

Recent Growth Patterns in the U.S. Organic Foods Market

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Introduction

Burgeoning consumer interest in organically grown foods has opened new market opportunities for producers and is leading to a transformation in the organic foods industry. Once a niche product sold in a limited number of retail outlets, organic foods are currently sold in a wide variety of venues including farmers markets, natural product supermarkets, conventional supermarkets, and club stores. Many U.S. manufacturers and distributors are specializing in processing and marketing organic products, while some longtime manufacturers of conventional products have introduced organic items to their product lines. As a result, an ever-widening array of organic agricultural and food products is now available. Since the early 1990s, certified organic acreage has increased as producers strive to meet increasing demand for organic agricultural and food products in the United States. The dramatic growth of the industry spurred Federal policy to facilitate organic product marketing, and is leading to new government activities in research and education on organic farming systems.

This report summarizes growth patterns in the U.S. organic sector in recent years, by market category, and describes various research, regulatory, and other ongoing programs on organic agriculture in the U.S. Department of Agriculture.

Marketplace Characteristics of U.S. Organic Sector

The U.S. organic food industry crossed a threshold in 2000: for the first time, more organic food was purchased in conventional supermarkets than in any other venue. Industry estimates suggest that nearly half of the \$7.8 billion spent on organic food in 2000 was purchased in conventional retail outlets. Organic products are now available in nearly 20,000 natural foods stores (*Natural Foods Merchandiser*), and are sold in 73 percent of all conventional grocery stores (Food Marketing Institute).

Growing consumer demand for organic products has been manifested in the market in many ways. Acreage of certified organic farmland is increasing to meet growing consumer demand. According to the most recent USDA estimates, U.S. certified organic cropland doubled between 1992 and 1997, to 1.3 million acres. Preliminary estimates for 2001 suggest that certified organic acreage significantly increased between 1997 and 2001. From the consumer side, new products are being introduced rapidly. For example, over 800 new organic products were introduced in the first half of 2000. Desserts made up the majority of new products in 2000, while most new products introduced in 1999 were beverages (Myers and Rorie).

The new U.S. Department of Agriculture standards for organic food, slated to be fully implemented by October 2002, are expected to facilitate further growth in the organic foods industry. The USDA standard defines organic production as “A production system that is managed in accordance with the [Organic Foods Production] Act and regulations in this part to respond to site-specific conditions by integrating cultural, biological, and mechanical practices that foster cycling of resources, promote ecological balance, and conserve biodiversity.”¹ The national organic standards address the methods, practices, and substances used in producing and handling crops, livestock, and processed agricultural products (see box). All agricultural products that are sold, labeled, or represented as organic must be in compliance with the regulations after October 2002.

Organic food is sold to consumers through three main venues in the United States—natural foods stores, conventional grocery stores, and direct-to-consumer markets—and a small amount is exported to foreign markets. USDA does not have national statistics on organic retail sales. Industry sources have reported retail sales for organic food, but those data are fragmentary and, at times, incon-

¹National Organic Program, Final Rule, *Federal Register* 7CFR Pt 205, December 21, 2000.

sistent. A trade publication, the *Natural Foods Merchandiser* (NFM) reported estimates of total U.S. retail sales of organic foods for 1990 through 1996. NFM estimated total organic sales through all marketing outlets rose steadily from about \$1 billion in 1990 to \$3.3 billion in 1996, the last year that total sales were reported. Since 1999, Packaged Facts, a market research firm, has been reporting organic food sales. According to Packaged Facts, organic food sales in all venues totaled \$6.5 billion in 1999 and \$7.8 billion in 2000. This increase continues the streak of industry growth equal to 20 percent or more annually since 1990.

Purveyors of natural products were the primary sales force for organic food since the beginning of the organic food movement over half a century ago. Until 2000, the largest retail outlet for organic food was natural foods stores followed by direct markets (such as farmers markets), according to NFM data (fig. 1). In 2000, 49 percent of all organic products was sold in conventional supermarkets, 48 percent was sold in health and natural products stores, and 3 percent through direct-to-consumer methods (Packaged Facts). In contrast, in 1991, 7 percent of all organic products were sold in conventional supermarkets and 68 percent were sold in health and natural products stores (NFM).

Fresh produce remains the top-selling organic category (see fig. 2), followed by nondairy beverages, breads and grains, packaged foods (frozen and dried prepared foods, baby food, soups, and desserts), and dairy products. During the 1990s, organic dairy was the most rapidly growing seg-

Natural Product and Conventional Supermarkets

From 1990 to 1996, natural products retailers sold two-thirds of organic foods. Sales of organic food in natural products stores increased 20 to 25 percent annually since the early 1990s.

Natural product retailers comprise 1 percent of all foodstores in the United States, and sold 48 percent of all organic food in 2000.

Conventional foodstores began outselling natural products supermarkets in several categories in 1999, including organic milk, half and half, cream, nondairy beverages, cold cereals, cookies and snack bars, and tofu.

In 2000, conventional supermarkets comprised 99 percent of all foodstores and sold 49 percent of all organic products.

ment, with sales up over 500 percent between 1994 and 1999. Sales of organic yogurt and kefir increased 56.4 percent between 1999 and 2000. Following closely, sales of nondairy beverages (for example, juice and soymilk) increased 53.1 percent and sales of fresh produce grew by 51.4 percent between 1999 and 2000, according to industry sources. Overall, according to Packaged Facts, organic sales in natural product supermarkets and conventional stores increased by 20 percent between 1999 and 2000.

