

# Achieving Sustainability through Local Food Systems in the United States

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While constituting a small portion of the overall agricultural complex in the United States, various local food systems are developing. These systems bring consumers in closer contact with farmers, they reduce the carbon footprint of food consumed, and they enlist consumers in supporting local farms and sustainable farming practices. While local food systems continue to face many barriers, significant growth in many is demonstrated using data from various sources.

**Keywords:** Local agriculture, sustainable, direct-to-consumer, direct-to-intermediate

## 1. Introduction

In the United States, weekly articles in the popular press promote local foods. But to say that this local food movement is substantial is delusional. To even say this movement is in its infancy is an overstatement. The local food movement in the U.S. is embryonic.

Of the 1.1 trillion dollars Americans spent on food in 2010, only 1.2 billion dollars (0.11%) reached farmers through direct-to-consumer food systems. While small, these local systems are growing.

The 300 million people of the United States are predominately fed by a food system some refer to as the industrial food complex. Characteristics of this system are listed in Table 1.

The industrial food complex has resulted in a diet of highly processed, uniform, and cheap food for consumers. Indeed, the percentage of disposable personal income Americans spend on food has declined constantly over decades to 9.4% in 2010 (Table 2.), one of the lowest percentages in the world.

**Table 1.**  
**Characteristics of Farms in the Industrial Food Complex**

- Large farms and agribusinesses
- Vertical & horizontal integration
- Geographically extensive
- Land extensive
- Building and machinery intensive
- Input intensive
- High technology
- Economies of scale
- Narrow profit margins
- Well paid management and low paid manual labor
- Specialization as opposed to diversification
- Uniform quality and low price food.

**Characteristics of Farms in Local Food Systems**

- Small farms and agribusinesses
- Land intensive
- Permacultures and biointensive
- Higher profit margins
- Well paid manual labor
- Diversification rather than specialization
- High quality and usually higher priced food

The double border text boxes in this paper contain extracts from articles written by author Dale Johnson for a blog titled Backyard Farming ([backyardfarming.blogspot.com](http://backyardfarming.blogspot.com)). A purpose of this blog is to connect readers to their local food sources.

The foundation for the evolution and success of this industrial food complex is cheap fossil fuels, surface and aquifer water, and mined fertilizers – all of which are being depleted as the world's burgeoning population increases demand for these finite resources. As food stuffs are produced, processed, and transported long distances across the United States and exported around the world, there has been much concern about the environmental impacts. Many are skeptical about the sustainability of this system in the long run.

## 2. Sustainability

In a 2010 seminal report on the status and issues surrounding sustainable agriculture, the Committee on Twenty-First Century Systems in Agriculture set forth four goals for achieving sustainability.

1. Produce enough to satisfy human needs.
2. Enhance environmental quality and protect the natural resource base.
3. Generate profitable farms.
4. Increase the quality of life for farmers, farm workers, and society as a whole.

Three of the issues driving farmers and consumers across the United States to develop more sustainable systems include: heightened consumer awareness of issues related to agricultural sustainability,

increasing desires to regulate development to maintain open space, and the gathering momentum among consumers to purchase locally produced food which is perceived as being fresher, higher in quality, and more sustainable.

**Table 2. Food expenditures in the U.S. as a share of disposable**

Year	Disposable personal income*	Expenditures for food						
		At home*		Away from home*		Total*		Away from home % of total food \$
1930	75	16	21.2%	2	3.1%	18	24.2%	
1940	77	14	17.6%	2	3.1%	16	20.7%	15.1%
1950	210	36	17.0%	8	3.6%	43	20.6%	17.6%
1960	365	51	14.1%	13	3.4%	64	17.5%	19.6%
1970	736	76	10.3%	26	3.6%	102	13.9%	25.9%
1980	2,009	181	9.0%	85	4.2%	266	13.2%	32.0%
1990	4,286	314	7.3%	175	4.1%	490	11.4%	35.8%
2000	7,327	433	5.9%	289	3.9%	722	9.9%	40.0%
2010	11,380	630	5.5%	444	3.9%	1,074	9.4%	41.3%

\* billions of dollars

Percentages and totals subject to rounding

Source: United States Department of Agriculture

### Cheap Energy = Cheap Food

For the past century we have had cheap energy in the form of petroleum. Let me illustrate. Suppose you need the energy to move 500 kilograms of produce 10 kilometers to market. Here are three ways to do it. All calculations are roughly adjusted to current U.S. dollars and developed-world rates.

