitment for the next generation, continues to climb past 58 years old. Key agricultural sectors, like dairy, are facing global competition, high costs, and unstable prices. At the same time, there are signs of growth in the industry, particularly the thriving markets for specialty crops like raspberries and close-to-the-city produce. By buying and eating local food, we put money directly into the hands of local farmers, ensuring a better future for them individually and for the industry as a whole.

Local food supports local farmland.

There are about one million acres of farmland in western Washington. In addition to supplying food, this land provides the region with salmon and wildlife habitat, groundwater recharge, flood storage, scenic landscapes, and many other benefits, all of which can easily be lost if farmland is lost to development. When we eat locally, we support a sustainable future for farmland in western Washington.

Local food contributes to our health and happiness.

Many of the nutrients in fresh food begin to degrade as soon as the food is harvested, and decreasing the time and steps involved in bringing food from the farm to the table will ensure that our food is nutritious. And as anyone who has bitten into a local strawberry or heirloom tomato knows, fresh food tastes good.

Local food ensures us of a dependable supply of food in the future.

As the world population climbs to nine billion and energy costs continue to rise, many of the people and places elsewhere in the world that grow food for us today may need to grow food for local people instead. While we are blessed with excellent farmland in the U.S., much of it is used to grow food for export, and the total land dedicated to production of fresh, raw foods has continued to decline. Eating locally and supporting local farmers are good ways to ensure that we have dependable supplies of nutritious food in an uncertain future.

How Local is our Food?

So just how local is our food supply right now?

How much and what kind of food do we eat?

And how much of that do we produce here in the region?

What We Eat

We began this investigation with a look at what we eat. Oddly, this information is pretty difficult to find. There aren't direct surveys that investigate what we're eating in western Washington, so we had to rely on national food consumption data.

We felt that this was acceptable, especially given a recent study that shows that we in western Washington have similar consumption patterns to other populations throughout the country.

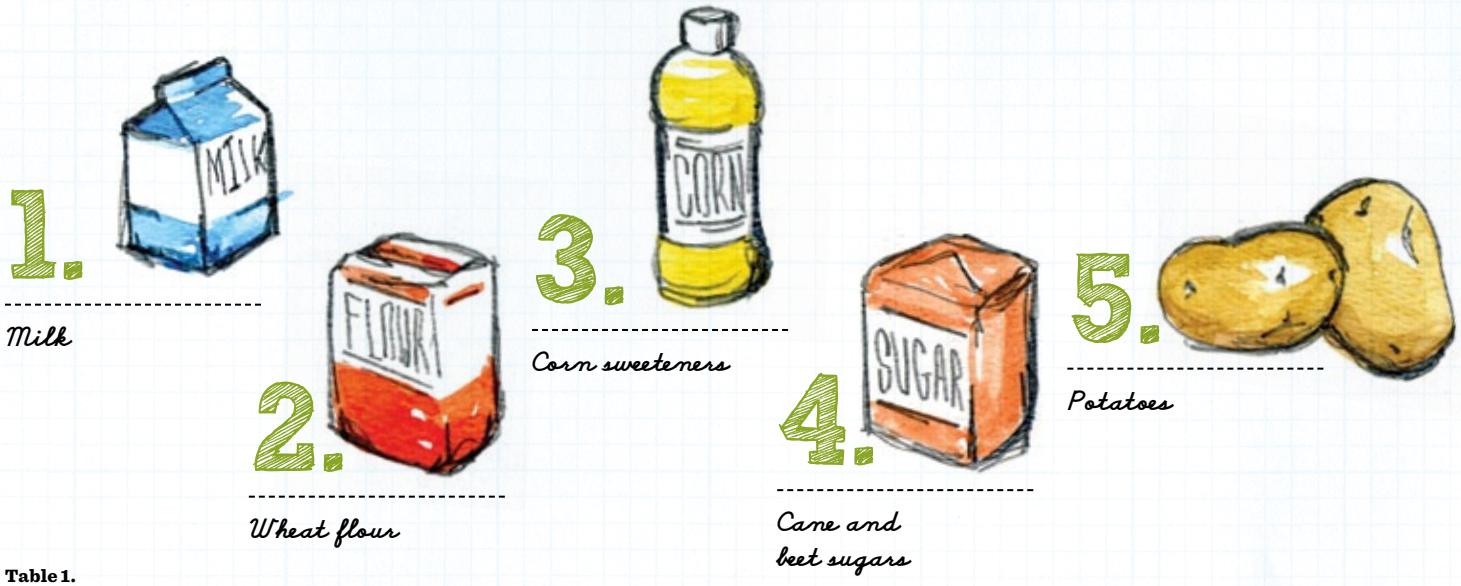
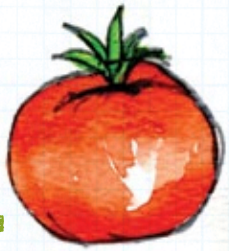


Table 1.

Top 20 Food Items Consumed in Western Washington (by weight)

6. Beef and veal

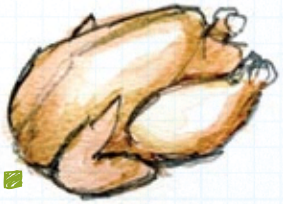
7. Tomatoes



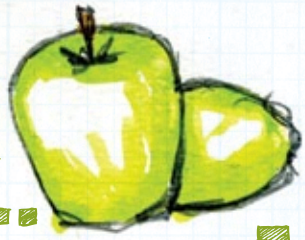
8. Oranges

9. *Salad and cooking oil

10. Chicken

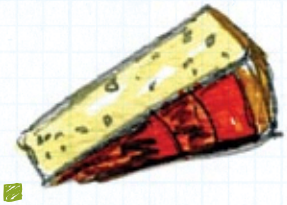


11. Apples



12. Pork

13. Cheese



14. Corn products

15. Eggs

16. *Cottage cheese

17. Legumes and dried beans

18. Rice

19. Lettuce

20. *Dairy fat

What we learned is that people around here eat a lot, about three pounds of food a day, and that our diet is not particularly healthy, at least by USDA standards. We eat nearly 40% more than is recommended by the USDA, and our diet is rich in proteins, fats, and sugars and poor in vegetables. Table 1 shows the top twenty foods in our diets.

As mentioned, we also learned that people in Seattle, broadly speaking, eat pretty much what people elsewhere in the country are eating, as Figure 2 shows. Of course, it's very possible that there are some differences in what we eat within each food category – for example, while we in western Washington eat more or less the same amount of protein as do other Americans, it may be that we get more of our protein from seafood and shellfish than others do. Unfortunately, there's a lack of comprehensive micro-level data on regional diets in this country. What we do know is that, at least in terms of food groups, we're all basically eating the same diet across the U.S.

