United States Department of Agriculture

Economic Research Service

Economic Information Bulletin Number 58

September 2009

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Recent Trends From Farms to Consumers

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National Agricultural Library Cataloging Record:

Dimitri, Carolyn

Marketing U.S. organic foods : recent trends from farms to consumer.

(Economic information bulletin ; no. 58)

1. Natural foods—Marketing—United States.
2. Natural foods industry—United States.

I. Oberholtzer, Lydia. II. United States. Dept. of Agriculture. Economic Research Service.

III. Title.

HD9005

Photo credits: Field, BrandX; milk plant, ERS; shopper, PhotoDisc; fruits and vegetables, ERS; dairy products, ERS; wheat, eggs, and chicken, BrandX; soybeans, Shutterstock; corn, Eyewire; cow, Corbis.

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A Report from the Economic Research Service

www.ers.usda.gov

Marketing U.S. Organic Foods: Recent Trends From Farms to Consumers

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Abstract

Organic foods now occupy prominent shelf space in the produce and dairy aisles of most mainstream U.S. food retailers. The marketing boom has pushed retail sales of organic foods up to $21.1 billion in 2008 from $3.6 billion in 1997. U.S. organic-industry growth is evident in an expanding number of retailers selling a wider variety of foods, the development of private-label product lines by many supermarkets, and the widespread introduction of new products. A broader range of consumers has been buying more varieties of organic food. Organic handlers, who purchase products from farmers and often supply them to retailers, sell more organic products to conventional retailers and club stores than ever before. Only one segment has not kept pace—organic farms have struggled at times to produce sufficient supply to keep up with the rapid growth in demand, leading to periodic shortages of organic products.

Keywords: Organic, organic food, marketing organic products, organic supply chain, producing organic products, handling organic products, organic price premiums, ERS, USDA

Acknowledgments

We thank Jacqueline Geoghegan, Clark University (MA); Rick Welsh, Clarkson University (NY); and Travis Smith, Economic Research Service, USDA, for helpful comments and reviews. We appreciate the design and editorial work of Susan DeGeorge and Priscilla Smith, ERS.

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Contents

Recommended citation format for this publication:

Dimitri, Carolyn, and Lydia Oberholtzer. *Marketing U.S. Organic Foods: Recent Trends From Farms to Consumers*. Economic Information Bulletin No. 58. U.S. Dept. of Agriculture, Economic Research Service. September 2009.

Summary

Organic foods now occupy prominent shelf space in the produce and dairy aisles of most mainstream U.S. food retailers, while offerings of organic meats, eggs, breads, grains, and beverages have increased. The marketing boom has pushed retail sales of organic foods up to $21.1 billion in 2008 from $3.6 billion in 1997. Supermarkets, club stores, big-box stores, and other food retailers carry organic products; many retailers have introduced lines of organic private-label products; and manufacturers continue to introduce large numbers of new organic products.

What Is the Issue?

The rapid growth of the U.S. organic industry has caused a major shift in the types and numbers of organic food retailers, manufacturers, and distributors and has widened the retail customer base. In addition, organic farmland acreage more than doubled from 1997 to 2005. With those changes has come an increased desire for research and analysis of the U.S. organic marketing system. The 2008 Farm Act allocated $5 million in initial spending for an expanded organic data collection initiative, along with an additional $5 million per year of authorized funding for researchers to:

- collect and distribute comprehensive reporting of prices relating to organically produced agricultural products
- conduct surveys and analysis and publish reports relating to organic production, handling, distribution, retail, and trend studies (including consumer purchasing patterns)
- develop surveys and report statistical analysis on organically produced agricultural products

While new data are being collected and analyzed, policymakers and other interested groups have expressed particular interest in: what types of consumers purchase organic food; how structural change has affected the retailing, distribution, and manufacturing of organic food; and why increases in the supply of organic products at the farm level lag behind growth in demand at the retail level. This study analyzes the most recent data available to examine each level of the organic supply chain.

What Did the Study Find?

The number and variety of consumers of organic products has increased, but those consumers are not easily categorized. The one factor that consistently influences the likelihood of a consumer's buying organic products is education. Consumers of all ages, races, and ethic groups who have higher levels of education are more likely to buy organic products than less-educated consumers. Other factors, such as race, presence of children in the household, and income, do not have a consistent effect on the likelihood of buying organic products.

Retailing of organic products has evolved since 1997, when natural foods stores were the main outlet. By 2008, nearly half of all organic foods were purchased in conventional supermarkets, club stores, and big-box stores. Although produce remained the top-selling organic category, sales of dairy products, beverages,

packaged and prepared foods, and breads and grains grew to 63 percent of total organic sales in 2008, from 54 percent in 1997.

On the wholesale level, by 2007, the share of organic handlers' sales to conventional retailers and club stores had increased, while the share of sales to wholesalers and other distributors had declined. Organic handlers are firms that buy organic products from farmers and other suppliers, process or repack the goods, and then sell the value-added resulting products to retailers, institutions, and other handlers, or directly to consumers or restaurants. Because of the competition for organic ingredients, handlers in recent years have relied on contracts versus spot-market sales to procure needed inputs.

While organic farmland increased from 1997 to 2005, growth was not swift enough to prevent periodic shortages of some organic products. Certified organic farmland designated for raising grains and soybeans grew slowly, placing pressure on sectors such as dairy and meat that depend on these inputs. The 2002 USDA National Organic Standards regulation in most cases requires farmland to be dedicated to organic farming for 3 years before that farm's products can be labeled as organic. This creates a lag between increases in retail demand and supply from farms.

How Was the Study Conducted?

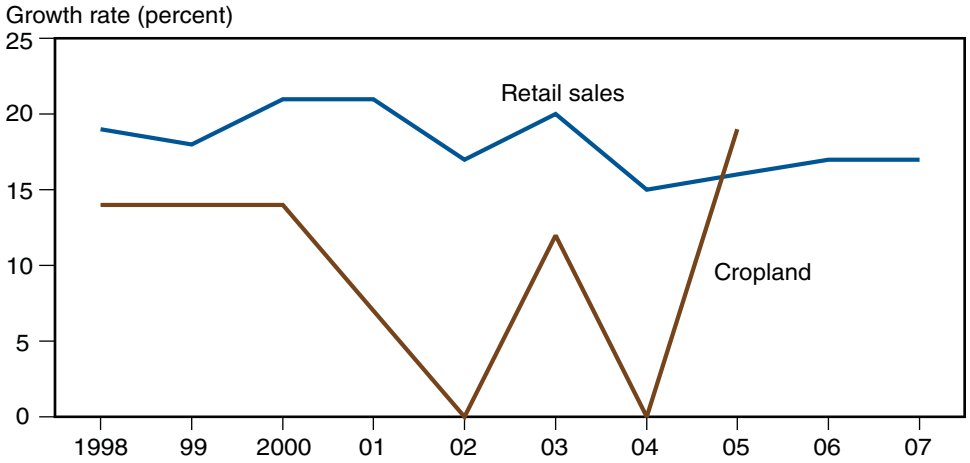
New ERS research was combined with existing ERS and academic research, industry studies, and available public data and select private data sources to quantify trends in the organic sector from 1997 to 2007. ERS researchers examined consumers, retailers, handlers, and farmers, and took a closer look into the production, marketing, and consumption of four major organic-product groups: produce, dairy, meats and eggs, and feed grains.

Introduction

A growing appetite for organic food in the United States translated into an increase in retail sales between 1997 and 2008. Over these years, the organic food sector underwent a transformation; by the time retail sales reached $21.1 billion in 2008, structural changes had revamped organic food marketing (*Nutrition Business Journal*, 2009). Retailing organic food changed as traditional purveyors of organic food faced increased competition from companies new to the sector, with organic food sold not only in natural-products stores, such as Whole Foods and food cooperatives, but also in traditional supermarkets such as Safeway, big-box stores such as Wal-Mart, and club stores such as Costco. Organic manufacturers by 2008 were either competing directly with conventional food manufacturers or had been subsumed by conventional firms. The effect of structural change at the retail and manufacturing levels has been twofold: there are more firms participating in the sector and the average size of these firms is larger.

One byproduct of rapid market growth has been periodic shortages of organic products due to the inability of organic farms to supply enough products to keep pace with demand. Increases in acres of certified organic farmland (the best available measure of organic production—data on actual production are unavailable) have lagged behind growth in demand and have been relatively volatile during the decade (fig. 1). For reasons not completely understood, farmers have not converted farmland rapidly enough to meet existing market demand. Farmers who convert to organic production must farm the land in accordance with a certifier-approved plan for 3 years before its yield can be sold as organic, unless they can prove that no prohibited substances were used in or near the production area during the previous 3 years. Potential organic farmers may opt to continue using conventional production methods because of social pressures from other farmers nearby who have negative views of organic farming, or because of an inability to weather the effects of reduced yields and profits during the transition period (Seimon, 2006).

Figure 1
Organic farmland growth rates are more volatile than growth rates of retail sales



Note: Farmland data are unavailable for 1998, 1999, 2006, and 2007. The 1998 and 1999 values shown on the chart are extrapolated from 1997 and 2000 data.
Source: USDA, Economic Research Service calculations of farm data (USDA, Economic Research Service, 2006) and retail sales data from *Nutrition Business Journal*, 2009.

Ramifications of the slow response of farm-level supply have rippled through the supply chain, resulting in situations where manufacturers, distributors, and retailers have periodically been unable to locate organic producers or procure a sufficient quantity of organic products (Dimitri and Oberholtzer, 2008; Organic Trade Association, 2006, 2004, 2001; Dimitri and Richman, 2000).