Organic farmers market their food directly to consumers much more frequently than conventional farmers do, and the last decade has seen a renaiss-

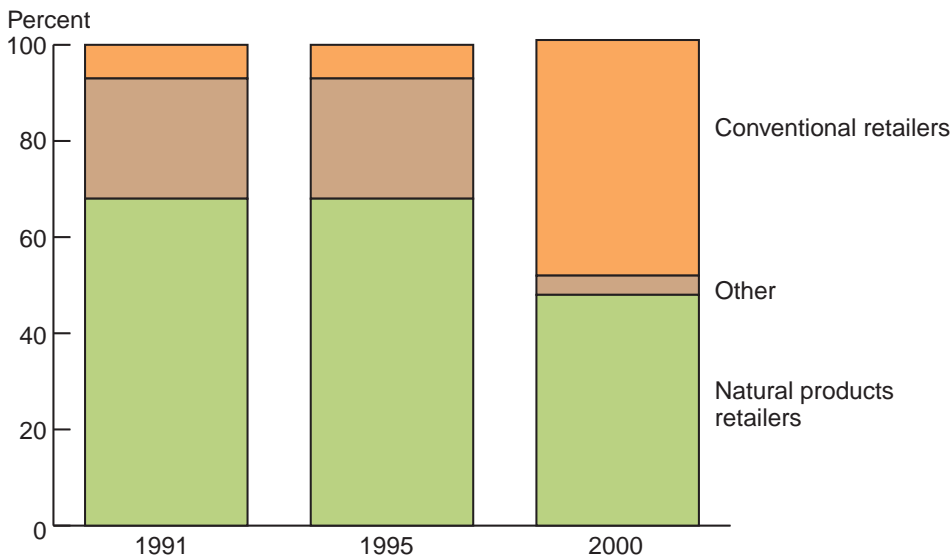
sance in the use of farmers markets across the country. Producers capture a much higher share of the consumer food dollar when they market their produce directly to consumers. Several surveys of certified organic producers show similar findings on their heavy use of direct-to-consumer marketing. A 1997 survey of certified organic producers in the United States conducted by the Organic Farming Research Foundation (OFRF)—a California nonprofit group that sponsors research on organic farming—found that direct market use is extensive and varies by commodity sector, with fruits and vegetables the highest. Organic producers reported selling produce from about 23 percent of their vegetable acreage directly to consumers through on-farm sales (9 percent), farmers markets (8 percent), “community supported agriculture” subscriptions (4 percent), and other types of direct-to-consumer markets (2 percent). Also, produce from about 20 percent of the organic fruit and vegetable acreage was marketed directly to grocery retailers and restaurants. A 1994 USDA survey of certified organic vegetable producers in the United States found that the use of direct-to-consumer markets varied with farm size, with 60 percent of the growers with under 10 acres (three-quarters of the respondents) using this channel compared with 12 percent with 10 acres or more (Fernandez-Cornejo et al.). Smaller growers tended to market directly to grocery retailers (11 percent versus 6 percent for larger growers) and through grower cooperatives (10 percent versus 3 percent for larger growers), while the larger growers marketed more heavily to vegetable packer/shippers, brokers, and food processors.

Organically grown food is widely available in farmers markets across the United States, and organic-only farmers markets have been organized in Oregon, Illinois, Missouri, and other States. The renaissance in farmers markets in the United States dur-

ing the 1990s—fostered by State and local municipalities wanting to revitalize neighborhoods and preserve regional farmland and open space—has been a boon to organic farmers who use this marketing outlet much more heavily than conventional farm-

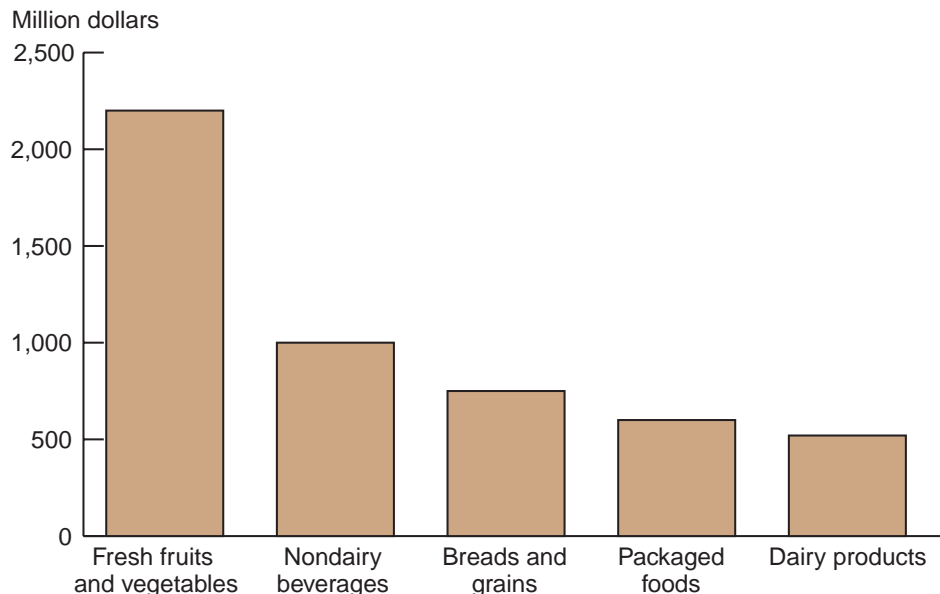
ers do. States are also producing directories of farm stands and pick-your-own farms, including organic directories, and developing logos like “Jersey Fresh” to promote locally grown food.

Figure 1—Share of organic sales by venue



Notes: Other is direct sales and exports.
Source: *Natural Foods Merchandiser*, Packaged Facts.