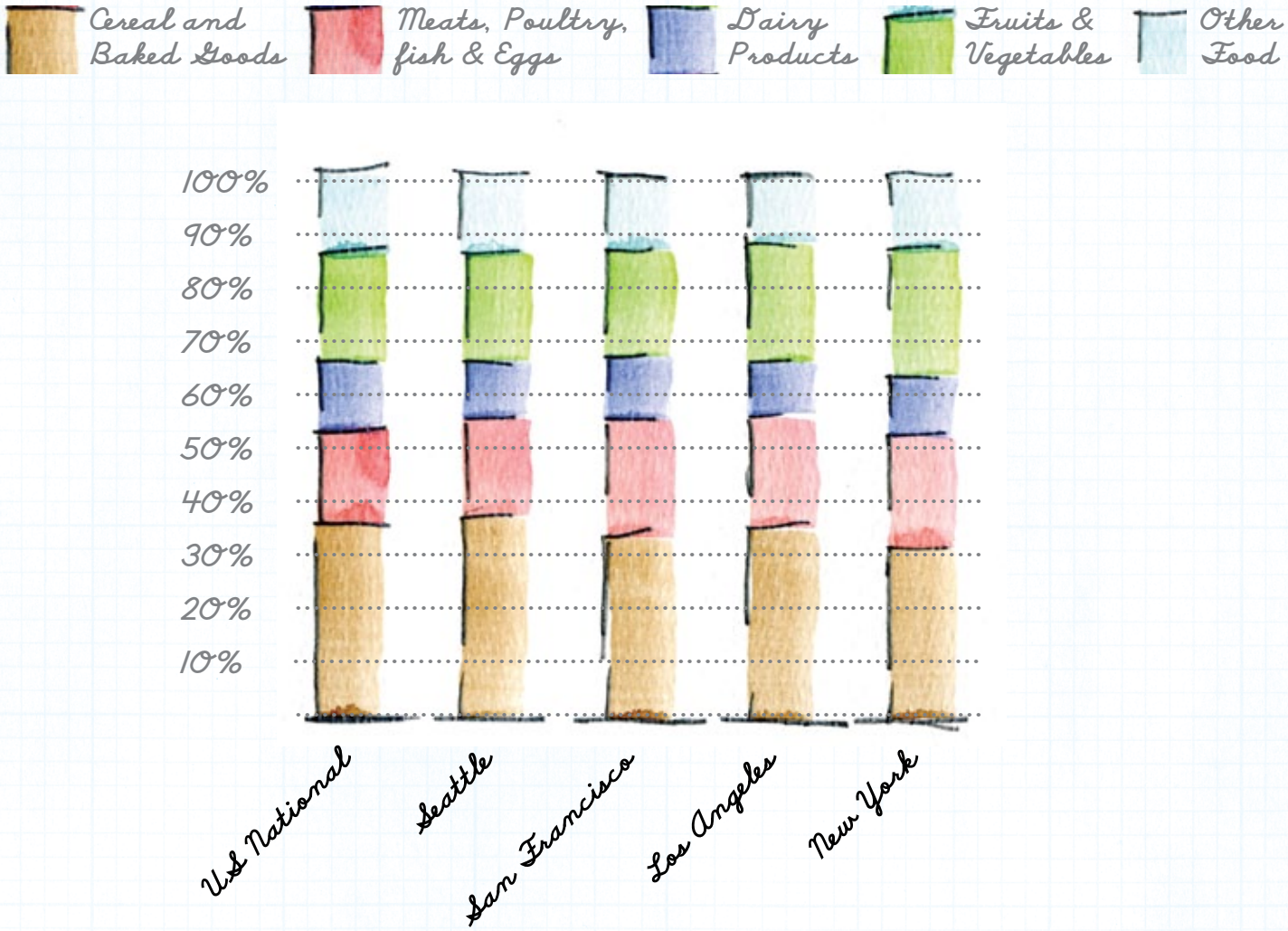


Figure 2.
Household Food Expenditures in Selected U.S. Cities

What We Produce

There's a lot more local information on what we're producing here in western Washington. The USDA Food and Agriculture Assistance Service compiles an Agricultural Census by county every five years that identifies all agricultural production worth more than $1,000 per year per farm. This survey indicates that there are currently about 17,000 farms and one million acres of farmland in the region, with an average farm size of 60 acres. The list of the top-20 farm products in western Washington is shown in Table 2.

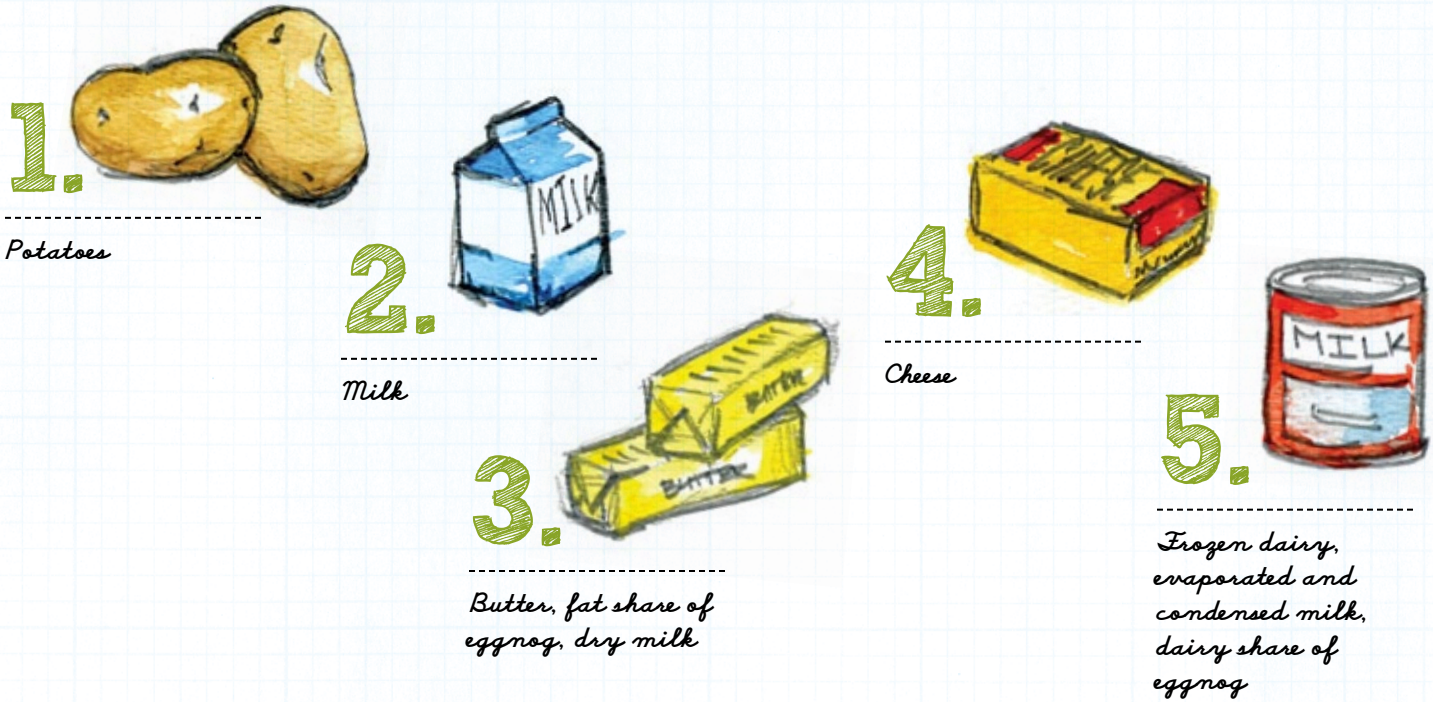
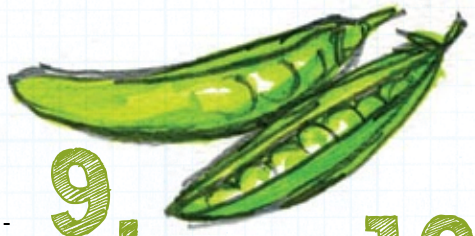


Table 2.
Top 20 Farm Food Products in Western Washington (by weight)

6. Chicken

7. Sweet corn

8. Raspberries



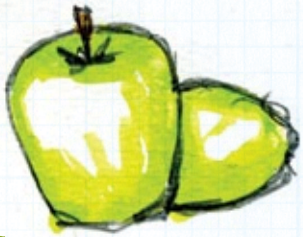
9. Green peas

10. Cucumbers

11. Snap beans

12. Mollusks*

13. Pumpkin



14. Apples

15. Blueberries

16. Cranberries

17. Leafy greens

18. Wheat flour

19. Rhubarb

20. Barley products

*Though mollusks are not produced on conventional farmland, they are nonetheless produced in great volumes in western Washington.