Policymakers and organic industry stakeholders have repeatedly called for additional economic research on organic agriculture in the United States, but such research has been constrained by the paucity of public data about the organic market. Over the past few years, this trend has been reversing. While coverage of the organic sector is still incomplete, there has been a large increase in the amount of public data available, and new data sources are regularly being added. Higher levels of funding in the 2008 Farm Act ($5 million, a fivefold increase over the 2002 Farm Act) promise to further expand existing public data collection. Some of the public data sources available are:

- *Market News Reports,* Agricultural Marketing Service, USDA. Fruit and vegetable prices, organic poultry and eggs since 2004, and organic feed and grains from 2006. eqpn7,,www.ams.usda.gov/marketnews.htm
- *Industry Market and Promotion*. Agricultural Marketing Service, USDA. Sales of organic fluid milk from 2006. eqpn7,,www.ams.usda.gov/dyfmos/mib/inareaslsbyprod.htm
- U.S. Census of Agriculture 2002, National Agricultural Statistics Service, USDA. Organic sales and acreage. eqpn7,,www.nass.usda.gov/Census_of_Agriculture/index.asp
- U.S. Census of Agriculture 2007, National Agricultural Statistics Service, USDA. Data on acres of certified organic cropland, certified organic pastureland, value of organic crops sold, value of organic livestock and poultry sold, value of organic livestock and poultry products sold, and number of acres in transition. eqpn7,,www.nass.usda.gov/Census_of_Agriculture/index.asp
- Organic acreage data set, Economic Research Service, USDA. Certified organic acreage since 1992 and certified organic operations since 2000. eqpn7,,www.ers.usda.gov/Data/Organic
- Organic handler data set, Economic Research Service and Risk Management Agency, USDA. Database of procurement and contract practices by U.S. organic handlers for 2004 and 2007. eqpn7,,www.ers.usda.gov/Data/OrganicHandlers
- Organic prices data set, Economic Research Service. Database of retail prices for select commodities (2004-2006), wholesale prices for select commodities (1993-2008), and farmgate prices for select commodities (1999-2007). http://ers.usda.gov/Data/OrganicPrices
- Agricultural Resource Management Survey, conducted jointly by Economic Research Service and National Agricultural Statistics Service, USDA. Cost of production data on organic dairy (2005), soybeans (2006), apples (2007). eqpn7,,www.ers.usda.gov/Briefing/ARMS

Consumers Fuel Market Growth but Defy Easy Categorization

Through their food choices, consumers are primarily responsible for the dramatic marketplace growth of organic products that occurred since 1997. Some of the growth may be attributed to the USDA national standards, implemented in 2002, which were meant to bring improved visibility and confidence about the integrity of organic products to consumers in the marketplace (see box, "How Can Consumers Tell if a Product Is Organic?").

Most evidence does point to a growth in the number of consumers of organic products. The Hartman Group, which conducts the gold standard of industry organic surveys, found that 69 percent of adults bought organic food at least occasionally in 2008 (Hartman Group, 2008). Nineteen percent of consumers bought organic food weekly in 2008, up from 3 percent in the late 1990s (Hartman Group, 2000, 2008). The Food Marketing Institute found that 51 percent of shoppers purchased organic food in 2006; in comparison, in 2001, 44 percent of shoppers bought organic food over a 6-month period (Food Marketing Institute, 2006).

Nearly all studies find that consumers with higher levels of education were the most willing or most likely to purchase organic products (Dettmann and Dimitri, 2010; Zepeda and Li, 2007; Krystallis et al., 2006; O'Donovan and McCarthy, 2002; Cicia et al., 2002; Fotopoulos and Krystallis, 2002; Magnusson et al., 2001). The impact of different levels of education varies among studies: households with graduate degrees were less likely to buy organic products (Durham, 2007; Thompson, 1998), while households with postgraduate education (these households attended graduate school but might not have earned a degree) were more likely to buy organic vegetables (Dettmann and Dimitri, 2010).

As shown by different studies reaching different conclusions about exactly which education levels affect organic buying, there are no definitive answers about how many consumers buy organic food, how much organic food the typical consumer of organic products purchases, or the demographic profile of the "typical" consumer of organic products.

A portfolio of analytical research accompanies the industry's exploration of consumers of organic products. Much of this research relies on "willingness-to-pay" surveys or 1-day in-store consumer surveys that collect purchase and demographic information from shoppers. These studies focus on specific demographic attributes, such as income, education, and presence of children, and those factors' influence on the probability of a consumer's willingness to pay for organic. Many of the findings of these studies are inconsistent, likely because they focus on consumers in different parts of the world, consider different products, and include different explanatory variables.

Some studies of U.S. consumers say Asians and Hispanics are the most likely to purchase organic products and that those most committed to an organic lifestyle are Hispanic and Black (Baxter, 2006). Other sources say Black consumers in the United States are the least likely to purchase organic vegetables (Dettmann and Dimitri, 2010). Half of U.S. consumers who frequently buy organic food have household incomes below $50,000, according to some sources (Howie, 2004).

Studies also have reached contradictory conclusions about how the presence of children in the household affects the likelihood of buying organic food. Some sources say households with children under age 18 are more likely to purchase organic produce (Thompson and Kidwell, 1998) and organic apples (Loureiro et al., 2001). Others say the presence of children under age 18 reduces the probability of buying organic food by 10 percent (Zepeda and Li, 2007). In other seemingly contradictory behavior, compared with childless households, families with children were less willing to pay a premium for organic potatoes (Loureiro and Hine, 2001) but were more likely than other households to purchase organic apples (Loureiro et al., 2001). The likelihood of buying organic produce increases with the number of children in the household (Thompson and Kidwell, 1998), while others found that the presence of children in the household had no impact on the probability of buying organic (Durham, 2007).

For studies that include income as an explanatory variable, the findings are contradictory. Smaller, higher income households are the most likely purchasers of organic produce (Govindasamy and Italia, 1990) and organic apples (Loureiro

How Can Consumers Tell if a Product Is Organic?

Since the implementation of the National Organic Standards in 2002, the USDA organic logo has provided an easy way for consumers to recognize organic products and to feel confident that they are buying a product that was raised, manufactured, and distributed according to the consistent, uniform standard set forth by the National Organic Program (USDA, Agricultural Marketing Service, 2000). The following organic labels are permissible:

100 percent organic: Product contains 100 percent organically produced ingredients, excluding added water and salt. The label is allowed to include the USDA organic seal and/or certifier's seal(s).

Organic: Product contains at least 95 percent organic ingredients, not counting added water or salt; does not contain added sulfites; and may contain up to 5 percent of nonorganic ingredients. The label may state "Organic", "X percent organic" or "X percent organic ingredients," and display the USDA organic seal and/or certifying agent seal(s).

Made with organic ingredients: Product includes at least 70 percent organic ingredients, not counting added water and salt; does not contain sulfites (except for wine which may contain added sulfur dioxide); and may contain up to 30 percent of nonorganic ingredients, including yeast. The label may state "Made with organic ____ (specified ingredients or food groups)," "X percent organic" or "X percent organic ingredients" and display the certifying agent seal(s), but cannot show the USDA organic seal.

Claim that product has some organic ingredients: The product contains less than 70 percent organic ingredients, not counting added water and salt. The label may list which ingredients are organic in the ingredient statement and display "X percent organic ingredients" when organically produced ingredients are identified in the ingredient statement. The label cannot display either the USDA organic seal or the certifying agent seal.

Source: USDA, Agricultural Marketing Service, National Organic Program.

et al., 2001). One study found that income is unrelated to a household's likelihood of buying organic food (Durham, 2007). A different study found that higher income households are more likely to buy organic vegetables, but once the decision to buy organic has been made, they devote a smaller share of their vegetable expenditures toward organic vegetables (Dettmann and Dimitri, 2010). And yet another study found that income is negatively associated with being an occasional consumer of organic products and has no impact on whether an individual is a frequent consumer of organic products (Zepeda and Li, 2007).

Organic foods are typically more expensive than conventional foods, costing at least 10 to 30 percent more (Lohr, 2001). Surveys indicate mixed results about consumer response to higher priced organic food. Seventy-three percent of consumers believe organic food is too expensive (Whole Foods Market, 2005), confirming earlier studies indicating that price was a barrier to purchasing organic food (*The Packer,* 2000, 2002; Walnut Acres, 2002). Higher prices appear to be less of a barrier for some organic products, such as fresh produce or baby food (Barry, 2004). However, anecdotal evidence suggests that, in the second half of 2008, consumers began substituting cheaper conventional products and private-label organic products for branded organic products in response to weakening macroeconomic conditions (Martin and Severson, 2008; Naughton, 2008; *Progressive Grocer,* 2008).