Figure 2—Sales of top five organic foods, 2000



Source: *Nutrition Business Journal*.

Community-supported agriculture (CSA) is an innovative direct marketing arrangement that organic farmers have been pioneering in the United States for about a decade. Consumers subscribe to the harvest of a CSA farmer for the entire upcoming season, and pay for their produce in advance. Under a CSA arrangement, consumers share the production risks and variable harvests of the farmer—including especially abundant harvests—and sometimes participate in festivals and other social activities at the farm. Over 800 CSAs are currently listed in the U.S. database maintained by USDA and the Robyn Van En Center at Wilson College. Most of the CSA farms use organic production systems.

Production Characteristics of U.S. Organic Sector

A growing body of research in the United States has been devoted to the economics of organic production systems—its yields, input costs, income, profitability, and other economic characteristics. A 1990 review of the U.S. literature concluded that the “variation within organic and conventional farming systems is likely as large as the differences between the two systems” and found mixed results in the comparisons for most characteristics (Knoblauch, Brown, and Braster, 1990).

Several more recent U.S. studies have indicated that organic price premiums

are key in giving organic farming systems comparable or higher whole-farm profits than conventional chemical-intensive systems, particularly for crops like processed tomatoes and cotton (Klonsky and Livingston, 1994; Batte, Forster, and Hitzhusen, 1993; Assadian, Esparza, and Ponce, 1999). Other studies have found that organic systems may be more profitable than conventional systems, even without price premiums. For example, some Midwestern organic grain and soybean production was found to be more profitable than conventional systems, even without price premiums, due to higher yields in drier areas or periods, lower input costs, or crop mix (Welsh, 1999). Also, a recent study comparing organic and conventional apple production in California's Central Coast showed higher yields as well as higher returns under the organic systems (Swezey et al., 1994). And another recent study compared organic, conventional, and integrated apple production systems in Washington State over a 6-year period, and found that the organic system was more profitable, had similar yields, better tasting fruit, and was more environmentally sustainable and energy efficient than the other systems (Reganold et al.). We are not aware of recently published research that finds farming with organic methods is less profitable than farming with conventional methods. Of course, net returns to various production systems may vary with biophysical and economic factors (such as soil type, climate, and proximity to markets), and a system that is optimal in one location may not be optimal in another. Also, factors not captured in standard profit calculations, such as convenience, longer-term planning horizons, and environmental ethics, can motivate

rational adoption of a particular practice or farming system. Further research is needed to improve our understanding of the factors influencing net returns to organic farming systems.

The promising results from the limited number of economic studies to date have led to an increase in research on organic farming systems. USDA, universities, and other U.S. institutions are increasingly examin-

ing the long-term economics of organic farming systems through replicated field trial research and a multidisciplinary systems approach. Most of these projects are less than a decade old, and promise to answer basic research questions about yields and profitability as well as to address farmer-defined management and production obstacles to the more widespread adoption of organic production systems.

Examples of U.S. long-term farming systems trials

Rodale Institute's Farming Systems Trial™, in Kutztown, Pennsylvania, was begun in 1981 and is one of the longest running experiments designed specifically to study organic cropping systems. The project focuses on corn and soybean production and studies the transition process that occurs when converting from conventional to organic farming.

The Sustainable Agriculture Farming Systems Project, at the University of California, Davis, has been examining processing tomato, safflower, bean, and corn production under conventional, low-input, and organic systems since 1988 on a 28-acre site in the Sacramento Valley.

Elwell Agroecology Farm, in conjunction with the University of Minnesota's Lamberton Experiment Station, began adding long-term, organic cropping systems trials in 1989; rotations include corn, soybeans, alfalfa, and oats.

The Living Field Laboratory, a project of the C.S. Mott Chair of Sustainable Agriculture, Michigan Agricultural Experiment Station, and others, was established in 1993 and is examining corn, soybean, and wheat production under organic, conventional, and other management systems.

USDA's Agricultural Research Service began investigating organic farming systems through long-term farming systems trials in 1993. The Farming Systems Project, at USDA's Beltsville (Maryland) Agricultural Research Center, is a long-term comparison of seven cropping systems with various rotations of corn, soybean, wheat, and alfalfa that are typical in the mid-Atlantic region.

The West Virginia University (WVU) converted its entire 60-acre Horticulture Farm to organic production in the fall of 1999. The WVU Organic Research Farming Project is studying market garden/vegetable production systems, as well as field crop/livestock systems, in replicated plots, and is evaluating changes in various aspects of the fauna, flora, and soil as organic practices are followed.

Farmers in 49 States used organic production methods and third-party organic certification services on 1.35 million acres of farmland in 1997, according to an Economic Research Service (ERS) study. Crops were grown on about two-thirds of the certified U.S. organic farmland, and the rest was pasture. The ERS study analyzed data from 40 State and private certifiers (see box, p. 8, on organic standards and certification). Uncertified acreage was excluded, even though it may represent a large segment of organic production, because of the difficulty in determining the production criteria used by uncertified growers. ERS reports statistics on certified organic U.S. acreage in the Organic Farming and Marketing Briefing Room (www.ers.usda.gov/briefing/organic).

Organic farming has made deeper inroads in the fruit, vegetable, and other high-value specialty crop industries than in the major grain and oilseed industries. While less than two-tenths of 1 percent of the U.S. corn, soybean, and wheat crops were grown organically in 1997, over 1 percent of the dry peas and tomato crops and about 2 percent of the apple, grape, lettuce and carrot crops were organic. And nearly a third of the U.S. herb and “mixed vegetable” crops were grown organically in 1997. (A “mixed vegetable” crop is a mixture of numerous horticultural crops (mostly vegetables) grown on a small farm or parcel.)