1. Hire a porter at \$200 per day for 25 days to carry it on their back at 20 kilograms/20 kilometer round trip. Cost = \$5,000. This method was used for millennia.
2. Hire a driver, wagon, and team of horses for one day to make the 20 kilometer round trip. Cost = \$500. This method was used for centuries.
3. Hire a driver and truck at \$2.50/kilometer which includes driver, depreciation, repairs, and fuel. Cost = \$50. This method has been used for a less than a century. This is only 1% of the cost of the most prevalent method used in the history of man. By historical standards, current petroleum prices give us very cheap energy. Think about that the next time you fill your car

During the history of mankind and in parts of the world today, people worked most of their time just to eat. The rest of the time was spent getting shelter and clothing. When they weren't totally exhausted, they made babies to help them with the work. Because of cheap energy, we have cheap food – it costs us less than 10% of the time we expend for work and other activities. But cheap food will end in the next hundred years as we deplete our fossil fuels unless we develop more sustainable systems.

Evidence of this movement is found in data from the United States Department of Agriculture Census of Agriculture which is conducted every 5 years. This data shows that “direct-to-consumer” marketing efforts have doubled in the 10 years from 1997 to 2007.

Various local food systems are developing across the United States (Table 3). All of these systems bring consumers in closer contact with farmers, attempt to reduce the carbon footprint of food consumed and enlist consumers in supporting sustainable farming practices. This paper will highlight the current status of each system in the United States with an emphasis on direct-to-intermediate systems which account for the larger portion of local sales.

### 3. Local Food Systems

Two reports provide insights on local food systems in the U.S. Martinez, et al. examines the economic impact of direct-to-consumer marketing, primarily farmers markets, Community Supported Agriculture and on-farm marketing. They compare direct-to-consumer sales to total farm gate sales rather than the total consumer spending mentioned earlier.

“Direct-to-consumer marketing amounted to \$1.2 billion in current dollar sales in 2007, according to the 2007 Census of Agriculture, compared with \$551 million in 1997. Direct-to-consumer sales accounted for 0.4% of total agricultural sales in 2007, up from 0.3% in 1997. If nonedible products are excluded from total agricultural sales, direct-to-consumer sales accounted for 0.8% of agricultural sales in 2007.”

Less than 1% of agricultural sales in the U.S. come from direct-to-consumer marketing. What is characterized in the popular press as a major food movement appears to be embryonic.

Low and Vogel broaden the discussion of local agriculture by not only looking at direct-to-consumer channels but also including direct-to-intermediate channels which includes local distributors, schools, institutions, restaurants, etc. They report:

“Marketing of local foods, via both direct-to-consumer and intermediated channels, grossed \$4.8 billion in 2008—about four times higher than estimates based solely on direct-to-consumer sales. Farms marketing food commodities exclusively through intermediated channels reported \$2.7 billion in local food sales in 2008 - higher than the value of local foods marketed exclusively through direct-to-consumer channels.”

So in discussing local food systems, it is important to consider both direct-to-consumer and direct-to-intermediate.

Low and Vogel also examine the structure of farms selling locally:

“Small farms (< \$50,000 in gross annual sales) accounted for 81% of farms reporting local food sales in 2008. They averaged \$7,800 in local food sales per farm and were more likely to rely exclusively on direct-to-consumer marketing channels, such as farmers' markets and roadside

**Table 3. Local Food Systems**

Direct-to-consumer

- On-farm markets
  - Roadside stands
  - Farm stores
  - U-pick
- Community Supported Agriculture
- Farmers markets

Direct-to-intermediate

- Farm-to-school (K-12)
- Colleges and universities
- Restaurants
- Food service vendors
- Grocers
- Internet

Gardening

stands. Medium-sized farms (gross annual sales between \$50,000 and \$250,000) accounted for 14% of farms reporting local food sales in 2008. They averaged \$70,000 in local food sales per farm and were likely to use direct-to-consumer marketing channels alone or a mix of direct-to-consumer and intermediate marketing channels. Large farms (gross annual sales >\$250,000) accounted for 5% of farms reporting local food sales in 2008. They averaged \$770,000 in local food sales per farm and were equally likely to use direct-to-consumer channels exclusively, intermediated channels exclusively, or a mixture of the two. Large farms accounted for 93 percent of the value of local food sales marketed exclusively through intermediated channels.”