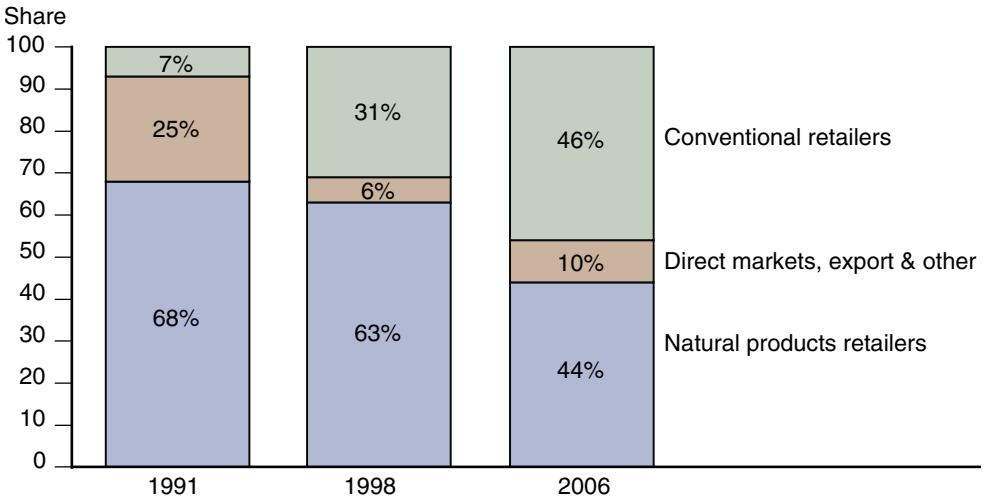
Retailers Expand Organic Product Introductions and Private Labels

The retailing of organic products in 2008 bears little resemblance to retailing organic products in the late 1990s. In the late 1990s, the natural-products channel—independent and small-chain natural product stores, food cooperatives, and large natural-food-product retailers such as Whole Foods—was the primary sales outlet for organic food (fig. 2). By 2006, approximately equal shares of organic food were sold in the conventional channel, which includes stores such as Safeway and Costco, as in the natural-products channel. The types of products purchased by consumers over the years also reveal a shift. Since 1997, organic fruits and vegetables have continued to be the top-selling organic product (fig. 3). As the decade has passed, however, consumers have started to purchase a wider range of other organic products, with dairy, beverages, packaged and prepared foods, and bread and grains rising to 63 percent of total organic sales in 2008, from 54 percent in 1997.

The wider reach of organic food is evident in the fact that organic food was available in 82 percent of retail food stores in 2007 (Food Marketing Institute, 2008). Further, retailers have begun moving from selling only organic branded products to developing lines of private-label organic products, as well as selling organic variations of long-time brands, such as organic Heinz ketchup. The number of new organic products introduced in one year increased from 290 in 1997 to 1,107 in 2007, with beverages, prepared foods, and snacks leading the organic product introductions in 2007 (USDA, ERS, 2009). New organic private-label products increased from 35 in 2003 to 540 in 2007 (Driftmier, 2009).

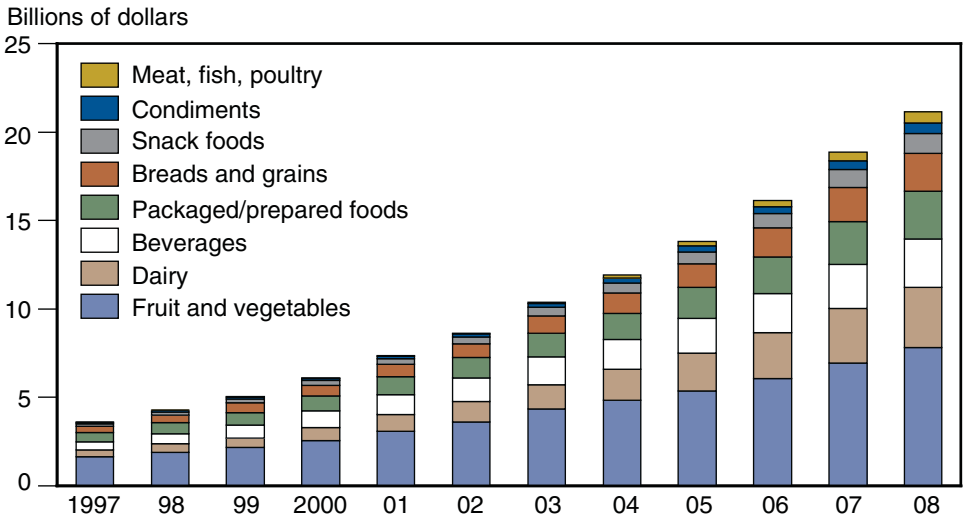
The distribution of sales between the natural-product and conventional channels varies by category. Three (snack foods, dairy, and beverages) of eight organic categories had more sales through conventional channels than natural food channels in 2005 (table 1). In comparison, in 2002, these three categories had more sales in natural-products channels. A significant share of meat and poultry, condiments and sauces, and breads and grains sales are made in natural channels; in fact, the first two categories (meat and poultry; condiments and sauces) have experienced increasing sales through natural products channels since 2002. Direct markets,

Figure 2
Share of organic sales by marketing channel, 1991, 1998, and 2006



Source: *Natural Foods Merchandiser,* various issues; *Nutrition Business Journal*, 2004; and Organic Trade Association, 2006.

Figure 3
U.S. retail sales of organic food products increase from 1997 to 2008



Source: *Nutrition Business Journal,* 2009.

such as sales made directly to consumers at farmers markets or directly to restaurants, remain an important outlet in the organic sector.

As organic sales in the conventional channels increased, marketers began using some traditional marketing strategies for organic foods, such as developing organic versions of conventional brands (such as organic Heinz ketchup) and creating lines of organic private-label products. In 2000, few organic private labels existed—one exception was Whole Foods' 365 Organic, which has been available since at least the mid-1990s. Now, nearly every large conventional supermarket has a private label for organic products, and many of these lines were introduced after the organic standards were promulgated in 2002. In 2003, approximately 8 percent of organic foods were sold under a private label (*Nutrition Business Journal*, 2004), in comparison to 16 percent for U.S. food products in general (Nielsen, 2005). In 2008, the share of private organic label products sales was an estimated 17.4 percent in the United States (Nielsen, 2008). ERS data indicate that, in 2007, approximately 43 percent of certified organic handlers manufactured private-label products, and private-label products make up approximately 19 percent of handlers' organic sales.

Table 1
Organic food sales by market type, 2002 and 2005

	Type of channel					
	Natural products		Conventional		Direct markets and other	
Organic categories	2002	2005	2002	2005	2002	2005
	Percent					
Meat and poultry	64	71	35	28	1	1
Condiments and sauces	63	69	34	22	2	9
Breads and grains	66	65	30	32	4	3
Packaged/prepared foods	61	56	37	42	2	3
Fruits and vegetables	42	48	49	38	10	14
Snack foods	60	44	38	51	1	4
Dairy	56	37	43	62	2	2
Beverages	65	29	33	64	3	7

Source: *Nutrition Business Journal*, 2003; Organic Trade Association, 2006.

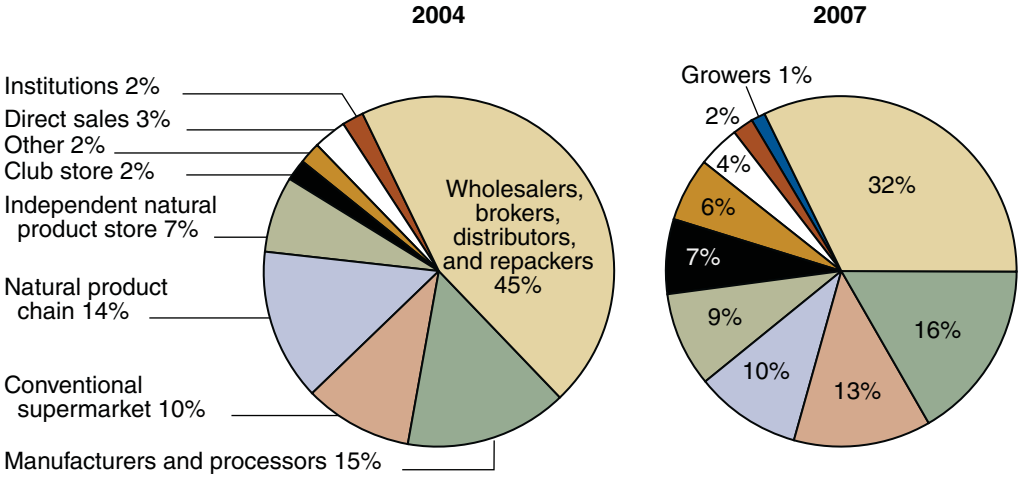
‘Handler’ Middlemen Move More Organic Products as Shortages Are Reported

Organic “handlers” move nearly all organic products from the farm to the retailer. These firms procure organic products from farmers and other suppliers, add value by processing or repacking, and then sell the value-added products to other handlers, retailers, and institutions, as well as directly to consumers or restaurants (see box, “Organic Handlers Move Products Through the Supply Chain”). These companies follow strict procedures to maintain organic integrity as organic food products move along the supply chain. Many of the trends in retailing are mirrored in the handling sector. The available data indicate that the sectorwide growth occurred at the intermediary handler level as well, with the number of certified organic facilities increasing to 3,225 in 2007 from 2,790 in 2004.[1] The presence of conventional firms now active in the organic industry extends to the handling sector. Survey results indicate that the majority of organic handlers are “mixed” operations that deal with both organic and nonorganic products. Many of the firms began as conventional facilities and later added an organic component to their businesses. In 2004, about 70 percent of handlers had converted part or all of their business to organic from conventional handling. In 2007, 63 percent reported converting to organic.

The overall value of organic products that moved through the intermediary “handling” stage increased 17 percent between 2004 and 2007, while the distribution of sales to the different outlets has shifted, reflecting the growing importance of the conventional channel. The most significant change in marketing outlets between 2004 and 2007 is the decline in the percent of sales going to wholesalers, brokers, distributors and repackers (fig. 4). In 2007, conventional supermarkets were the third most important outlet; natural-product chains held this position in 2004. The percent of sales that handlers made directly to consumers remained relatively constant between 2004 and 2007, while club stores captured 7 percent of the market in 2007, up from 2 percent in 2004.