The markets for organic vegetables, fruits, and herbs have been developing for decades in the United States, and these crops are grown organically in more States than any other type of commodity. State and private certifying groups certified over 180,000

acres of these crops in 44 States in 1997, more than double the amount certified in 1994, with the biggest gains for cultivated and wild-harvested herbs such as St. John’s Wort.

About 2 percent of the major fruit and vegetable crops—apples, carrots, lettuce, and grapes—were grown organically, and a third of the organic vegetable acreage was devoted to producing “mixed vegetables” in 1997. Mixed vegetable farms, as defined in the census of agriculture, are small farms—less than 50 acres—that produce a large number of vegetables. Large farms produce processing tomatoes, organic wine grapes, and other high-value crops on a commercial scale, while numerous small farms still specialize in mixed vegetable production for direct marketing to consumers and restaurants. The top producer of organic fruits and vegetables was California, followed by Arizona, Florida, Texas, and Washington.

About a third of the total certified organic vegetable acreage in 1997 was for mixed vegetables. In 1997, U.S. farmers certified nearly 3,000 acres of organic mixed vegetables on farms or parcels that were 5 acres or less, and over 14,000 acres on farms and parcels over 5 acres. New York organic producers had over 1,400 acres in the 5-acres-or-less category. Mixed vegetable producers often target farmers markets, community-supported agriculture subscriptions, restaurants, and other direct marketing outlets.

Organic farmers are also growing major grains and oilseeds on a small portion of the planted area in the United States. Wheat was produced under certified organic farming systems on over 125,000 acres in 1997,

corn was grown on over 42,000 acres, and soybeans were produced on about 82,000 acres. Other field crops produced organically in 1997 include barley, oats, sorghum, rice, spelt, millet, buckwheat, rye, dry peas, lentils, dry beans, flax, and sunflowers. Organic acreage of these crops, especially soybeans, has undoubtedly increased since 1997.

Thirty-nine States had certified organic hay and silage production, with most acreage in Idaho, Wisconsin, and New York. Acreage of these crops expanded 51 percent between 1995 and 1997 as the number of certified organic milk cows more than doubled during that period.

Organic meat and poultry markets have lagged behind those for crops partly because meat and poultry could not be labeled as organic until February 1999, when a provisional label was approved by USDA. Food crops and non-meat animal foods (eggs and dairy products) are regulated by the U.S. Food and Drug Administration, which allowed food packages to carry an organic label throughout the 1990s.² While the number of certified organic beef cows, hogs, sheep, and lambs declined during the study period (1992-97), the number of dairy cows and layer hens increased sharply. The market for organic meat products is beginning to grow now that organic labeling is permitted, and the growing market for organic milk and eggs has been pushing up the use of certified organic pasture and the demand for certified organic grains and oilseeds.

²Traditionally, USDA has regulated labeling of all meat products and FDA has regulated labeling of nonmeat animal products and other food products. The new USDA organic label, however, will apply to all food products.

Farmers and ranchers raised a small number of certified organic cows, hogs, and sheep in 23 States in 1997. Dairy cows were raised organically in 13 States in 1997, and New York, Wisconsin, and Minnesota were the top three producers. The number of certified organic milk cows in the United States nearly tripled between 1992 and 1994 and more than doubled between 1994 and 1997. California was the leader in organic poultry production, followed by New York and Virginia. Other organic animal specialties, including goats, fish, and colonies of bees, were certified in several States.

Consumption Characteristics of the U.S. Organic Sector

A number of academic and industry studies have been conducted to examine consumer behavior and identify their motivation for purchasing organic foods. Many of the industry studies use consumer surveys, which seek to identify how often consumers purchase organic food, their motivations for purchasing organic food, and demographic data on organic food purchasers. University studies have adopted different approaches to assess consumer buying behavior and to identify which characteristics (for example, income, food quality, educational level, concern for the environment, or family size) affect whether consumers will purchase organic food.

Several industry groups have surveyed consumers about their preferences and buying habits for organic food. The results of the different surveys are not always consistent. *The Nutrition Business Journal* reported that 11 percent of consumers pur-

chased some organic food in 2000, and less than 2 percent are regular purchasers. Results of the Hartman Group's 2000 survey suggest that 3 percent of consumers regularly buy organic products. The Walnut Acres Survey (2001) found that 63 percent of respondents purchased organic food at least sometimes, and 57 percent of the purchasers had been doing so for at least 3 years. The Food Marketing Institute's survey (2001) found that 66 percent of surveyed shoppers bought organically grown foods.

In 2001, the Food Marketing Institute's survey indicated that 37 percent of shoppers said they purchased organically grown food to maintain their health; and 44 percent of these shoppers had purchased organic food in the past 6 months. Consumers surveyed by the Hartman Group (2000) gave the following reasons for purchasing organic food: health and nutrition (66 percent), taste (38 percent), environment (26 percent), and availability (16 percent).³ The Fresh Trends (2001) survey revealed that 12 percent of the shoppers surveyed reported that whether a product is organic is a primary factor in their purchasing decision. Sixty-three percent of the respondents of the Walnut Acres Survey believed that organic food and beverages were better for them and were more healthful than their conventional counterparts. Fresh Trends (1996, 1998, 2000, 2002) found little difference between the purchasing habits of men and women.