Shellfish farms are not included in the farmland acreage figures that appear throughout this report.

The survey confirms what we know intuitively: that western Washington is a very good place to grow food. Farmers in our region produce about 3.7 billion pounds of food per year, the equivalent of almost two pounds of food per person per day.

With our wet springs and long days, the region is particularly good at growing grass. In turn, that grass is particularly good for raising dairy cattle. Dairy products are the number one food produced in the region, representing more than 60% of total farm production. Milk is tops among dairy products, but powdered milk, butter and cheese are also produced in abundance.

The region is also very good at producing vegetables, which comprise almost one-third of what's grown here. Our mild winters allow for long growing seasons that are especially good for root vegetables, such as potatoes and carrots, and for leafy greens, like kale.

Aside from a few popular fruits like bananas and oranges and all-important products such as coffee and chocolate, much of what we eat in western Washington can theoretically be grown here. Of the top 20 food items consumed here, we could produce everything but oranges, including corn sweeteners and corn products, sugar beets, grains for salad and cooking oils, legumes and rice. That's not to say that we should *try* to produce all of these things here. For starters, some of them are less suited to our climate than are other products, but more significantly, they're less financially viable here. Farms in western Washington are small on average, and land is expensive. These commodities sell at relatively low prices, so they are most profitable when grown on large tracts of low-cost land outside the region.

A good bit of what we grow on western Washington farms is not intended for human consumption. Quite a bit of land is dedicated to pasture and feed for livestock. In addition, a smaller amount of land produces a wide variety of non-food items, including Christmas trees, nursery stock and flowers.

ABOUT ORGANICS

Organics represent a small but growing sector within the food industry. Although sales of organic foods represent a small portion (approximately 3.7%) of all food sales in the U.S., several studies suggest that most Americans buy at least some organic products. Initial research conducted for this report suggests that 6% of all produce sold in western Washington is certified organic.

Comparing What We Eat & What We Produce

It's pretty simple to compare what we eat (about three pounds of food per day) with what we produce (about two pounds of food per day) and conclude that we are producing almost two-thirds of what we eat. If this were the whole story, we wouldn't be writing a report on how to make our food supply more local — we'd have one of the most local food supplies in the country.

The problem with this analysis is that a big chunk of our farm production never makes it to the market, much less to our table. A lot of food weight comes from non-edible parts, like bones and stalks. Also, food is wasted at various levels of the supply chain. In order for the three pounds that we eat to make it to our plates, 4.5 pounds of food must be produced. Once these factors are considered, we currently produce about 43% of what we eat.

Even that number over-estimates the "local-ness" of our food supply, because many things produced in the region are exported outside western Washington, just as many of the foods in our diet are imported from elsewhere. It's extremely difficult to determine how much of what type of product is exported, but our best guess is that somewhere around one-quarter of our diet is locally grown.

The two graphics presented here compare what we grow with what we eat. As Figure 3 shows, only dairy is produced in enough volume to meet demand. We produce a substantial amount of vegetables, equivalent to slightly more than half of what we eat. For the remaining food groups — fruits, grains and protein — what we eat is far greater than what we grow.

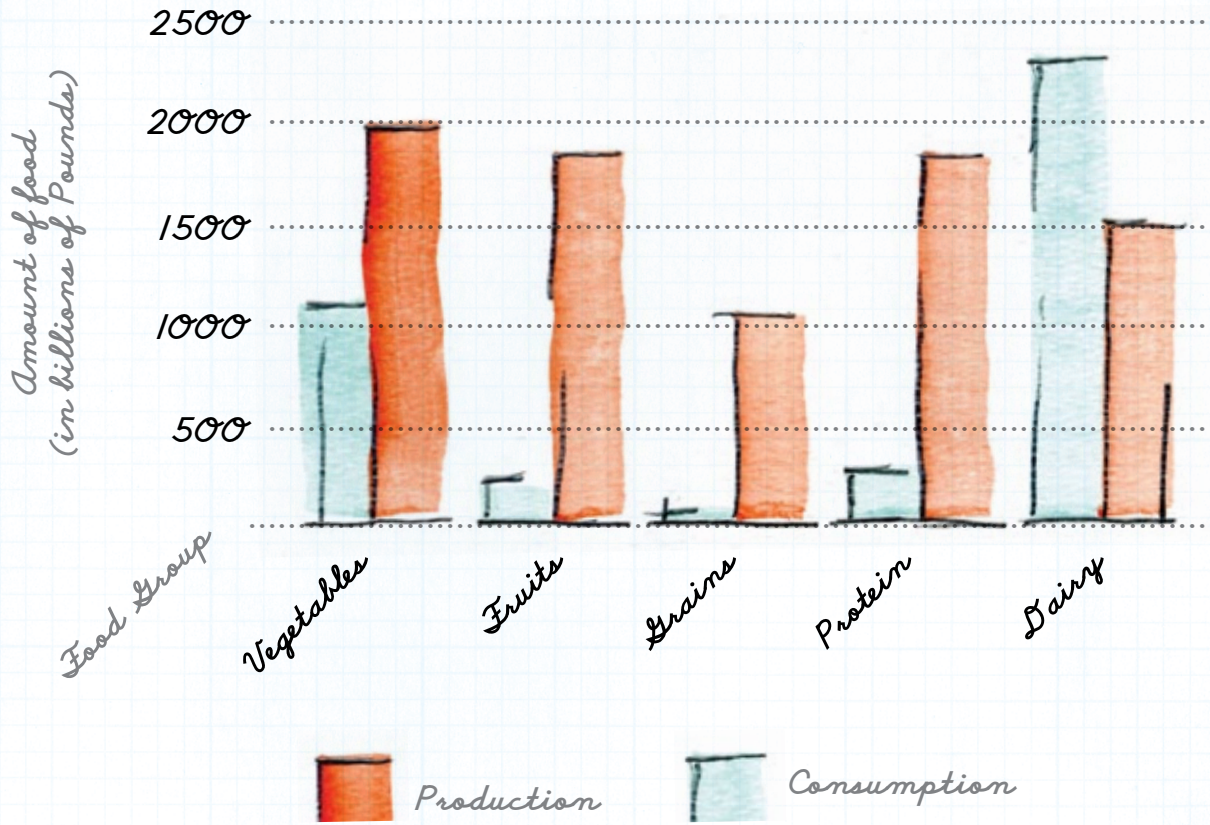


Figure 3.
Production vs. consumption in western Washington

How Local Could We Be?

As the previous discussion indicates, we could have a far more local food supply. We have several major assets:

1. A great climate, with an extended summer/fall growing season and few winter freezes;
2. Enough water and high-quality agricultural soils;
3. A growing crop of enthusiastic farmers; and
4. A large population center in which to sell local food.

We also have many foods that are producible in western Washington but that are not produced in sufficient supply to meet local demand. Many of these are already grown here in large enough volumes to make up a significant portion of our consumption, so we know that they're well suited to the physical and economic climates of the region. We also know that there's a market for these items, the most promising of which are listed in Table 3.