[1]Tracing the handling sector from 1997 to 2007 is not possible; the only available information pertains to 2004 and 2007, and is the result of a nationwide survey of certified organic firms.

Figure 4
Organic handler sales shift away from wholesalers, 2004-07

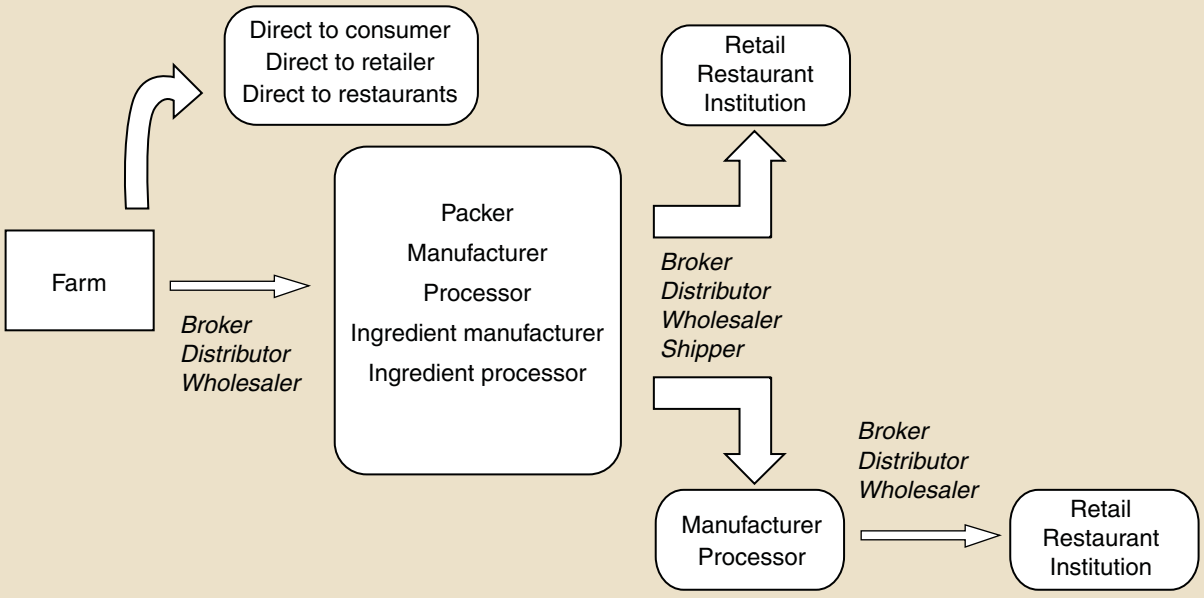


Note: Charts present percent of sales made in each market outlet.
Source: USDA, Economic Research Service.

Procurement has been a longstanding problem for organic handlers, and ingredients often have been difficult to locate (Dimitri and Oberholtzer, 2008). Sourcing organic ingredients has become even more challenging as demand for organic products has increased. In 2007, 57 percent of handlers reported finding limited supply of needed ingredients, which was up from 46 percent in 2004. These procurement shortages translated to handlers' being unable to meet market demand for their output, with a greater percentage of handlers struggling to supply the market in 2007 than in 2004. Thirteen percent of handlers reported experiencing critical shortages of at least one of their organic products at some time during 2004, while another 16 percent of organic handlers experienced minor shortages. In 2007, 20 percent reported critical shortages, and 16 percent reported minor shortages.

Similar to their conventional counterparts, organic handlers procure ingredients and products from their suppliers in the spot market or through sales arranged in advance with their suppliers. Spot-market sales are anonymous transactions between buyers and sellers that might take place in a wholesale market, for example, or through a broker. For conventional agricultural products, spot-market purchases are common, making up 60 percent of all purchases (MacDonald et al., 2004). However, in markets with limited competition, because of increased demand for a distinctive process or short supply, spot markets often fail to produce enough products with the attributes consumers desire (MacDonald et al., 2004). In such cases, market needs can be more effectively met though vertically coordinated transactions, such as through contracts or closely aligned transactions between buyers and sellers. The research indicates that contracts are used at a higher rate in the organic sector than in the conventional sector. In 2007, approximately 65 percent of the volume of organic products bought by organic handlers was obtained through written or verbal contract and 29 percent acquired through spot markets.

Organic Handlers Move Products Through the Supply Chain



Note: The transactions along the supply chain are indicated by arrows. These transactions may be done by written contract, verbal contract, or anonymously. Handlers are all firms between the farm and the retailer, restaurant, or institution. A handler's supplier, as the chart shows, may be a farmer or another handler.

Source: Dimitri and Oberholtzer, 2008.

Organic Acres More Than Doubled From 1997 to 2005, But Supply Still Fell Short of Demand

Growing enough of the right organic products on the farm is essential to meet consumer demand for fresh and manufactured organic foods. At one point in time, the organic sector was supply-driven and organic products were introduced by farmers. Today's market is different in that consumer demand is driving growth in the organic market. While the "pioneer" organic farmers struggled to find a market for their products, today's farmers face the opposite problem: they are struggling to produce a sufficient supply of organic products (Dimitri and Oberholtzer, 2008).

Both the quantity of farmland and the number of farms under organic management expanded in the United States from the late 1990s to the late 2000s, albeit more slowly than in many other parts of the world. U.S. organic farmland increased from 1.3 million acres in 1997 to a little over 4 million acres in 2005, or 0.5 percent of all agricultural lands (table 2). Growth rates for organic farmland in the United States were relatively slow in the 1990s (with annual average increases of 9 percent from 1992 to 1997) but started to increase in the late 1990s and, except for 2002, the year in which the national organic standards were implemented, continued to increase with an average annual growth rate of 19 percent from 2000 to 2005. At the same time, the number of U.S. organic farms expanded from 5,021 to 8,493. The average farm size of certified organic farms increased from 268 acres in 1997 to 477 acres in 2005. A large part of the increase in average farm size was due to dramatic growth in the number of certified acres of pastureland.

Although certified organic acreage is increasing in the United States, growth of organic farmland by specific commodity is not uniform. The largest increases between 1997 and 2005 were in pastureland and rangeland (USDA, Economic Research Service, 2006). The quantity of land planted to vegetables and fruit, long the top-selling organic category, has grown steadily since 1997, and the percent of vegetable and fruit farmland that was certified organic by 2008 reached almost 5 and 3 percent, respectively. The two sectors that have garnered the most attention in recent years are organic grains and soybeans, which provide crucial inputs for organic dairy and meat production. The amount of land devoted to organic grain production has increased, and between 2000 and 2005, farmland devoted to organic corn, wheat, and oats increased between 10 and 12 percent annually. The amount of farmland allocated to organic soybean production declined slightly.

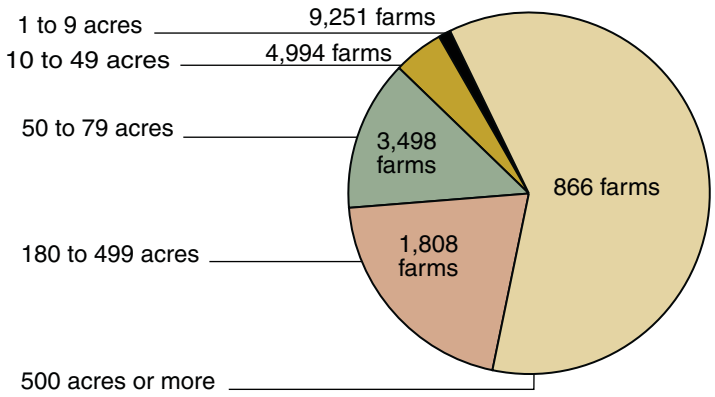
The amount of certified organic farmland used for production in 2007, from the Census of Agriculture, totaled 2.6 million acres, with 1.3 million used for growing certified organic crops and 1.0 million acres of certified organic pastureland. The Census, an agriculturally based census conducted by USDA's National Agricultural Statistics Service, reports that in 2007, 20,437 farms had organic acreage, with an average of 126 organic acres per farm (fig. 5). Most of the organic farms are small (fewer than 9 acres), while more than half the organic farmland counted by the census is accounted for by the largest farms. Including organic farms in the agricultural census is a relatively new effort for USDA.

Comparing these data with the acreage numbers and number of organic farms collected by ERS is difficult because the two entities used different methodologies when collecting data. ERS contacted organic certifiers to ascertain the quantity

of organic farmland certified in each year, while NASS collected information directly from farmers via the Census of Agriculture. Some differences are readily apparent: the ERS data include fallow land, while the Census excludes this acreage. Also, for confidentiality and disclosure reasons, responses from large, isolated farms were not reported in the Census. The advantage of the census data relative to the ERS data is that census data provide an estimate of the distribution of organic farms by size.

Despite the growing demand for organic food products, many U.S. farmers are reluctant to switch to organic production methods. Understanding the factors that

Figure 5
866 farms make up 60 percent of certified organic farmland, 2007



Source: USDA, National Agricultural Statistical Service, 2007 Census of Agriculture, table 48.