Over the years, Fresh Trends found that, of the shoppers that had purchased organic produce in the previ-

³Consumers gave more than one reason for purchasing organic food. Thus, the percentages sum to more than 100.

ous 6 months, more purchased vegetables than fruit (according to the 1996 survey, 24 percent purchased fruit and 84 percent purchased vegetables; according to the 2000 survey, 35 percent purchased vegetables). Apples and tomatoes led the list of fruit and vegetables purchased by the shoppers surveyed by Fresh Trends. According to the Hartman Survey (2000), the top 10 organic products purchased were strawberries, lettuce, carrots, other fresh fruit, broccoli, apples, other fresh vegetables, grapes, bananas, and potatoes. The Hartman survey also suggested that fruits and vegetables were "gateway categories" (typically the first organic products purchased by consumers). The Walnut Acres Survey (2002) indicated that 68 percent of consumers revealed that price is the main reason they did not purchase organic food.

Academic researchers have taken a slightly different tack in studying organic consumers by complementing surveys with statistical analysis to depict the typical consumer. Some studies reveal conflicting results, most likely because of the different methodological approaches. Consumers considered the following factors important when purchasing fresh produce: price, size and packaging, whether the item is on sale, and whether the item is organic (Estes and Smith). Age, gender, and having a college degree had little impact on a shopper's decision to buy organic produce (Thompson and Kidwell). Consumers with higher incomes and higher levels of education are willing to pay more for organic potatoes (Loureiro and Hine), while consumers with advanced degrees are less likely to buy organic produce (Thompson and Kidwell). Appearance of fresh produce mattered, and

Summary of Methodology Used in Consumer Studies

Study	Year Published	Methodology
Walnut Acres Survey	2001	Telephone interviews with nationally representative sample of 1,000 adults. Sample collected March 1 - March 5, 2001.
Food Marketing Institute Survey	2001	Telephone interviews with nationally representative sample of 1,200 adults.
Hartman Group, the Organic Consumer Profile	2000	Mail questionnaire sent to 40,000 households, nationwide, selected from a panel of 550,000 households. The panel conforms to a cross-section of the population based on the 2000 census; 26,434 consumers responded.
Fresh Trends Survey	Biannual	Two separate surveys. The first survey was a telephone survey of 1,000 nationally representative households. Average phone conversation was 10 minutes. The second survey covered 5,000 consumer in-store interviews in June 2001 and August 2001. Interviews took place in one retailer (five stores each) in five different markets across the United States.
Estes and Smith	1996	Hedonic analysis of demand for organic produce. Data collected using focus groups and mall interviews.
Thompson and Kidwell	1998	Collected data on items purchased by examining shopping carts of consumers in Tucson, AZ, and collected demographic data.
Glaser and Thompson	1999, 2000	Econometric analysis (using scanner data) of demand for organic frozen vegetables and organic milk.
Reicks, Splett, and Fishman	1999	Experimental design for effectiveness of shelf labeling.
Govindasamy and Italia	1999	Estimated consumer willingness to pay a 10-percent premium for organic produce.
Thompson and Glaser	2001	Econometric analysis (using scanner data) of demand for organic baby foods.
Loureiro and Hine	2001	Estimated the willingness to pay for Colorado potatoes.

Organic Standards and Certification

Organic farming systems rely on ecologically based practices, such as biological pest management and composting; virtually exclude the use of synthetic chemicals, antibiotics, and hormones in crop production; and prohibit the use of antibiotics and hormones in livestock production. Under organic farming systems, the fundamental components and natural processes of ecosystems—such as soil organism activities, nutrient cycling, and species distribution and competition—are used as farm management tools. For example, food and shelter are provided for the predators and parasites of crop pests, planting and harvesting dates are carefully planned and crops are rotated, and animal manure and crop residues are cycled in organic production systems. Organic livestock production systems attempt to accommodate an animal's natural nutritional and behavioral requirements, requiring dairy cows and other ruminants, for example, to have access to pasture.

Private organizations, mostly nonprofit, began developing certification standards in the early 1970's as a way to support organic farming and thwart consumer fraud. Some States began offering organic certification services in the late 1980's for similar reasons. The resulting patchwork of standards in the various certification programs, however, caused a variety of marketing problems. Congress passed the Organic Foods Production Act of 1990 to establish national standards for organically produced commodities, and USDA promulgated final rules for implementing this legislation in December 2000. USDA is currently implementing these organic regulations, and all agricultural products that are sold, labeled, or represented as organic must be in compliance with the regulations after the 18-month transition period is completed in October 2002. These regulations require that organic growers and handlers (including food processors) be certified by a State or private agency accredited under the uniform standards developed by USDA, unless the farmers and handlers sell less than \$5,000 a year in organic agricultural products. Retail food establishments that sell organically produced agricultural products but do not process them are also exempt from certification.

The national organic standards address the methods, practices, and substances used in producing and handling crops, livestock, and processed agricultural prod-

ucts. Although specific practices and materials used by organic operations may vary, the standards require every aspect of organic production and handling to comply with the provisions of the Organic Foods Production Act. Organically produced food cannot be produced using genetic engineering and other excluded methods, sewage sludge, or ionizing radiation. These standards include a national list of approved synthetic, and prohibited nonsynthetic, substances for use in organic production and handling.

USDA organic standards for food handlers require that all nonagricultural ingredients, whether synthetic or nonsynthetic, be included on the national list. Handlers must prevent the commingling of organic with nonorganic products and protect organic products from contact with prohibited substances. In a processed product labeled as "organic," all agricultural ingredients must be organically produced unless the ingredient(s) is(are) not commercially available in organic form.