Two common assumptions were dispelled by these reports. First, direct-to-consumer is the primary channel for getting local food to consumers. Second, farms that sell locally are small. The following are some observations about some local food systems.

#### **4. On-Farm Sales**

On-farm sales such road side stands, on-farm stores, and U-pick appear to dominate farmer-to-consumer sales. Lev and Gwin (2010) support their conclusion that farm stand sales are most likely the single strongest marketing channel for local direct to consumer sales with the following statistics.

- Two thirds of Oregon’s 2001 Senior Farmers’ Market Nutrition Program coupons were redeemed at farm stands.
- Multiple surveys of urban fringe county farms reported more sales at farm stands than at farmer’s markets with one study of eight counties reporting farm stand sales more than five times greater than at farmer’s markets.
- Disaggregated data of direct market sales reported in the USDA 2008 Organic Production Survey listed farm stand sales as the major market channel.

On farm sales are perhaps the best channel for connecting consumers with farmers. As consumers travel to farms, they are able to meet with farmers and see how their food is produced first hand. It benefits farmers as they do not have to transport their produce to markets. However, thousands of consumers traveling to various farms is energy inefficient. This is mitigated if farms are on direct commuter routes.

#### **5. Community Supported Agriculture**

Community supported agriculture (CSA), is one of the newest systems for connecting consumers with local farmers. CSA members subscribe/pay dues to a CSA farm at the beginning of the year to capitalize the farm and then receive weekly shares of produce through the growing season. Some CSAs provide opportunities for the members to work on the farm in exchange for shares of produce.

According to Martinez and colleagues (2010), the two CSA’s operating in 1986 had grown to 400 in 2001. Four years later, the number had expanded to 1,144 CSAs and by 2010, it was estimated that at least 1,400 had been established.

This number has continued to grow with Local Harvest ([localharvest.org](http://localharvest.org)) listing just over 5,000 CSAs in the United States in May, 2012. While various databases report different numbers of CSAs, all demonstrate the rapid growth of this marketing approach. However, even with this growth and assuming a liberal estimate of the number of members per CSA, there are probably less than 500,000 people in the United States currently purchasing local food through CSAs.

## 6. Farmers Markets

Farmers markets are one of the oldest local food systems and the number of markets continues to grow each year. According to the USDA's Agricultural Marketing Service, the 1,755 reported in 1994 had reached 5,274 in 2009. These numbers are further supported by Local Harvest which lists almost 6,000 farmers markets in May of 2012 which are fairly well distributed across the population centers of the eastern seaboard and the west coast of the U.S. While sales at these markets were less than on-farm sales, sales at farmers markets is a significant marketing channel. According to the USDA 2008 Organic Production Survey, Farmer's markets only lagged 7% behind on-farm sales as a specific marketing channel for direct to consumer sales.

## 7. Farm to School (K-12)

Spearheaded by parents, schools and governments, some schools are sourcing local food for their menus. As of May, 2012, the National Farm to School Network ([farmtoschool.org](http://farmtoschool.org)) estimates that there are 2518 farm to school programs in the U.S. and documents 9,945 individual schools (K-12) involved in these programs, about 10% of schools in the U.S. However, most of these programs provide only a small portion of the food for each school's menu.

There are many barriers to expansion of farm to school programs. Hanson and colleagues (2011) surveyed school food service directors regarding their perceived barriers to increasing local food purchases. Responses were combined into a single index ranking as listed below from most to least problematic.

1. Seasonal availability
2. Delivery considerations
3. Pricing
4. Liability (farmer compliance with food safety standards)
5. Lack of local food supply
6. Extra staff time needed to prepare fresh foods
7. Lack of partially processed products