Table 2
U.S. certified organic farmland, 1997 to 2005

Farmland	1997	2000	2001	2002	2003	2004	2005
				Acres			
Grains	291,013	415,977	454,598	495,503	547,729	490,561	607,907
Beans	96,183	166,320	211,405	145,071	152,757	143,839	155,853
Oilseeds	31,433	54,521	43,722	33,418	28,117	53,503	45,674
Hay and silage	126,797	231,481	253,641	267,827	327,538	356,590	411,342
Vegetables	48,227	62,342	71,667	69,887	78,895	79,522	98,525
Fruits	49,414	43,481	55,675	60,693	77,989	80,707	97,277
Herbs, nursery, and greenhouse	90,784	41,282	14,716	29,287	25,074	8,254	9,119
Other cropland	116,333	203,645	197,085	197,999	213,531	239,375	297,575
Total pasture/rangeland	496,385	557,167	789,505	625,902	745,273	1,592,756	2,331,158
Total cropland	850,173	1,218,905	1,302,392	1,299,632	1,451,601	1,452,353	1,723,271
U.S. total	1,346,558	1,776,073	2,094,272	1,925,534	2,196,874	3,045,109	4,054,429
Number of operations	5,021	6,592	6,949	7,323	8,035	8,021	8,493
Average farm size, acres	268	269	301	263	273	380	477

Note: Data are not available for 1998 and 1999.
Source: USDA, Economic Research Service, 2006.

encourage or discourage farmers to convert from conventional to organic farming systems is currently constrained by the fact that few (if any) researchers have systematically examined this issue. We do know that those converting may face a large financial risk as they learn a new way of doing business. During the transition years they face lower yields for crops, which are sold at the lower conventional prices until conversion is complete (Wolf, 2006), and, practically speaking, farmers do not reach their top organic production level for approximately 5 years of farming organically (Siemon, 2006). Although U.S. farmers do not experience a post-transition yield reduction (Liebhardt, 2001), overall yields for major crops may be lower over time because of organic crop rotation. Social pressures also influence the decision to convert, in that farmers converting to organic may be criticized by their neighbors or their families (Duram, 2000; Siemon, 2006; Wolf, 2006). Organic farmers often have little contact with their neighbors who use conventional farming practices; these neighbors may warn the organic farmer that their farming systems may fail (Duram, 2000).

Surveys of farmers also provide some insight into motivations for turning to organic production. In 2001, slightly more than half (51 percent) of organic farmers who took part in a nationwide survey of organic farmers said they transitioned from conventional farming systems, while 49 percent began as organic farmers (Walz, 2004). The surveyed farmers chose to farm their land organically because they have feelings of stewardship for the land, desire to avoid using chemicals for family and farmworker health, and prefer to avoid chemical use for environmental health (Walz, 2004). Ecological factors are crucial motivators to those who farm organically (Walz, 2004; Duram, 2000). Slightly less than half of organic soybean producers are farming organically to increase their income. Many of the other soybean farmers report using organic methods to protect environmental health and community health (McBride and Greene, 2008).

In Europe, government policies encourage farmers to adopt organic farming techniques through a variety of schemes, including "green payment" subsidies. The economic rationale for green payments is that organic production provides benefits that accrue to society and that individual farmers do not consider these social benefits when making production decisions. Subsidies alter production practices by more closely aligning each farmer's private costs and benefits with social costs and benefits. The green payments for organic production target new and existing organic farmers, partly to compensate new or "transitioning" farmers for the decline in yields when moving from conventional to organic production.[2] The results of these policies can be seen in one example: Austrian farmers who converted before 1995 farmed organically for philosophical reasons, while those who converted after subsidies were available (1995) perceived that organic farming was a good way to make money (Darnhofer et al., 2005). In contrast to EU countries, the United States has adopted a free-market approach and so policies are aimed toward facilitating market development. In one small deviation from this general approach, Federal legislation provides funding for crop and livestock producers to help defray certification costs.

Another factor in the decision of whether to farm organically is a farmer's alternative opportunities; for example, a farmer weighs the expected profits from continuing under his or her current production technology relative to the expected profits from converting to managing farmland organically. As the prices farmers received for conventional food rose in late 2007 and the first half of 2008, fewer farmers made the switch to organic production methods (Fromartz, 2008). But prices paid

[2]Unlike U.S. farmers, European farmers often continue to have yields below conventional producers after the 3-year conversion period. For example, organic grain yields in the early 2000s were about 60-70 percent of conventional grain yields (Offermann and Nieberg, 2000). One possible explanation for this difference is that European conventional farming systems are more intensive than U.S. conventional farming systems.

to farmers are historically cyclical, and by the end of 2008, had already significantly declined. In addition to considering the relative prices of organic to conventional foods, farmers likely consider other factors important in the decision to convert to organic farming methods, and as of the time of this writing, the decision to convert or not has been largely unexplored.

Fresh Produce Continues To Be Top-Selling Category

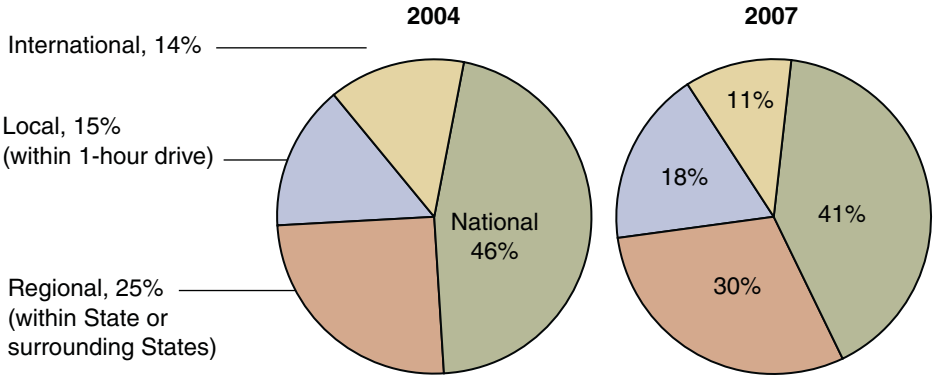
Historically, fresh produce has been the most popular organic category and continues to be; growth in retail sales of fresh produce averaged 15 percent a year between 1997 and 2007. Fresh fruits and vegetables move from the farm to the consumer through certified organic handlers, who distribute, ship, broker, or wholesale transactions between the firms along the supply chain. As produce moves along the supply chain, these firms follow strict procedures to maintain product quality and organic integrity. These include maintaining fresh produce at proper temperatures, and keeping organic and conventional produce separate during shipping.

Consumers purchase fresh organic produce in conventional supermarkets, natural products supermarkets, and club stores. Fresh organic produce is also available directly to consumers through venues such as farmers markets and community-supported agriculture arrangements.

In 2005, the top organic vegetables in cropland were lettuce (12 percent of all vegetable acreage), tomatoes (7 percent), and carrots (6 percent). The top fruits were grapes (23 percent of all fruit acreage), tree nuts (16 percent), apples (13 percent), and citrus (10 percent). (See table 3 for certified organic acreage, 1997-2005.)

Figure 6

Handlers distribute most organic fruits and vegetables to national market, 2004-07



Note: Charts represent percent of sales made in each geographic region.
Source: USDA, Economic Research Service.

Table 3

U.S. certified organic acreage for fruits and vegetables, 1997-2005

	1997	2000	2001	2002	2003	2004	2005
				Acres			
Total fruit	49,414	43,481	55,675	60,693	77,989	80,707	97,277
Total vegetables	48,227	62,342	71,667	69,887	78,895	79,522	98,525

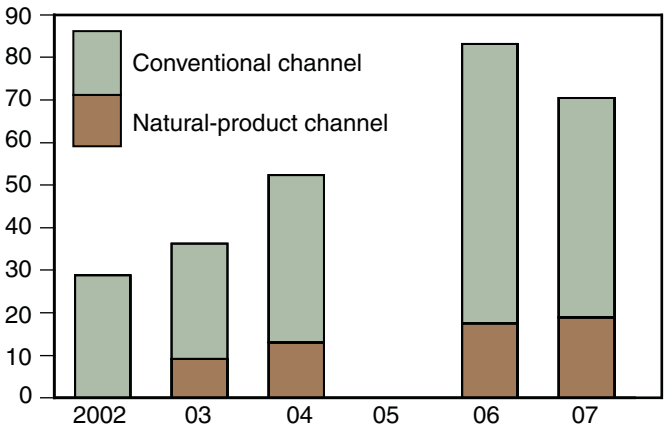
Note: Data for 1998-1999 are not available.
Source: USDA, Economic Research Service, 2006.

What Are Organic Fruits and Vegetables?

Organic fruit and vegetable production relies on ecologically based practices, such as biological pest management and composting, and crops are produced on land that has had no prohibited substances applied to it for at least 3 years prior to harvest. Soil fertility and crop nutrients are managed through tillage and cultivation practices, crop rotations, and cover crops, supplemented with manure and crop waste material and allowed synthetic substances. Crop pests, weeds, and diseases are controlled through physical, mechanical, and biological control management methods.

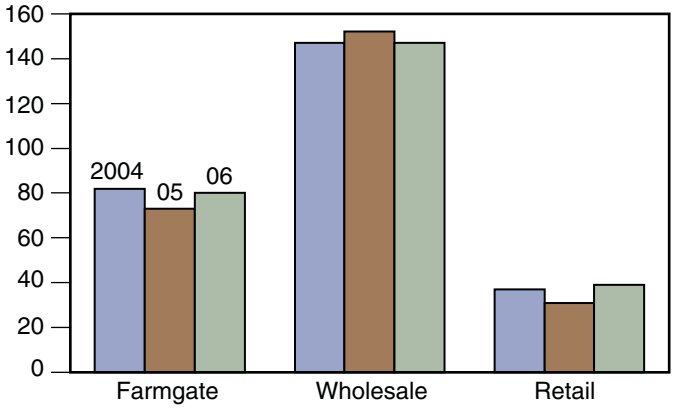
Organic fruits and vegetables must be stored and shipped separate from conventionally grown produce. Organic produce is shipped or packed in containers free from synthetic fungicide, preservative, or fumigant.