The labeling requirements under the national standards apply to raw, fresh, and processed products that contain organic ingredients and are based on the percentage of organic ingredients in a product. Agricultural products labeled "100 percent organic" must contain (excluding water and salt) only organically produced ingredients. Products labeled "organic" must consist of at least 95-percent organically produced ingredients. Products labeled "made with organic ingredients" must contain at least 70-percent organic ingredients. Products with less than 70-percent organic ingredients cannot use the term organic anywhere on the principal display panel but may identify the specific ingredients that are organically produced on the ingredients statement on the information panel. The USDA organic seal—the words "USDA organic" inside a circle—may be used on agricultural products that are "100 percent organic" or "organic." A civil penalty of up to \$10,000 per violation can be levied on any person who knowingly sells or labels as organic a product that is not produced and handled in accordance with these regulations.

For further information, visit USDA's Agricultural Marketing Service/National Organic Program (NOP) website at www.ams.usda.gov/nop/.

the larger the number of cosmetic defects, the less likely would an organic product be purchased (Estes and Smith, Thompson and Kidwell).

One picture of the typical organic shopper is a younger household in which females do the shopping; smaller and higher income households are the most likely purchasers of organic produce (Govindasamy and Italia) and organic apples (Loureiro et al.). Households knowledgeable about alternative agriculture are more likely to purchase organic produce (Govindasamy and Italia) and those concerned about the environment are more likely to purchase organic apples (Loureiro et al.). Those concerned about food safety are more likely to buy organic produce (Govindasamy and Italia) and organic apples (Loureiro et al.). Those who enjoy trying new products are more likely to purchase organic produce (Govindasamy and Italia). Households with children under 18 are more likely to purchase organic produce (Thompson and Kidwell) and organic apples (Loureiro et al.). Consumers with children are willing to pay less for organic potatoes (Loureiro and Hine) and more likely than other households to purchase organic apples (Loureiro et al.).

Strategies to increase purchases of organic food include shelf-labeling, which had a mixed effect on sales in an upscale grocery store but a significantly positive effect on sales of dairy products, pasta, bread, cereal, and carrots in a discount retailer in the Minneapolis and St. Paul markets (Reicks, Splett, and Fishman).

The recent addition of organic food sales to scanner data, by AC Neilson

and Information Resources, Inc., has made possible econometric studies of consumer demand for organic food. Frozen organic vegetables, organic milk, and organic baby food all exhibited high price elasticity of demand, meaning that the quantity purchased responds greatly to price changes (that is, quantity purchased increases by more than 1 percent when prices fall by 1 percent) (Glaser and Thompson, 1999, 2000; Thompson and Glaser, 2001). For some frozen vegetables, there was little crossover between purchases of organic and conventional products, so that changes in prices of either commodity had no significant impact on quantities purchased (Glaser and Thompson 1999). For other products (milk and baby food), the conventional and organic products are substitutes, so that increases in the price of the conventional product result in consumers' purchasing a greater quantity of the organic products (Glaser and Thompson, 2000; Thompson and Glaser, 2001).

The Marketing Chain: From Farm to Market

Food passes through many hands as it moves from farm to consumer. Some foods are fresh when delivered (apples and eggs) while others are processed before delivery (pasta and bread). Regardless of whether they are fresh or processed, higher quality products and products with unique attributes (such as organic foods) generally have a higher selling price. As a result, farmers have a strong incentive to produce and sell commodities with quality and other price-enhancing attributes intact. Yet, since most foods pass through a number of intermediaries as they move from the farm

to the consumer, maintaining premium product integrity along the marketing chain can sometimes be a challenge. To do so, each agent along the marketing chain must begin by moving the product to the next agent quickly. Farmers need to sell their perishable commodities immediately after harvesting, while distributors, brokers, and wholesalers need to get fresh products to retailers as quickly as possible. Retailers want to be able to purchase a consistent and large enough supply of a wide variety of uniform quality fresh food. Consumers want to be able to buy a wide variety of fresh food that is both high quality and low priced. Organic food consumers, in particular, want to feel confident that they are buying food that not only was grown organically, but also has kept its organic integrity at each stage in its journey to the market.

Each commodity, depending in large part on whether it is fresh or processed, follows an individualized path from farm to market. Because fresh foods rapidly deteriorate, they must be delivered to the market quickly. The storage and transportation systems along the way must provide the proper temperature and other conditions that help maintain freshness. Processed foods, on the other hand, have a longer shelf life—but the products that go into them must be harvested at the right time, delivered at the right time and satisfy the processor's quality requirements. In the next sections, we trace the production and marketing chains for the major organic commodities in the United States, noting applicable regulations as well as observed marketing trends.

Organic Fresh Fruits and Vegetables

The first stage in the organic fresh fruit and vegetable marketing chain—the production and preparation of produce for shipment—involves growers, packers and shippers, working together in a number of possible combinations. In some cases, one firm grows, packs, and ships the produce, while in others one firm grows and another packs and ships. After it is shipped, produce can either be sold to retailers by a broker or delivered to a terminal market, where it is sold to retailers by wholesalers. In practice, most organic produce is sold through a specialty broker rather than in a terminal market (Dimitri and Richman). In some instances, when a specific variety, quality or quantity is desired, larger retailers

Fruit and vegetable marketing chains:

Fresh produce:

Farm – shipper – wholesaler – natural foods retailer

Farm – shipper – wholesaler – conventional retailer

Farm – shipper – specialty broker – retailer

Farm – shipper – natural foods retailer

Farm – shipper – conventional retailer

Farm – consumer farmers markets, roadside stands, U-pick, community supported agriculture

may buy fresh fruits and vegetables directly from the produce shipper. Organic produce can also be sold directly to consumers through farmers markets, community-supported agriculture, and farm stands.

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.