The big factor governing how local we can get is the tricky issue of what people will buy. Massive changes in the way we grow and distribute food in recent years mean that, here in western Washington, California-grown strawberries cost less than strawberries from right down the road, even at the height of the summer harvest. The origin of strawberries bought at the local store is viewed as a personal choice and not a political one, and lots of people opt for the California strawberries.

We have a decidedly un-local food supply in part because that's the one we've supported with our buying decisions. The question of how local we can become has largely to do with us. There are lots of signals that a growing number of people in western Washington are beginning to appreciate flavor, freshness, and the host of social, environmental, and economic benefits of local foods. It remains to be seen how many local foodies there are and what impact we can and will have on creating a more local food supply.

Food item	Percent of current consumption met by local production	Consumption in excess of current production (tons)
Snap beans	95%	1,006
Cucumbers	82%	5,548
Milk	78%	100,404
Sweet corn	70%	19,923
Lamb	58%	1,217
Chicken	33%	162,324
Pears	21%	11,559
Strawberries	16%	16,468
Honey	10%	2,140
Kiwi fruit	9%	1,195
Apples	9%	111,400
Carrots	9%	22,748
Squash	7%	10,729
Leafy greens (lettuce, dark leafy greens, cabbage)	6%	91,729
Fresh garlic	6%	6,085

Table 3.

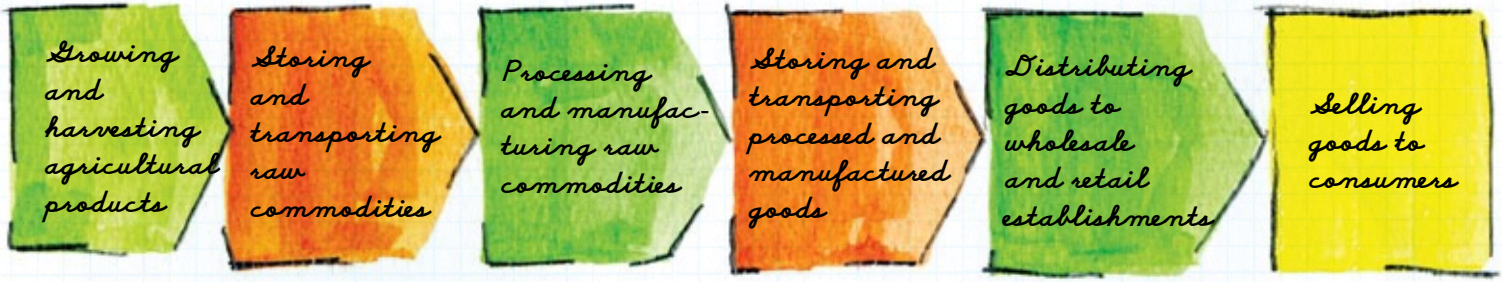
Region-appropriate food items for which current consumption exceeds production

Steps to a More Local Food Supply

Connecting Farmers & Consumers

As we discussed before, we are currently producing about 43% of what we are eating, but much of this food is exported from the region. We think we actually grow about 25% of what we eat. It seems that the simplest thing we could do to build a more local food supply would be to keep more of what we grow within the region.

This proves to be far from simple. Keeping food local requires a continuous supply chain from farmer to processor to distributor to stores or restaurants and finally to us, the consumers (Figure 4). As our food supply has become more global, many of the connections in that supply chain have been lost. Often the first to go are the processors, who depend on a large and steady supply of raw foods, easy access to markets, and consistent prices to fuel their high-volume, low-margin businesses. In the last decade, Washington State has lost more than 200 processors.



Source: Based on a graphic from "Terrorists Threats to Food: Guidance for Establishing and Strengthening Prevention and Response Systems," Food Safety Department, World Health Organization, 2002.

Figure 4.
The food supply chain

Large grocery chains have only recently come around to supplying more local foods in response to consumer demands, and their supplies still come predominantly from out-of-region sources for at least eight months a year. And large institutional buyers such as school systems and hospitals are still sourcing primarily from distributors who are buying from well beyond the region.

There are some very exciting things happening to rebuild local supply chains, including:

1. Founding of more than 85 farmers markets in the region to directly link producers and consumers;
2. Development of a variety of matchmaking services such as Food Hub, the Northwest Agriculture Business Center Food Network, and Cascade Harvest Coalition's efforts to link institutional buyers with local producers; and

3. *Construction of tangible infrastructure, such as the USDA-certified mobile slaughterhouse organized by San Juan County's Lopez Community Land Trust and the Island Grown Farmers' Cooperative, to address a lack of certified facilities in the region.*

At the same time, consumers are pushing local grocers to disclose the origin of food and to buy from local suppliers whenever possible. Much as we'd appreciate a more systematic approach to rebuilding local supply chains, it seems like these incremental improvements are the best bet to developing a more local food supply.

HOW DOES OUR FOOD GET TO OUR TABLES?

We had high hopes of making specific recommendations on rebuilding local supply chains in the Foodshed Study. It turns out that this is practically impossible. There is no uniform or coordinated tracking of food products from the farm to the grocery shelf. In addition, many local products (such as berries) are processed outside the region and then brought back into the area in their final form (such as jam). The best we could do was to identify pieces of the supply chain that are obviously missing in western Washington, like USDA-certified slaughterhouses and value-added food processing facilities that are accessible to both small and large-scale producers. In the long run, a system for tracking the flow of food will be needed if we're going to be able to chart progress on localizing food supplies.

Moving to a More Local Food Supply

Bringing Land Back Into Food Production

Since 1950, we've lost more than half of the farmland in the region to development. The losses have largely tracked the periods of population growth in western Washington, as newcomers to the region have bought land and built houses on former farms.

In 1950, long before the development of the interstate highway system and the routine transportation of food across the country and around the world, western Washington still had a largely local food supply. At that time, the region had a population of around 1.7 million living off food produced on 2.3 million acres of farmland, for an average of about 59,000 square feet, more than 1.3 acres, of land per resident.

Today, our population has risen to 5.2 million, and farmland has shrunk to 1.02 million acres. Instead of more than one acre of farmland per person, the amount the United Nations thinks is necessary to support the average Western diet, we have about 8,500 square feet, less than 0.2 acres,, of land per person, about the size of two average urban house lots. One of the most effective ways to increase local food supplies in western Washington would be to bring additional land into food production.

SAVING TODAY'S FARMLAND

Although the emphasis of this discussion is on how to improve the supply of local food, it goes without saying that the most fundamental thing we can do on farmland is to keep it from falling out of farming in the first place. The foundation for this approach must be a system of agricultural zoning, tax relief, and retirement of development rights that keeps existing farmland in farming permanently, along with programs that educate, mentor and assist new farmers and their businesses.

How Would We Do It?

Reclaiming large tracts of still undeveloped land in rural areas: Despite the population explosion in western Washington during the past 50 years, simple observation tells us that a fairly sizeable area of the region's historical farmland remains either undeveloped or only minimally developed. However, not all of it is being actively used for agriculture, and we could target this "underutilized" land for reclamation.

Consolidating undeveloped but subdivided lots on the edges of more developed areas: Much historic farmland in or near areas of suburban growth remains mostly undeveloped, but has been subdivided into lots in anticipation of development. We could reconvert this land to agriculture, perhaps consolidating numerous adjacent lots in order to maximize total land area.

How Much Would We Do?

If we brought 10% of farmland lost since 1950 back into farm production, it would result in about 124,000 acres of additional farms. If all were producing at today's average rate of 3,623 pounds of food per acre, they would produce about 450 million pounds of food. It is easy to imagine that there could be this much land in the region that is readily available for conversion back into farming.