Figure 7
Most fresh-cut organic produce is sold in conventional food stores



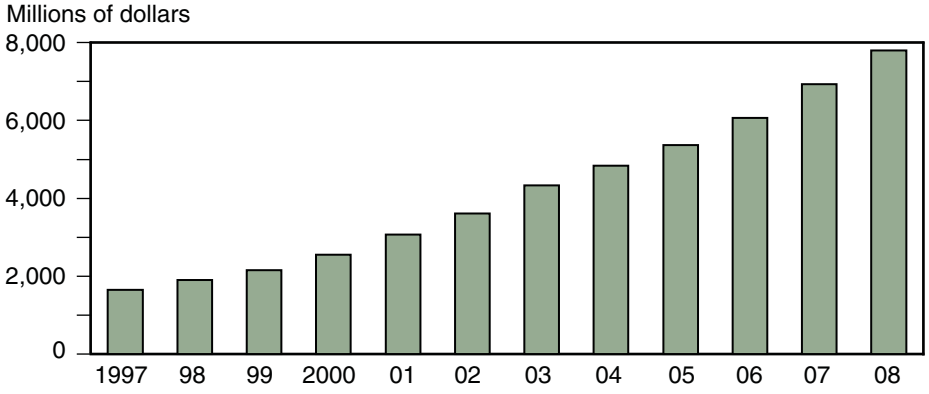
Source: *Natural Foods Merchandiser,* various issues.
Data not available for 2005.

Figure 9
Organic carrots' highest price premium comes at wholesale level, 2004-06



Note: Premiums are in percents. Organic price premiums are calculated by subtracting the conventional price (whether computed monthly, quarterly, or yearly) from the organic price and dividing the difference by the conventional price. For additional price premiums, see www.ers.usda.gov/data/organicprices.
Source: USDA, Economic Research Service, 2009 calculations (see eqn 7, www.ers.usda.gov/data/organicprices).

Figure 8
Retail sales of organic fruits and vegetables increased over fourfold, 1997-2008



Source: *Nutrition Business Journal,* 2009.

Characteristics of Organic Packaged-Vegetable Consumers

More likely to buy organic vegetables:

- Consumers with higher levels of education
- Consumers with higher income

Less likely to buy organic vegetables:

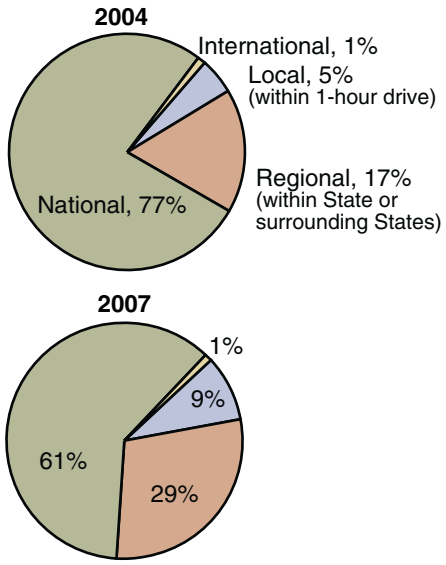
- Consumers over 50 years old
- Black consumers

Source: Dettmann and Dimitri, 2010.

Dairy Products Sector Has Boomed Despite Periodic Supply Shortages

The dairy sector has been one of the fastest growing segments of the organic industry, with annual growth rates of retail sales ranging from 16 to 34 percent between 1997 and 2007. Growth in the milk sector, however, has been periodically hampered by supply shortages, such as those experienced by supermarkets during 2005 and 2006 (Oliver, 2006; Weinraub and Nicholls, 2005).

Figure 10
Handlers' regional sales of organic milk increase, 2004-07



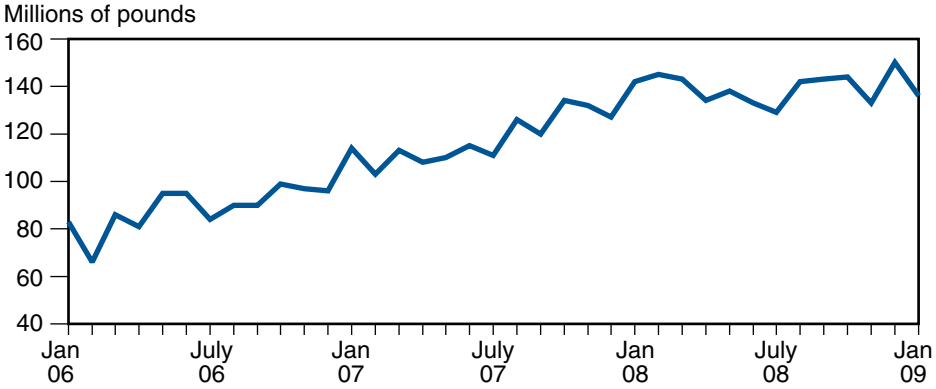
Note: Charts represent percent of sales made in each geographic region.
Source: USDA, Economic Research Service.

What Are Organic Dairy Products?

As defined by the USDA national organic standards, organic dairy products are made from the milk of animals raised under organic management. The cows are raised in a herd separate from conventional dairy cows and are not given growth hormones or antibiotics. The animals do receive preventive medical care, such as vaccines, and dietary supplements of vitamins and minerals. All organically raised dairy cows must have access to pasture, the outdoors, shade, shelter, exercise areas, fresh air, and direct sunlight suitable to their stages of production, the climate, and the environment. There is currently a proposed rule that would change the requirements for access to outdoors. The proposed rule requires that ruminants be provided with continuous management on pasture for access to the outdoors throughout the year, including during the non-growing season; this rule would apply to lactating cows as well (*Federal Register,* 2008).

Organic dairy products must make use of milk from animals raised organically for at least 1 year prior to producing the milk. The process used to bottle milk and to make and pack cheese, ice cream, yogurt, and other dairy products also must be certified as organic. The processor is required to keep organic and conventional products separated, and must prevent organic products from contact with prohibited substances.

Figure 11
Organic fluid milk production increases, 2006-09



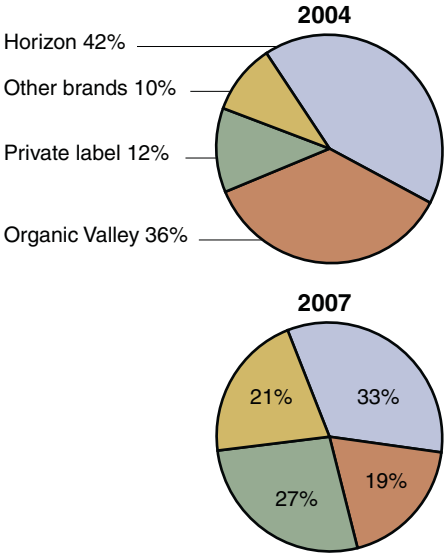
Source: USDA, Agricultural Marketing Service, *Fluid Milk Sales Data—Monthly and YTD,* 2009.

Table 4
U.S. certified organic milk cows and pasture acreage, 1997-2005

	1997	2000	2001	2002	2003	2004	2005
				Number			
Milk cows	12,897	38,196	48,677	67,207	74,435	74,840	87,082
				Acres			
Pasture and rangeland	496,385	557,167	789,505	625,902	745,273	1,592,756	2,331,158

Note: The pasture and rangeland data are greatly influenced by four large pastureland farms in Alaska that entered the sector starting in 2004. Data are not available for 1998-1999.
Source: USDA, Economic Research Service, 2006.

Figure 12
Market share of private label milk at retail stores more than doubles, 2004-06



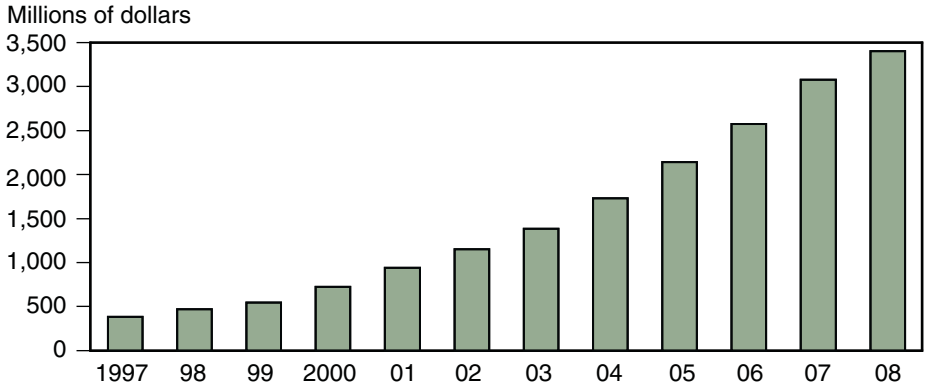
Source: USDA, Economic Research Service calculations of Nielsen data.

Characteristics of Organic-Milk Consumers in the United States

- As education increases, the likelihood of buying organic milk dramatically increases.
- Hispanic households are more likely to frequently purchase organic milk
- Asian households are more likely to purchase organic milk occasionally.
- Upper income households are more likely to buy organic milk.