## Top Ten tips for Shopping the Farmer Market

1. View the farmers market as entertainment. Think how much produce you can buy for the cost of taking your family to a movie. Encourage friends and neighbors to join you on your outing.
2. Take your children and ask them what they would like. Help them learn about the different fruits and vegetables. Buy them strawberries they can eat right there.
3. Take a cooler with ice. Keep that great produce COLD! until you use it.
4. Don't price shop at the farmers market. Local farmers can't compete with factory farm prices but the produce is fresher and tastes better. You help the local economy and improve the environment.
5. Be flexible and build a menu around what the farmers have. Farmers sometimes have recipes for vegetables that you are unfamiliar with. Don't forget the meat, eggs, and dairy products many local farmers are producing now. If you go just to buy tomatoes or green beans, then you are actually hurting the environment with this special trip.
6. Ask the farmers for cull produce. Farmers will sometimes to sell lower quality at a reduced price. Often you can't tell the difference when using these for cooking.
7. If you can't find what you are looking for (provided it is not out of season) ask the farmers to grow it for you. They are often looking for new crops to grow.
8. When the farmer is not serving other customers have them tell you about their farm.
9. Go to the farmers market on the way to the grocery store. This saves energy and you can buy menu ingredients to supplement what you purchased at the farmers market.
10. USE WHAT YOU BUY! Spoiled vegetables are a waste of money and discourage you from going back to the farmers market.

8. Product quality
9. Developing relationships with farmers
10. Consistent product quality
11. Lack of information about where/when local foods are available

Seasonal availability is an absolute barrier in Maryland as it is in many states. Most produce that could be incorporated into school menus is harvested in the late spring and summer when school is not in session. Farmers do not have the storage or processing facilities for delivering food during the school year. Delivery of local produce is also daunting. School food systems are run on a county wide basis and individual local farms do not have the capacity to meet the needs of a large system with delivery to multiple units.

If these first two barriers can be mitigated, there is still the barrier of the higher price usually associated with local food. There is extreme pressure on food service directors to balance their budgets. When local food is more expensive, or perceived to be more expensive, directors are less likely to pursue options for increasing the percentage of local foods in their menus.

Hanson and colleagues (2011) suggested several structural changes to overcome these barriers. These suggestions include the following. Food purchasing contracts can require distributors to indicate the price and availability of local food. Establishing collection centers to combine produce from small farms can enable sales to distributors and school systems. Increased storage and processing capacity could alleviate the barrier of seasonal availability. Ad hoc Farm to School Action Teams which include extension educators and agricultural economic development specialists could improve communication and creative solutions to local barriers between farms and schools. Expanding Farm to School activities to include fruit and vegetable tasting and developing a curricular component that teaches students about the path from 'farm to fork' can increase interest in local sourcing as parents and students better understand where their food comes from and its value to their health.

### **8. Farm to School - College and Universities**

A major player in getting local food into colleges and universities is the Real Food Challenge ([realfoodchallenge.org](http://realfoodchallenge.org)). The vision of this organization is as follows:

"The Real Food Challenge leverages the power of youth and universities to create a healthy, fair and green food system. Our primary campaign is to shift \$1 billion of existing university food budgets away from industrial farms and junk food and towards local/community-based, fair, ecologically sound and humane food sources—what we call "real food"—by 2020. The Real Food Challenge also maintains a national network of student food activists—providing opportunities for networking, learning, and leadership development for thousands of emerging leaders."

The Real Food Challenge is important because it is led by and reaching out to the next generation to educate them on sustainable food systems. Considering that colleges and universities spend about 5 billion dollars on food each year, the \$1 billion or 20% goal of the real food challenge is very ambitious because colleges and universities face many of the same problems experienced by the K-12 schools mentioned in the preceding section. As of May, 2012, 363 of the nearly 4,500 colleges and universities in the United States had joined in this movement, a small but growing number.

As a member of the University of Maryland Sustainable Food Working Group, the first author serves as a faculty advisor along with the Director of Dining Services and the Director of the

Office of Sustainability to the student led group which is spearheading the Real Food Challenge on the College Park Campus.

To put the work of this group into perspective, the UM dining services program is the 7th largest self-operating dining service program in the United States. It generates \$52 million dollars a year and serves 23,000 meals a day at 34 locations across campus. UM dining services has initiated major sustainability protocols such as minimizing and composting of waste, clean energy systems, as well as roof top and campus gardens for educational purposes.

The Sustainable Food Working Group is setting up the criteria for UM Dining Services to meet the Real Food Challenge. The criteria focus on four specific areas – local (within 250 miles of UM), fair trade, ecologically sound (Certified Organic), and humane (Certified Humane). The most difficult of the four criteria to verify is fair trade because there is no clear measurement or certifying body. The details of these criteria are still in development, but UM Dining Services has made a firm commitment to these efforts and is in the process of hiring a full time employee to head these efforts toward the Real Food Movement.

## **9. Restaurants**

While Americans spend a large share (41%) of their food budget on food away from home (Table 2), there are many barriers between the vast majority of restaurants and local foods.