If we aimed at reclaiming 25% of the "lost" farmland, it would mean 309,000 acres back in production and an additional 1.1 billion pounds of local food. However, it could be difficult to find this much land that could be cultivated without removing parking lots or, in worse cases, structures. The feasibility of this would have to be more thoroughly investigated.

In order to reclaim 50% of the "lost" farmland, 618,000 acres would be brought into cultivation and would produce an additional 2.2 billion pounds of food. At this level, it is almost certain that we'd reach into suburbs and perhaps urban areas to find undeveloped open space to cultivate, in order to avoid the removal of structures in previously farmed areas. The feasibility of this option seems questionable.

What Would It Achieve (and Cost)?

Assuming that all reclaimed land is in food production and is producing at today's average yield, this strategy would achieve the following:

At the 10% level, an additional 448 million pounds of food and an increase in potential local food supply from 43% to 48% of our local diet.

At the 25% level, an additional 1.1 billion pounds of food and an increase in potential local food supply from 43% to 56% of our local diet.

At the 50% level, an additional 2.2 billion pounds of food and an increase in potential local food supply from 43% to 69% of our local diet.

WHY 10%, 25%, AND 50%?

All of the strategies in this section have been evaluated assuming 10%, 25%, and 50% levels of implementation. This is done to allow a comparison of the effectiveness and costs of each strategy. It also recognizes that all actions to develop a more local food system will be challenging, and it may be a reach to consider even a 10% or 25% level of implementation in the short run.

We look at costs in three ways: financial, environmental, and social/political.

Financial: Five negative dollar signs. Fallow land in large lots probably averages $10,000 per acre in the region, while developable suburban land can cost 20 times as much. We didn't hazard a full estimate given the many uncertainties of this strategy, but this is probably the most expensive path to a local food system.

Environmental: Three positive environmental symbols. Land brought into farming is not available for urban development or more intensive uses, all of which are likely to have more significant impacts on water quality, habitat, climate, and other environmental resources, than farming.

Social/Political: Three positive symbols. Bringing "underutilized" land into production means more local jobs and higher rural tax bases, while forcing new development into already developed areas, a sound "smart growth" strategy that is likely to lead to more vibrant and sustainable cities.

Who's Working on These Issues in the Region?

PCC Farmland Trust and numerous local land trusts and conservation organizations are purchasing active and fallow farmland for permanent farm use. American Farmland Trust, The Nature Conservancy, the Trust for Public Land and numerous local groups are working to keep current farmland in agricultural production. Whatcom, Skagit and King Counties, along with other counties in the region, have adopted forward-thinking farmland policies and directed funding towards farmland protection.

Moving to a More Local Food Supply

Increasing Food Yields on Active Farmland

Today, there are just over 1 million acres of farmland in western Washington producing 3.7 million pounds of food, an average yield of 3,623 pounds of food per acre of farms. One possibility for increasing local food production is to increase the average food yield for land currently in farming. Some of the land is not even producing food, and a 100% increase is possible in these cases. Other land is producing food, but not at a very high rate. Any increase in yield is creditable directly against the deficit of food produced in western Washington.

How Would We Do It?

Lengthening the Growing Season:
Many of the foods we eat can only be produced in our summer growing season. As Table 4 shows, many of the fruits and vegetables grown in western Washington are harvested only in the four-month period between mid-June and mid-October. One proven way to lengthen this season, at least for some crops, is to install greenhouses or hoop houses to begin the growing season earlier in the spring and extend it into the fall or even into the winter. We'd expect this to be done by individual farmers acting independently in response to market demand.

Converting to Higher-Yielding Products:
Some of the farmland in western Washington is growing non-food items like Christmas trees and flower bulbs. Other parcels are used as pasture for cattle and horses, to produce feed for livestock, or simply as part of large rural estates. Some of these uses require a great deal of land that could be made available for food production. In all, about 650,000 acres of the region's farmland are currently used for something other than crops for direct human consumption. If growing local food were significantly more lucrative, we'd expect some producers to convert land from non-food to food crops and, in rarer circumstances, from livestock feed to human food.

Phasing in Improved Practices for Sustainable Agriculture:
Applying various improved agricultural practices can improve yields in an environmentally friendly way. One such practice is permaculture, which advocates techniques such as vertical "stacking" of plants, companion planting, production of plants and animals in common pastures, reliance on integrated pest management and extensive production of root crops and perennial plants. These practices are growing in use in the region and would again be expected to be implemented by individual farmers in response to market opportunities.

Blackberries

Kiwi fruit

Corn

Plums

Cucumbers

Melons

Blueberries

Raspberries

Strawberries

Broccoli

Eggplant

Onions

Cauliflower

Fennel

Peas

String beans

Cherries

Grapes

Peppers

Tomatoes

Table 4.

Selected Fruits and Vegetables Harvested Primarily During the Summer Season in Western Washington

How Much Would We Do?

If we aimed to increase yields on active farmland by 10%, we would probably begin by providing market incentives to build greenhouses and hoop houses and convert land from Christmas trees and nursery stock to food production. If successful, these actions would result in the production of 185 million additional pounds of food in the region.

An increase in food yields of 25% would be more difficult to realize. It would probably require far more widespread use of greenhouses and hoop houses and the adoption of various practices to significantly increase yields. In addition, we would probably have to convert some land currently being used for non-food items or pasture into food crop production. If achieved, this would result in the production of 463 million additional pounds of food.

Theoretically, a 50% increase in food yields on existing regional farmland seems possible, though it would require some fairly extreme changes in what we grow. Most notably, it would mean a large-scale shift from non-food to food crop production. A good portion of our agricultural land would need to be producing food at a very intensive level during an extended growing season. Use of energy, water, fertilizers, and pesticides would increase. If possible, this regime would be expected to produce 927 million additional pounds of food.

What Would It Achieve (and Cost)?

Assuming that we could increase yields through the actions described, this is what we'd expect to achieve:

At the 10% level, an additional 185 million pounds of food and an increase in potential local food supply from 43% to 45% of our local diet.

At the 25% level, an additional 463 million pounds of food and an increase in potential local food supply from 43% to 48% of our local diet.

At the 50% level, an additional 927 million pounds of food and an increase in potential local food supply from 43% to 54% of our local diet.

We look at costs in three ways: financial, environmental, and social/political.

Financial: No dollar signs. Short-term costs of the greenhouse/hoop house program, conversion of land from non-food to food crops, and adoption of alternative practices are likely to be balanced by higher income from locally grown products and higher local yields. Short-term financing is needed for a transitional period and would accelerate adoption of these practices.

Environmental: One negative symbol. It's hard to increase yields without increasing demand for water, energy, pesticides, and herbicides to support more intensive production. These are probably minor issues at the 10% level of implementation, but they become far more important if the region embarked on the 25% or 50% scenarios. Permaculture techniques have promise but need further investigation. On the plus side, increasing yields would decrease impacts of transporting foods into the region.

Social-Political: Two negative symbols. At the 10% and perhaps the 25% levels of implementation, the changes in agricultural practices are subtle and well within the mainstream of farming activities in the region. Adoption is unlikely to be controversial. At 25% plus, the changes are more dramatic and potentially unsettling. The conversion from livestock feed to food production, greatly expanded use of non-traditional farming practices such as permaculture, and increasing role of the public sector in assisting with widespread transitions in farm practices could be a tough sell to the farm community in the region.

Who's Working on These Issues in the Region?

The USDA's Natural Resources Conservation Service, Whole Foods Markets and many farm supply companies provide funding or financing assistance to help western Washington's farmers install greenhouses and hoop houses to increase growing seasons. Many small farms, non-profit organizations, and educational institutions in the region offer training in improving production through permaculture and other techniques.