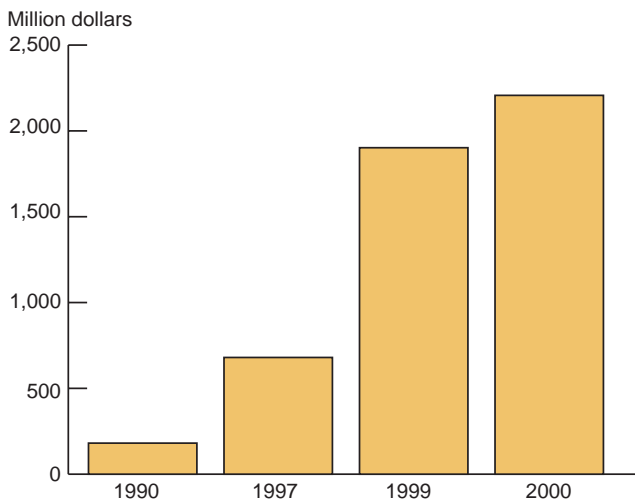
Organic fruits and vegetables must be stored and shipped separate from conventionally grown produce. Organic produce is shipped or packed in containers free from synthetic fungicide, preservative, or fumigant.



Credit: USDA.



Figure 3—Sales of organic fruits and vegetables: 1990, 1997, 1999, and 2000



Source: 1997 data, Food Industrial Management Program at Cornell University; 1999, 2000, *Nutrition Business Journal*.

Certified organic acreage in 1997

California had the most certified organic vegetable acreage, 22,886 acres in 1997. Colorado and Washington followed with 3,716 and 3,140 acres certified in 1997. Arizona, Oregon, Minnesota, New York, Illinois, and Florida each had over 1,000 acres of certified organic vegetables.

Almost 2 percent of U.S. lettuce acreage, 2.4 percent of carrot acreage, and 1 percent of tomato acreage was certified organic.

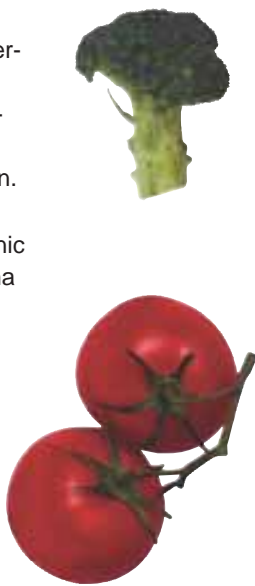
Over 49,000 acres of organic fruit and nut crops were certified in 36 States. Organic grapes accounted for 39 percent of the acreage certified, followed by apples (18 percent), citrus (12 percent), and tree nuts (10 percent); 21 percent of the total was unclassified as to the crop grown.

Growers in California had 32,582 acres of certified organic fruit and nut acreage, over two-thirds of the total. Arizona was second (4,361 acres), and Washington third (2,978 acres).

Source: Greene.



Credit: PhotoDisc.



Fruit and vegetable market facts:

Organic produce accounts for 42 percent of all organic food sales (Packaged Facts, 2001).

According to Spins, fresh produce (UPC coded) is the organic category with the third largest level of sales in conventional supermarkets, with sales equal to \$93,978,272 in the 12-month period ending June 2001.

Sales of fresh organic produce in natural foods supermarkets totaled \$708 million in 1998. Fresh organic produce sales (UPC and nonUPC coded) summed to \$833 million in 1999, which was 69.4 percent of total fresh produce sales in natural foods supermarkets. Fresh produce was the top-selling organic food category (NFM).

According to Fresh Trends survey, the organic products most often purchased are tomatoes, leafy vegetables, carrots, and apples.

According to the Hartman survey, the organic products most often purchased are strawberries, lettuce, and carrots.

Fruits and vegetables are the “gateway” category into organic foods (Hartman Group, 2001).

Price premiums for organic produce in the Boston wholesale market during 2000 - 2001

Organic broccoli – 30 percent higher, on average, than conventional prices

Organic carrot – 25 percent higher, on average, than conventional prices

Organic mesclun – 10 percent higher, on average, than conventional prices

Source: Sok and Glaser.

Organic Grains, Oilseeds, and Legumes

Organic grains, oilseeds, and legumes are used as inputs to manufactured products, as feed grain and as final food products such as rice and tofu. Crops produced by organic grain and oilseed farmers include traditional grains and oilseeds such as corn, soybeans, wheat, barley, oats, and rice, as well as nontraditional grains, including millet, buckwheat, rye, and spelt.

Organic grains, oilseeds, and legumes may be contracted prior to planting. Several companies offer producers contracts for organic wheat, corn, soybean, black bean, buckwheat, sunflower, popcorn, spelt, and millet crops. Contracts for organic grains vary considerably—for example, some make producers responsible for grain cleaning or shipping charges or both while others do not make the producer responsible for either (Born and Sullivan).

Marketing chain for organic grains, oilseeds, and legumes:

- Farmer – cooperative – cleaner – manufacturer – distributor
- Farmer – cleaner – manufacturer – distributor
- Farmer – cooperative – cleaner – broker – manufacturer – distributor
- Farmer – cleaner – broker – manufacturer – distributor
- Farmer – marketing agent (often contracts with farmer, and cleans) – manufacturer
- Farmer – cooperative – processor of feed grain – distributor – livestock producer
- Farmer – processor of feed grain – distributor – livestock producer



Credit: Comstock Images.

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 being stored and shipped, organic grains, oilseeds, and legumes must be kept from commingling with conventionally grown grain. These organic products cannot be shipped or packed in containers containing synthetic fungicide, preservative, or fumigant.

Top-selling products made with organic grains and legumes:

Soy milk and rice milk: the organic nondairy beverage category had sales in all venues of \$316 million in 1999 and \$395 million in 2000 (NBJ).