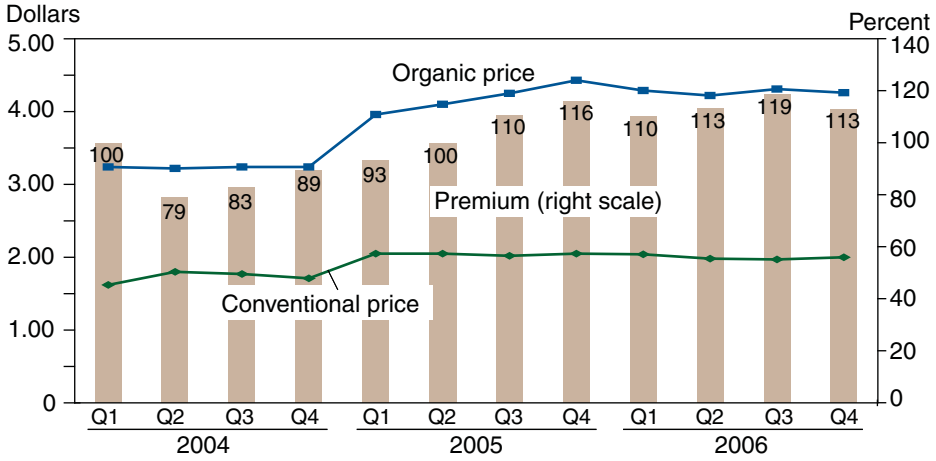
Source: Dimitri and Venezia, 2007.

Figure 13
Retail sales of organic dairy products steadily increase between 1997 and 2008



Source: *Nutrition Business Journal*, 2009.

Figure 14
Organic milk retail prices are roughly double conventional prices, 2004-06



Note: Prices are per half gallon of milk. Price premiums are shown as percentages. Organic price premiums are calculated by subtracting the conventional price (whether computed monthly, quarterly (Q1-Q4 above), or yearly) from the organic price and dividing the difference by the conventional price. For additional price premiums, see www.ers.usda.gov/data/organicprices.
Source: USDA, Economic Research Service calculations of Nielsen data.

Organic and Conventional Milk Cost of Production

A 2005 survey of dairy producers across the United States showed that size and location of the operation and milk production costs were primary factors for determining whether a dairy producer would choose to use organic production methods. Small dairy farms were more likely than their larger counterparts to view organic as an alternative approach for reorganizing farm resources to improve farm income. Location in the Northeast and Upper Midwest also increased the likelihood that a dairy would be organic. Overall, production costs for organic dairies ran about $4 to $6 higher per hundredweight (cwt) of milk than those for conventional dairies (excluding the initial cost of changing management methods from conventional to organic), but organic dairy producers received an average milk premium of $6.69 per cwt.

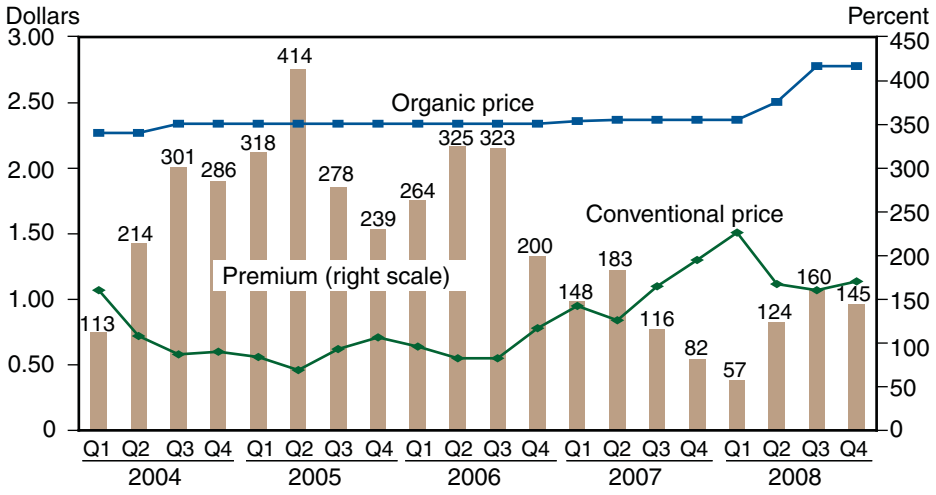
Source: McBride and Green, 2007.

Organic Meat and Eggs Have Relatively Low Total Sales But Fast Growth

The organic meat sector is still in early stages of development, and has relatively low total sales. Yet the sector is currently one of the fastest growing in the organic industry, with total retail sales having increased by a factor of 46 between 1997 and 2007. Poultry accounted for 59 percent and beef made up 24 percent of the 2007 sales of $476 million. Egg sales have grown at a slower rate between 1997 and 2007, although the average annual growth rate was 19 percent over these years.

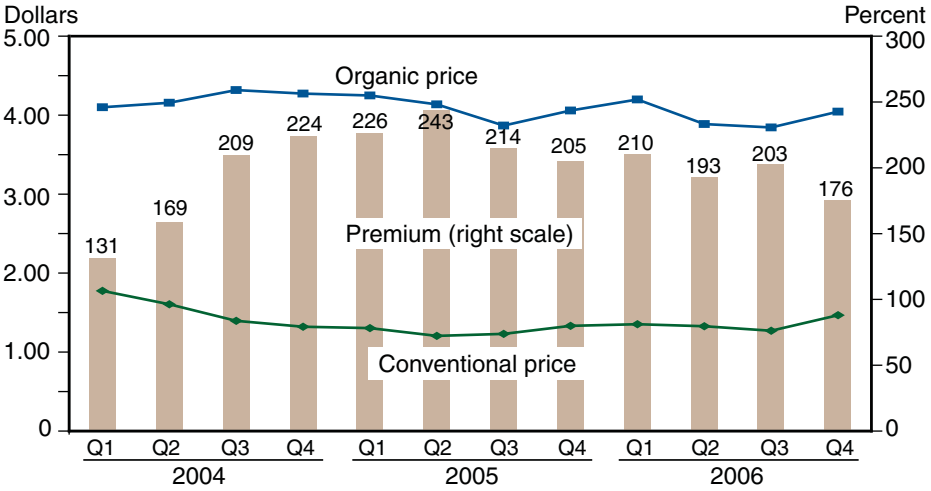
Organic livestock increased dramatically between 2000 and 2005, with both beef and milk cows experiencing close to 20 percent average annual increases each year (table 5). The number of hogs and pigs increased 58 percent between 2000 and 2005. Organic poultry, which is the meat product with the greatest demand by consumers, has undergone even greater growth. Organic poultry numbers experienced 39 percent average annual increases from 2000 through 2005. The number of organic broilers, which makes up a substantial part of overall poultry growth, increased an average of 53 percent per annum during this period. Layer hen numbers have also expanded at an average annual rate of 22 percent.

Figure 15
Wholesale organic price premiums for eggs vary widely, 2004-08



Note: Prices are dollars per dozen. Price premiums are shown as percentages. Organic price premiums are calculated by subtracting the conventional price (whether computed monthly, quarterly (Q1-Q4 above), or yearly) from the organic price and dividing the difference by the conventional price. For more price premiums, see eqm7,www.ers.usda.gov/data/organicprices.
Source: USDA, Economic Research Service, 2009.

Figure 16
Retail organic egg price premiums are high, 2004-06



Note: Prices are in dollars per dozen. Price premiums are shown as percentages. Organic price premiums are calculated by subtracting the conventional price (whether computed monthly, quarterly (Q1-Q4 above), or yearly) from the organic price and dividing the difference by the conventional price. For more price premiums, see www.ers.usda.gov/data/organicprices.
Source: USDA, Economic Research Service calculations of Nielsen data.

Table 5
Organic livestock herds, poultry flocks expand dramatically between 1997 and 2005

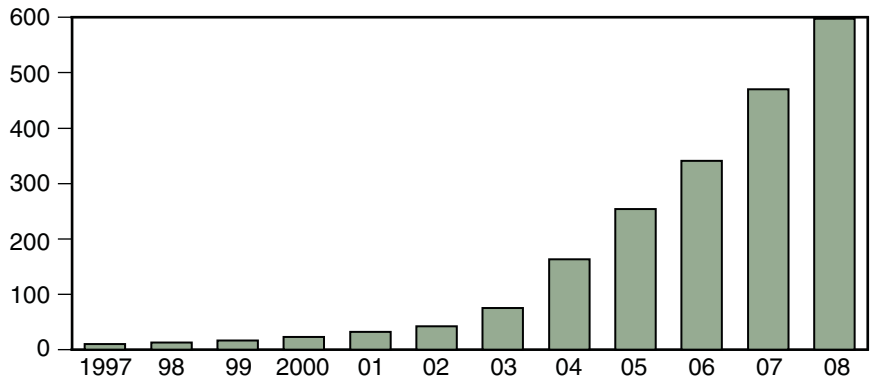
	1997	2000	2001	2002	2003	2004	2005
				Number of animals			
Total livestock	18,513	56,028	72,209	108,362	124,346	157,253	196,506
Beef cows	4,429	13,829	15,197	23,384	27,285	36,662	36,113
Other cows[1]	-	-	993	10,103	11,501	36,598	58,822
Hogs and pigs	482	1,724	3,135	2,753	6,564	4,883	10,018
Total poultry	798,250	3,159,050	5,014,015	6,270,181	8,780,152	7,304,566	13,757,270
Layer hens	537,826	1,113,746	1,611,662	1,052,272	1,591,181	1,787,901	2,415,056
Broilers	38,285	1,924,807	3,286,456	3,032,189	6,301,014	4,769,104	10,405,879

[1]Includes unclassified cows and some young stock and excludes milk cows.
Source: USDA, Economic Research Service, 2006.