Moving to a More Local Food Supply

Reducing Food Waste

Nearly 40% of the food that we produce in western Washington never gets eaten. It gets culled during processing, spoils at the store, or is tossed by the consumer. Because of this, much more food must be produced than what we actually consume. Figure 5 shows the total loss by food group.

Food loss happens at every step between the farm field and the consumer's kitchen. Some food never gets harvested due to spoilage in the field. During processing and transport, more is lost through culling to meet food safety standards, packaging failure and product mishandling. At the retail level, damaged packaging, spoilage and expiration and unsuccessful new products result in additional losses. But the biggest culprit is food waste at the consumer level—including households, restaurants and foodservice operation—which represents almost half of all loss. As we all know, we can easily buy too much or keep food too long and end up throwing it away. This is illustrated in Figure 6.

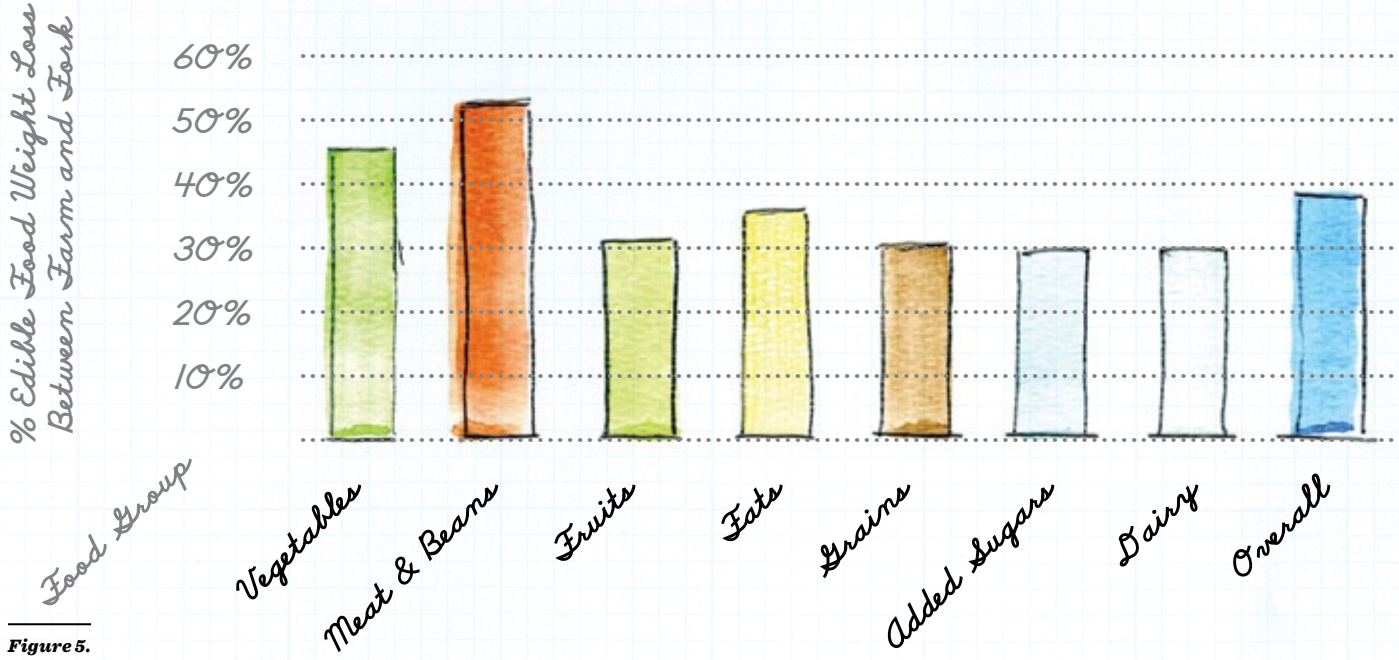


Figure 5.
Percent of Edible Food Lost in the Food Supply Chain

Cutting down on food waste is one of the most effective ways to make our food supplies more local, because it contributes directly to increasing the share of local production that is available to eat. Waste reduction efforts could target the losses happening at each phase of the food chain.

GETTING TO THE SOURCE OF FOOD WASTE

Plenty of organizations in western Washington are helping to keep food out of landfills. Some of them "rescue" food from farm fields and supermarkets and funnel it to emergency food programs for the needy, while others, like Seattle's Children's Hospital, have installed composting facilities on site. A new Issaquah-based company, WISErg, has begun working with retailers to produce fertilizer from food waste. These are laudable efforts, but they're only necessary because our food system produces so much waste in the first place. By preventing food from ever entering the "waste stream," more of the food that we produce will actually get eaten, and our food system as a whole will become more efficient.

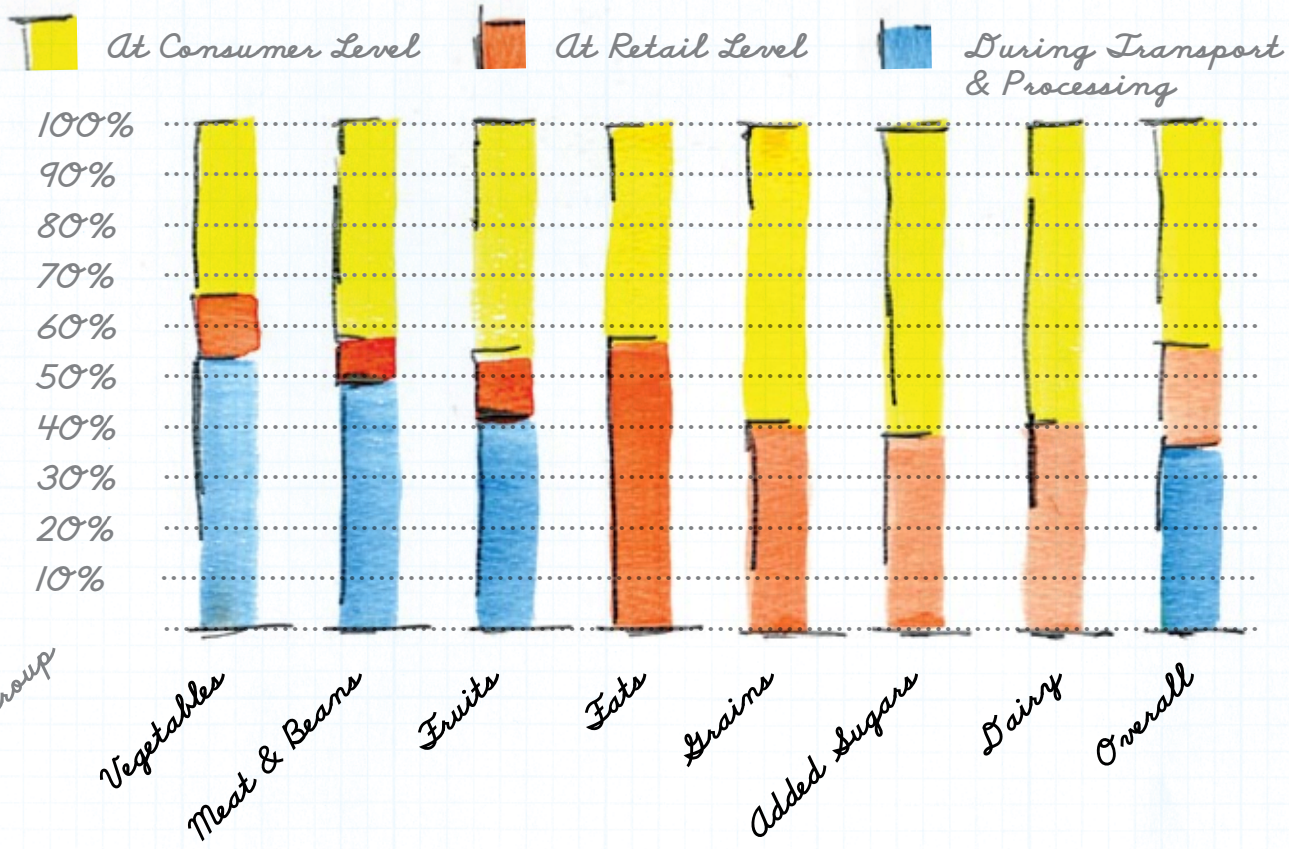


Figure 6.
Breakdown of Loss by Food Group

How Would We Do It?