The low to mid-priced restaurant and “fast food” culture of the U.S. relies on cost control and efficiency with high customer turnover because of thin profit margins. This is generally achieved through reliance on a single food vendor which provides prepared foods that can simply be warmed in the kitchen. These kitchens are not prepared to incorporate dishes made from unprocessed produce and present a major impediment to getting local food into restaurants. Local foods simply do not fit into this model.

Additionally, individual farmers are often limited in their ability to provide the variety of produce year round that restaurants need. It is also inefficient and time-consuming for farmers to make small deliveries to several restaurants and it is inefficient for restaurants to purchase from several farm vendors. To improve efficiency and to facilitate the delivery of both quantity and diversity of produce to restaurants, many farmers have formed cooperatives. Consequently some restaurant/farmer and chef/farmer organizations are springing up around the country.

Despite these efforts, as of May 2012 only 600 (LocalHarvest.org) of the estimated 574,000 (0.1%) restaurants (NPD Group) in the U.S. feature locally produced food and the potential for significant growth in this marketing channel does not appear to be as promising as other local food systems.

## **10. Food Service Vendors**

Food Service Vendors supply most of the restaurants, schools, hospitals, and cafeterias in the U.S. It seems almost a sacrilege to suggest a union of these huge conglomerates with local food. Yet this may be one of the most efficient ways to get local food to consumers. Indeed, many food service vendors recognize the growing desire of the population to connect to local foods and have modified their marketing accordingly. For example, Sysco, the largest food service vendor in the U.S., shares the following information regarding their efforts to connect local farms with customers in four states on their website, [sysco.com](http://sysco.com).

“Good things come from Sysco - Local Flavor, Fresh Foods, Fresh Ideas: Sysco customers are expressing a new set of values. Many care not only about price and quality, but also about where

their food comes from, who grows it, and how it gets to them. Many Sysco companies have initiatives to connect local farms with markets that value the unique varieties of the produce they grow. They are committed to local farming initiatives and work closely with small farms and local producers to make their high quality products accessible to more people. Meet the farmers, restaurateurs, and Sysco and FreshPoint staff who are bringing local flavor to our Sysco companies in California, Connecticut, Michigan and Oregon.”

### **11. Grocery stores**

Grocery store chains are part of the industrial food complex. They purchase and sell produce on a massive scale. Local farmers have difficulty fitting into this food infrastructure. However, many groceries stores are starting to feature locally produced food.

The Maryland Department of Agriculture (MDA) started one of the first large local food initiatives, The Shore-to-Store program, in the mid-1980s. MDA facilitated connections between vegetable farmers located on the Eastern Shore of Maryland and grocers by helping to organize production, consolidation, and transportation of produce. Consequently, customers often see a “local” sign next to one or more produce items in grocery chain stores throughout Maryland.

Some grocery stores have also taken the individual initiative to prominently feature locally grown produce. For example, Wegmans is a popular large grocery chain in the Northeast United States that was named the best supermarket chain by Consumer Reports. At Wegmans, the first thing a customer usually sees is locally grown produce and information about the farm it came from. Additionally, farmers are regularly invited to meet with customers at the store.

The Wegmans home page ([wegmans.com](http://wegmans.com)) prominently promotes local foods with a banner that directs customers to several webpages discussing local food. For example:

“Food Miles - At Wegmans we have long partnered with farmers that are local to each store, providing our customers with the freshest fruits and vegetables possible. When you buy produce that’s labeled “locally grown,” you’re not only getting the best quality, you’re supporting your local farmer and community, and helping to reduce the impact on the environment by shrinking the carbon footprint from the farm to you. Taking steps—even little steps—together can make a difference. Sustainability at Wegmans: Today, Tomorrow, Together.”

The success of this partnership was clearly illustrated in a recent interview the first author conducted with the farmer of a small, 10 hectare, vegetable farm who sells produce to Wegmans. A program on the farm computer was used to help coordinate the movement of produce from the farm to the local store. The farmer expressed great satisfaction in his business relationship with Wegmans and indicated that it was a model that all grocery store chains should try.

### **12. The internet**

The internet has been instrumental in connecting farmers with local customers. Farmers, farmers markets, cooperatives, CSAs, etc. use webpages to direct customers to their locations. Additional portals such as Local Harvest also link farmers and consumers within a local area. However, the internet can also be used to link farmers to consumers at great distances. The first author of this article recently received an overnight delivery of a Styrofoam box cooled with carbonic ice that contained four small beef filets from a farm nearly 1,500 miles away. While this gift could be classified as a direct farmer-to-consumer sale, it was disturbing to the concepts that underlie the sustainability movement.