What Are Organic Meat, Poultry, and Eggs?

Organic meat, poultry, and eggs, as defined by USDA's national organic standards, are made from animals raised under organic management. All organically raised herds and flocks must be raised separate from their conventional counterparts. The animals are not given growth-producing hormones or antibiotics. The animals receive preventive medical care, such as vaccines, and dietary supplements of vitamins and minerals. They consume 100 percent organically produced feed, free of animal byproducts. Producers must provide living conditions that accommodate the health and natural behavior of the animals. The animals should have access to the outdoors, shade, exercise areas, fresh air, and direct sunlight suitable to their species and stage of production. All organically raised cows must have access to pasture. Their bedding must be clean and dry. Producers may not withhold medical treatment from a sick animal in order to preserve its organic status. The producer must manage manure in a way that does not contribute to soil, water, or crop contamination. In certain cases, the producer may temporarily confine animals because of weather, stage of development, if the animal's well-being would be compromised from being outdoors, or if there is a risk to soil or water quality.

Figure 17
Retail sales of organic meat products rapidly increase after 2003



Source: *Nutrition Business Journal*, 2009.

Essential to Other Sectors, Feed Grains and Oilseeds Face Slow Growth

Organic feed grain and soybean production are critical inputs into organic dairy and livestock production. Scarcity of organic feed grains and oilseeds, especially corn and soybeans used in the production of milk and meat (Clarkson, 2007; Brasher, 2005) has contributed to shortages of organic milk and meat at the retail level (Oliver, 2006; Organic Monitor, 2005). High conventional feed and grain prices during 2008 exacerbated this problem, as producers in the Midwest responded to high organic feed prices by shifting their organic beef and dairy into conventional production (USDA, Agricultural Marketing Service, 2008).

Slow growth in this sector can be traced back to the farm level, where organic grain acreage has increased relatively slowly, at about 7 percent each year from 2000 to 2005. Growth by specific product varies. While corn, wheat, and oats have increased by more than 7 percent, organic beans have grown less than 1 percent a year since 2000, and organic soybeans have experienced negative growth. Future growth in the sector is dampened by high prices for conventional corn and soybeans, which, since 2005 have dissuaded potentially interested farmers from converting to organic production (Brasher, 2008).

What Are Organic Grains, Oilseeds, and Legumes?

Organic grain, oilseed, and legume production relies on ecologically based practices, such as biological pest management and composting, and crops are produced on land that has had no prohibited substances applied to it for at least 3 years prior to harvest. Soil fertility and crop nutrients are managed through tillage and cultivation practices, crop rotations, and cover crops, supplemented with manure and crop waste material and allowed synthetic substances. Crop pests, weeds, and diseases are controlled through physical, mechanical, and biological control management methods.

When storing and shipping organic grains, oilseeds, and legumes, producers and handlers must not allow them to commingle with conventionally grown grain. These organic products cannot be shipped or packed in containers containing synthetic fungicide, preservative, or fumigant.

Organic Feed and Grain Handlers Had Shortages in 2004 and 2007

	2004	2007
	Percent of organic handlers	
Products for sale	22	28
Supplies of ingredients for procurement	46	58

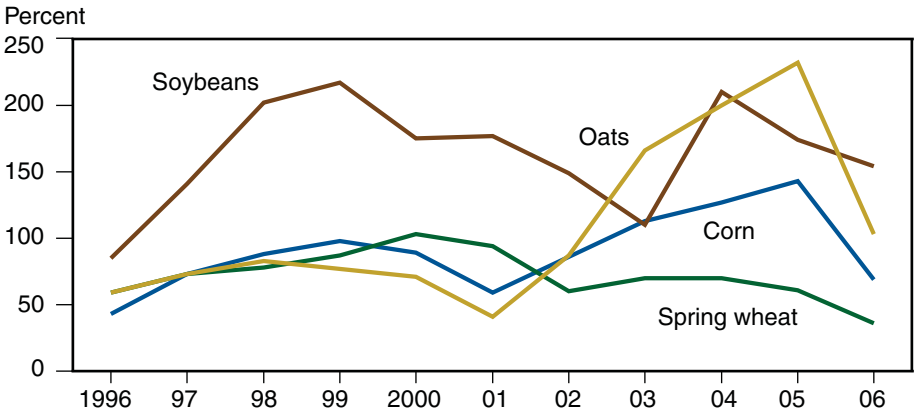
Source: USDA, Economic Research Service.

Table 6
U.S. organic acreage for grains and oilseeds, 1997-2005

Crop	1997	2000	2001	2002	2003	2004	2005
				Acres			
Total grains	291,013	415,977	454,598	495,503	547,729	490,561	607,907
Corn	42,703	77,912	93,551	96,270	105,574	99,111	130,672
Wheat	125,687	181,262	194,640	217,611	234,221	214,244	277,487
Oats	29,748	29,771	33,254	53,459	46,074	42,616	46,465
Total beans	96,183	166,320	211,405	145,071	152,757	143,839	155,853
Soybeans	82,143	136,071	174,467	126,540	122,403	114,239	122,217
Total oilseeds	31,433	54,521	43,722	33,418	28,117	53,503	45,674

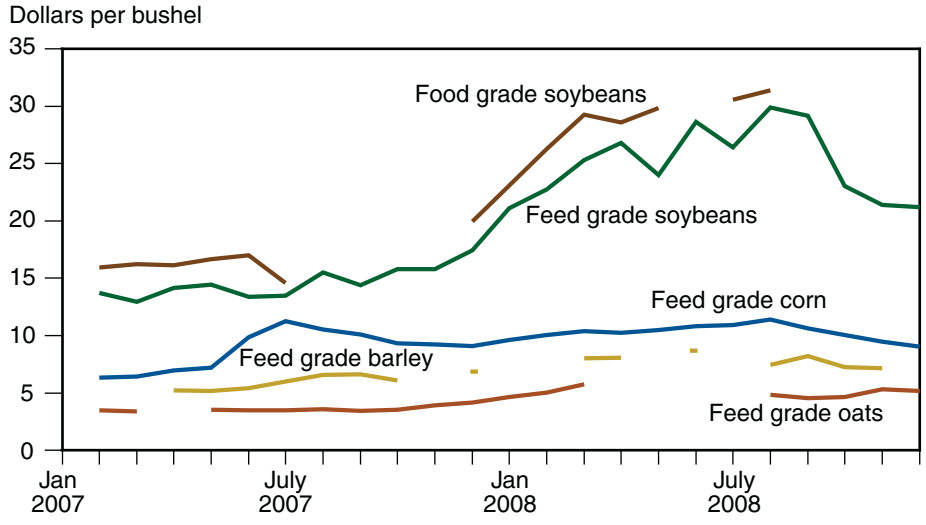
Source: USDA, Economic Research Service, 2006.

Figure 18
Yearly price premiums for grains and feedstuffs, 1996-2006



Note: Price premiums are shown as percentages. Organic price premiums are calculated by subtracting the conventional price (whether computed monthly, quarterly, or yearly) from the organic price and dividing the difference by the conventional price. For additional price premiums, see www.ers.usda.gov/data/organicprices.
Source: Streff and Dobbs, 2004; and USDA, Economic Research Service, 2009, for 2004-06 data.

Figure 19
Monthly market prices for organic grain and feedstuffs, upper Midwest, 2007-08



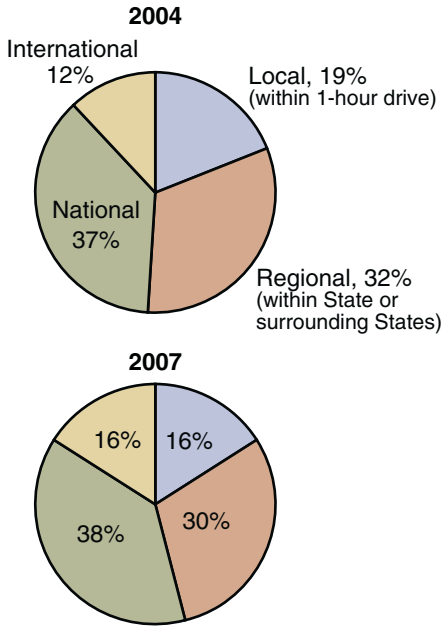
Source: USDA, Economic Research Service calculations of USDA, Agricultural Marketing Service, *Market News Report* data.

Table 7
Contract use by handlers of organic oilseeds, grains, legumes, and feed in 2007

Type of arrangement	Percent of volume
Formal contracts	44
Informal contracts	23
Spot market	30
Other	2

Source: USDA, Economic Research Service.

Figure 20
Where organic handlers buy oilseeds, grains, legumes and feed changed very little, 2004-07



Note: Charts present percent of sales made in each geographic market.
Source: USDA, Economic Research Service.

Additional Reading

For more information on the organic sector in the United States, see the following USDA publications and websites:

U.S. Department of Agriculture, Agricultural Marketing Service, National Organic Program. www.ams.usda.gov/nop

U.S. Department of Agriculture, Agricultural Research Service, Organic Agriculture Production Research. www.ars.usda.gov/research/programs/programs.htm?np_code=216&docid=15009

U.S. Department of Agriculture, Cooperative State Research, Education, and Extension Service, Organic Agriculture. www.csrees.usda.gov/organicagriculture.cfm

U.S. Department of Agriculture, Economic Research Service, Organic Briefing Room. www.ers.usda.gov/briefing/organic

U.S. Department of Agriculture, Foreign Agricultural Service, Organic Products. www.fas.usda.gov/agx/organics/organics.asp

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