Innovations in packaging: Advances in packaging technology can help cut down on food losses throughout the supply chain. Improved packaging could serve to better protect food during transportation, storage and handling, to extend the shelf life of products and to offer portion sizes better aimed at consumers' needs. This is probably best implemented through an alliance of processors and grocers based on better research on inventory management and spoilage.

Dynamic pricing systems for perishable goods: Retailers could implement dynamic pricing in order to encourage sales of overstocked items before they spoil. Such systems allow store managers to adjust prices throughout the day, based on sophisticated software that suggests how to price an item based on stock levels and actual and expected sales.

Technologies for improved inventory management: The ongoing development and implementation of technologies that can make inventory management more efficient present an opportunity for significant waste reduction. Retailers and food service providers can use software to forecast sales, better track actual inventory and inform automated ordering systems.

Consumer and foodservice-focused public outreach campaigns: As mentioned earlier, almost half of all food loss occurs at the consumer level, so successful education campaigns could have a major impact on waste reduction. Efforts could provide households and foodservice managers with information designed to reduce waste through improved meal planning and food purchasing, appropriate serving sizes, and better understanding of food safety. Campaigns targeting the foodservice world could additionally provide current information about the latest innovations in inventory management technology.

How Much Would We Do?

If we hoped to achieve a 10% decrease in waste, we would probably concentrate on consumer-level food loss. We could launch an aggressive outreach campaign on food waste reduction, targeting households and foodservice providers. In addition, we might try to educate retailers and foodservice interests about innovations in packaging and inventory management. A 10% reduction would mean savings of 324 million pounds of food per year.

Aiming for a 25% reduction in waste, we would do more of the above, plus promote incentives for the development and adoption of advanced packaging and inventory management technologies. This would mean savings of about 809 million pounds of food per year.

Achieving a 50% reduction in food waste would require that we step up all of the previous strategies, plus substantially increase trash and compost removal fees and potentially impose some legal restrictions on the disposal of food waste. This would mean savings of 1.6 billion pounds of food per year.

What Would It Achieve (and Cost)?

Assuming that we could decrease waste through the actions described, this is what we'd expect to achieve:

At the 10% level, 324 million pounds of food saved and an increase in potential local food supply from 43% to 44% of our local diet.

At the 25% level, 809 pounds of food saved and an increase in potential local food supply from 43% to 47% of our local diet.

At the 50% level, 1.6 billion pounds of food saved and an increase in potential local food supply from 43% to 53% of our local diet.

We look at costs in three ways: financial, environmental, and social/political.

Financial: No dollar signs. Reducing food loss is likely to save money for retailers, consumers and foodservice providers, but widespread educational campaigns, sophisticated packaging, and inventory control technologies may be quite costly to implement, especially in their early phases of development.

Environmental: Four positive symbols. Reducing food waste is extremely positive for the environment, since it means that the resources being used to grow, transport, process and store food are being used more efficiently and that there is less demand on landfills and composting facilities. However, certain technologies, especially packaging, may be energy and resource intensive to produce and implement, an impact that is likely to decline as changes are implemented.

Social/Political: Two positive symbols. There would likely be strong support for this strategy at the 10 and 25% levels, especially with growing awareness of the extent of the region's food waste problem and the incentive-based approaches to tackling it. At the 50% level, however, businesses and consumers might begin to resent the more aggressive imposition of waste reduction measures.

Who's Working on These Issues in the Region?

As previously mentioned, many municipal and private institutions are working to divert food from landfills. Also, area cities and schools commonly undertake waste audits, which identify the percentage of trash that is made up of compostable and recyclable materials. These are good first steps, but it seems that we in western Washington have not yet attempted to tackle the problem at its source and take broad measures to prevent food from ever becoming "waste" in the first place.

Moving to a More Local Food Supply

Changing What We Eat

One very effective way to balance local production and local consumption would be to eat only what we grow here, but this would require cutting our overall consumption by half, reducing protein and fruit intake to a tenth of what we currently eat, and making up for it by drinking lots of milk. This is not only extremely unlikely, it would be quite unhealthy.