### 13. Gardening

By far the greatest, but often overlooked, local food source in the United States is gardening. Gardening connects people to food production in the most intimate way as they plant and harvest their own food. Planning a garden, acquiring the resources, coping with irrigation, weed, insect, and disease problems, incorporating garden produce into the diet, and--most of all--exerting physical labor, gives people an appreciation for food that non-gardeners rarely obtain.

Gardening is on the increase in the United States. Gardens are proliferating in rural, suburban, and urban settings. Community gardens are being established by those who lack the land base for personal gardens. In addition to vegetables, fruits and herbs, some gardeners are also integrating small animal production, particularly poultry layers and broilers for eggs and meat. Some gardeners are so passionate that they prefer the terms "urban" or "backyard farming".

The magnitude and impacts of gardening in the United States was evaluated through research conducted by the National Gardening Association (NGA) using data collected by Harris Interactive, a leading market research firm. The NGA (2008) concluded:

- 31 percent of all U.S. households, or an estimated 36 million households, participated in food gardening in 2008.
- The median food garden size is 96 square feet (9 square meters) feet in area and the average food garden size is 600 square feet (56 square meters) in area.
- 33 million households have food gardens at home (91%); 2 million households have gardens at a friend, neighbor, or relative's home (5%); and 1 million households garden in a community garden plot (3%).
- U.S. food gardening households spent an annual average of \$70 on food gardening and a total of \$2.5 billion in 2008.
- Food gardening households have gardened for an average of 12 years.

#### Victory Gardens

Most of us were not around when the term "Victory Garden" was a household word in the United States. With food rationing in World War II, 20 million American families answered the call of the government to plant gardens. It's estimated that these gardens produced 40% of the vegetables consumed during the war, stretching the food supply of the United States.

Victory Gardens are needed as much now as then. The battles we fight are epidemics of obesity, diabetes, heart disease and other nutrition related illnesses. Our children turn up their noses up at vegetables and vegetate in front of movies, facebook, and video games. Self-centeredness breeds isolation as we ignore neighbors in our daily pursuits. Degradation of the environment spawns air, soil, and water pollution. Depletion of fossil fuels and water tables threaten food supplies. Biodiversity is sacrificed to monoculture food production. Our taste buds are assaulted by tasteless factory food.

Imagine replacing the lawn around the house with a fruit, vegetable, and flower garden. If everyone did this, envision the impact on our world. The exercise of gardening and eating the resulting produce would dramatically improve our health. Our children's minds and bodies would be stimulated and strengthened. We would gain lifelong friends as we exchange ideas with our neighbors over the garden fence. Instead of burning 10 calories of fossil fuels in producing, processing, and transporting every calorie of food we eat, we'd conserve our natural resources as we burn our fat calories in producing our own food. As we intensively manage our multi-cropped gardens, we'd increase biodiversity and avoid polluting the air, soil, and water. Instead of corrupting our palettes with tasteless uniform hybrid vegetables, we'd savor the flavors, colors, textures, variety, and nutrition of heirloom vegetables. Through Victory Gardens, we win all of these battles and make the world a better place for our families.

- Food gardening households spend an average of 5 hours per week in the garden.
- An estimated 5 million households are extremely or very interested in having a garden plot in a community garden located near their home.

The NGA report (2008) estimated the value of produce of home gardens in the United States to be about 22 billion dollars (36 million gardens x 600 square feet/garden x ½ pound produce/square foot x \$2/pound). More conservative estimates value home garden produce in the United States at 10 billion dollars. Even this lower figure dwarfs all other local food systems combined. Additionally, there is anecdotal evidence that people who maintain a garden often shift their food purchases toward more local and sustainable systems.

#### 14. Summary

Of the many local food systems developing in the United States, gardening may have the biggest economic impact for consumers. From the farmer's perspective on-farm sales are the leading marketing channel with farmer's markets coming in second. Other local systems face barriers that include inefficiencies from both farmer and consumer perspectives that must be overcome in order to continue to increase in market share. However, despite the growth that has been reported in studies using various indexes and data bases covering the past 15 years, local food remains an insignificant when compared to the vast industrial food complex in the United States.

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