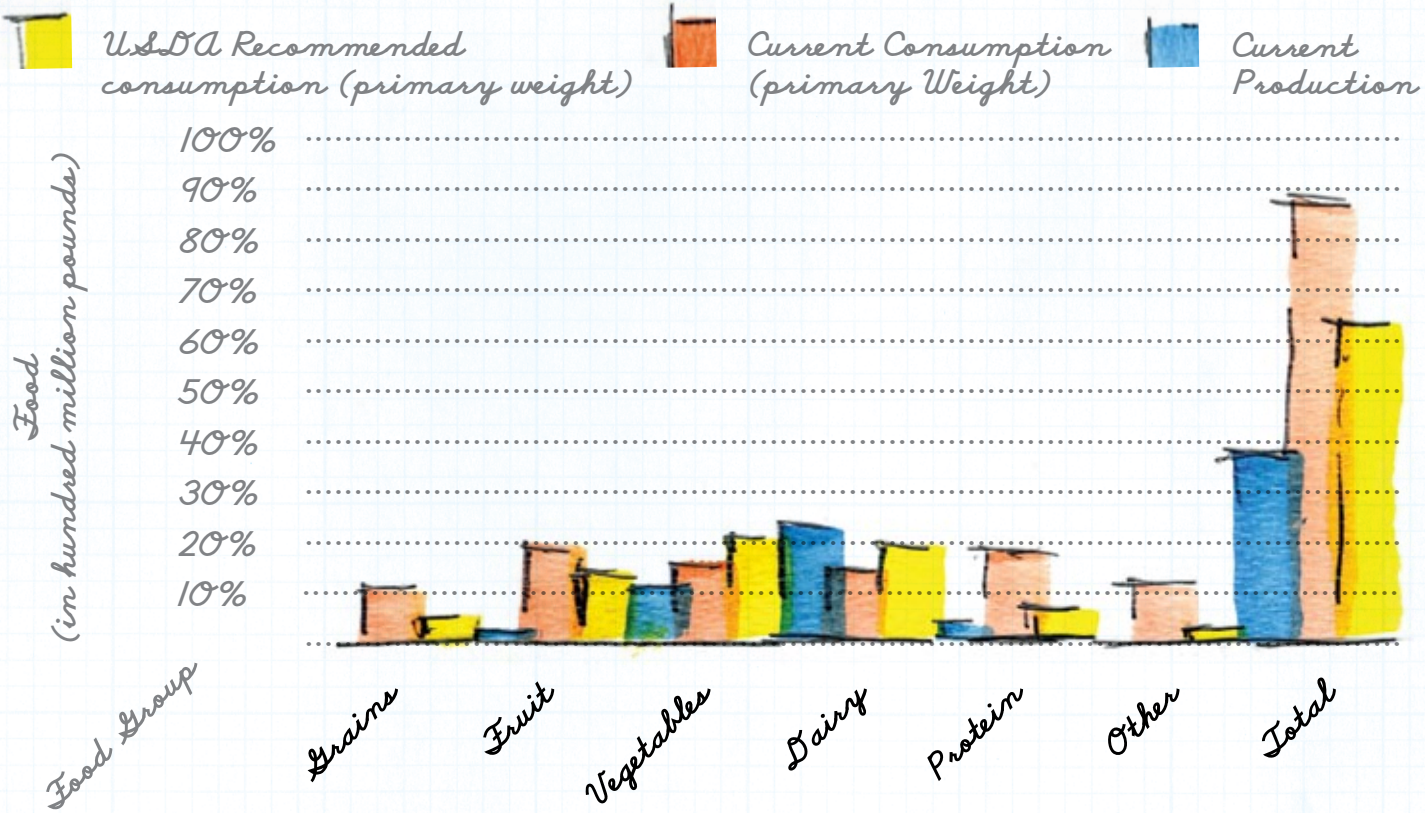


Figure 7.
Current production and consumption vs. USDA-recommended consumption

A more reasonable path would be to shift our diets towards the USDA recommendations. Figure 7 compares our current production with current consumption and consumption following the USDA guidelines. If we were to follow the guidelines, total consumption would decline about 38% - a stretch but probably very good for us — and consumption of each food group would be tweaked. The biggest change would be a marked reduction in protein consumption. While this wouldn't have the impact of the all-local diet, it would be quite effective at balancing local production and consumption.

How Would We Do It?

Modify our diets to shift what and how much we eat: We currently eat more than 2,700 calories per day, while the USDA suggests that an average of 2,000 calories per day would be better. The USDA diet is also richer in fruits, vegetables, and dairy than our current one and includes far less protein, sugar and grains. It is clearly the purview of the individual to determine what he or she eats, but there are ways to encourage good eating habits through education, incentives such as subsidized wellness programs, adoption of USDA guidelines by institutions like schools and taxes on detrimental foods such as candy and sugary soft drinks.

Modify our food production to match our evolving eating habits: These changes would actually be quite modest, because most of what we overeat we don't actually produce in the region. It might make sense to shift some dairy production to other food products, but that is the only food we produce in excess of USDA recommendations.

How Much Would We Do?

If we aimed for a 10% shift in our diet towards the USDA recommendations, we'd probably start with the targets of most obesity campaigns: fatty and sugary foods. We'd presumably do far more education on these topics than we do now and ideally begin to implement incentives through taxes and wellness programs. A 10% shift towards a healthier diet, via a reduction in the overall number of calories consumed and adjusting dietary consumption towards the USDA guidelines, would reduce consumption by 237 million pounds of food per year.

At the 25% level, we'd continue to reduce our overall caloric intake and to address fatty and sugary foods, but would also try to wean people from meaty diets and transition them to vegetables, once again through a combination of education, legislation and incentives. Shifting from current dietary patterns towards the USDA guidelines at this level would reduce overall consumption in the region by 592 million pounds per year.

If we implemented a program to shift 50% of the way towards the USDA diet, we would more aggressively pursue the consumption-side strategies mentioned above, probably imposing regulations on food programs at institutions serving large populations, like schools, hospitals and government agencies. We also might begin to shift production away from dairy and towards vegetables. This would be accomplished through voluntary actions by individual farmers in response to market drivers, although subsidies, price supports, research grants, and other public incentives could help. If accomplished, this would reduce consumption in the region by 1.2 billion pounds per year.

What Would It Achieve (and Cost)?

Assuming that we could shift diets and adjust production through the actions described, this is what we'd expect to achieve:

At the 10% level, reduced consumption of 237 million pounds of food and an increase in potential local food supply from 43% to 44% of our local diet.

At the 25% level, reduced consumption of 592 million pounds of food and an increase in potential local food supply from 43% to 46% of our local diet.

At the 50% level, reduced consumption of 1.2 billion pounds of food and an increase in potential local food supply from 43% to 50% of our local diet.

We look at costs in three ways: financial, environmental, and social/political.

Financial: Five positive dollar signs. There are tremendous financial costs of our current diet, including the considerable costs of importing food and the health care costs of eating too much of the wrong things. Considering that cutting back and shifting consumption would have little to no impact on current farmers in the region, this seems overwhelmingly positive.

Environmental: Two positive symbols. Again, this shift would have little or no impact on existing farming in the region and thus no environmental impacts from changes in land use. There would be a decrease in the transportation of food from beyond the region, with a net benefit in air pollution and climate change.

Social-Political: Four negative symbols. The American public has been remarkably resistant to incentive-based strategies for modifying diet and decreasing consumption, with ever-increasing rates of obesity despite the abundance of messages about what we should be eating. And yet more persuasive efforts like tax shifting and waste fees are likely to be very unpopular.

Who's Working on These Issues in the Region?

Though the State's Farm-to-School program was eliminated in 2011 due to budget cuts, efforts to bring healthier food into public schools continue. Six school districts in King County have already adopted the USDA nutrition standards. Most counties in the region offer educational resources on healthy lifestyles, including better eating.

Putting It All Together

Strategy	Baseline	Impact 10%	Impact 25%	Impact 50%
Bringing land back into food production	43%	48%	56%	69%
Increasing food yields on active farmland		45%	48%	54%
Reducing food waste		44%	47%	53%
Changing what we eat		44%	46%	50%

Table 5.
Summary of Strategies and Their Potential Impacts

The following table summarizes the effectiveness of the four strategies at the 10%, 25%, and 50% levels of implementation. Again, the baseline for comparison is 43%, based on the idea that if we consumed all of the food that we produce in the region, current regional production would account for 43% of our diets.

As you can see, bringing land back into food production seems to be the most effective option by far. The remaining three strategies seem to have less extreme but still significant potential for increasing the percentage of local food in our diets.

It's also clear from the preceding discussion that these alternatives vary greatly in their financial, environmental, and social-political costs, all important considerations in determining the viability of these as solutions. For instance, bringing land into production looks great until you look at the high financial cost, while changing local diets seems very promising until you consider the degree of public indifference or opposition.

It's likely that a combination of these solutions, and probably some not considered in this brief document, would have the greatest impact at a tolerable cost. For instance, perhaps bringing a small amount of land into high-yield greenhouse production would result in a significant uptick in the vegetable production needed to make our dietary shift acceptable. These synergies certainly exist and simply need to be investigated further.

Finally, the authors have attempted to recognize some of the organizations and agencies doing good work to develop local food supplies in western Washington. We live in a free market economy, and changes to our food supply will largely come from greater education, incentives, and fundamental changes in consumer behavior. The non-profit sector is in a crucial position to lead these incremental shifts in the marketplace that will result in a new local food economy. These groups deserve our support.

We also listed these groups in an effort to find a home for the substantial amount of additional work needed to flesh out alternatives, pursue promising solutions, and keep the rest of us in touch. Here at American Farmland Trust, we are ready to continue work on the issue of how to bring additional land into food production, and we're happy to support others willing to take on leadership roles. We hope that the Foodshed Study has whetted the appetite of the region to continue work on developing a more local food system, and we look forward to working with all of our colleagues on these issues.

Until we meet again, happy eating!

American Farmland Trust

Want More Information?

Contact Dennis Canty at
American Farmland Trust
1335 N. Northlake Way
Suite 101, Seattle WA 98103
or email dcanty@farmland.org.