Organic nondairy beverages made up 62 percent of U.S. sales of nondairy beverages in all venues in 1999 (NBJ).

Sales of organic breads and grains increased from \$700 million in 1999 to \$848 million in 2000 (NBJ).

Sales of organic tofu totaled \$40.8 million in 1999 and \$46.3 million in 2000. Slightly more than half of organic tofu sales (52.8 percent) were made in conventional supermarkets (NFM, 2001).



Credit: PhotoDisc.

Organic grain market facts:

U.S. farmers produced certified organic grain crops on over 291,000 acres in 1997. A variety of certified organic grains was grown in 35 States in 1997 (Greene).

North Dakota was the top producing State, with over 50,000 acres. Another dozen States—Montana, Minnesota, Idaho, Colorado, Nebraska, Iowa, Utah, Kansas, California, South Dakota, Wisconsin, and Texas—had at least 10,000 certified organic acres of grain crops (Greene).

Corn, wheat, and oats were grown organically in over 24 States in 1997. Wheat was produced under certified organic farming systems on over 125,000 acres in 1997, corn was grown on over 42,000 acres, and oats and barley were each grown on almost 30,000 acres. Other certified organic grain crops—sorghum, rice (including wild rice), spelt, millet, buckwheat, and rye—were grown on under 15,000 acres each. State and private groups certified another 22,967 acres of organic grain crops in 1997 that could not be broken out into acreage for specific crops (Greene).

Certified organic grain acreage was well under 1 percent of the U.S. total for corn, wheat, barley, and rice. However, between 1 and 3.5 percent of the U.S. oats, millet, and rye crops were certified organic in 1997. About a third of two specialty grain crops—spelt (used in cereals and other food products) and buckwheat—were grown under certified organic farming systems in 1997 (Greene).



Photo courtesy of Organic Valley Family™ of Farms, 2002.

Organic soybean and legume market facts:

Soybeans are the top legume crop grown under certified organic farming systems. U.S. growers produced over 82,000 acres of certified organic soybeans in 1997. Organic soybeans accounted for 0.1 percent of total soybean acreage in the United States (Greene).

Certified organic dry peas and lentils were grown on nearly 5,200 acres in the United States in 1997. Mon-

tana and North Dakota led with over 1,500 acres each. Organic dry peas and lentils accounted for about 1 percent of the total dry pea and lentil acreage in the United States in 1997 (Greene).

Certified organic dry beans were grown on over 4,600 acres in 1997, and California had almost a quarter of those acres (Greene).

Certified organic oilseeds—including flax and sunflowers—were grown on 31,400 acres in 18 States in 1997. Certified organic sunflowers were grown on almost 11,000 acres, and flax was grown on over 8,000 acres. North Dakota was by far the biggest producer, with over 7,000 acres of flax and 4,500 acres of sunflowers. Certified organic flax represented almost 6 percent of total U.S. flax acreage in 1997, while organic sunflowers represented 0.4 percent of the total sunflower acreage (Greene).

Price premiums for organic grains and oilseeds for the time period between 1995 and 2000

	1995	1996	1997	1998	1999	2000	2001
	<i>Percent</i>						
Corn	35	43	73	88	98	89	59
Soybeans	114	85	141	202	217	175	177
Spring wheat	54	59	73	8	87	103	94
Oats	35	59	73	83	77	71	41

Note: The premiums are reported as the percent higher than prices for the conventionally produced equivalent. Source: Bertramsen and Dobbs, 2002.

Processed Organic Foods

Organic processed foods include frozen vegetables and entrees, pasta, canned vegetables, sauces in jars, and shelf-stable entrees. Specific products must be used to manufacture these foods—for example, pasta processors need to use a particular variety and grade of organic wheat, while frozen fruit and vegetable processors need organic produce of a specific size and quality. All processors want uniform quality, so they can offer products that consistently taste the same. Consequently, the biggest challenge facing organic manufacturers is how to secure a steady supply of organic ingredients of a consistent quality. Often, manufacturers will recruit new farmers, assisting them with converting from conventional to organic production. Retailers with private label organic products may also provide on-farm assistance to producers. The next biggest challenges are how to transport the processed goods to the supermarket and how to secure shelf space.

There are two basic marketing channels for processed foods. In both cases, farmers first produce raw commodities. In the first case, these commodities are then sent to the manufacturer, who converts them into a processed product. A distributor acts as a middleman, moving processed products from manufacturers to retailers. In the second scenario, a middleman (shipper) procures raw commodities from farmers and delivers them to manufacturers. After creating the processed good, the manufacturer moves the products through to retailers. The middleman secures the quantities needed; he or she also ensures that the commodities are high quality and meet the manufacturer's organic standards.

Processed products marketing chain

Farm – manufacturer – wholesaler – retailer

Farm – shipper/procurer – manufacturer – wholesaler – retailer

Average price premiums for organic frozen vegetables, 1991-1996

Frozen broccoli	72 percent
Frozen sweet corn	25.8 percent
Frozen green peas	109.7 percent
Frozen green beans	75.7 percent

Note: The premiums are reported as the percent higher than prices for the conventional equivalent. Source: Glaser and Thompson, 1999.

Credit: Comstock Images.

What are organic processed products?

A certified organic processed product, such as pasta or frozen pizza, is first prepared using at least 95 percent organic ingredients. Conventionally grown ingredients may be used only when an organic ingredient is not commercially available. For products that contain 70 to 95 percent organic ingredients, processors may label the organic ingredients on the package.

Organic and conventionally grown ingredients must be kept separate, and the organic ingredients must be stored in containers that do not compromise the organic nature of the food. Both organic and conventional ingredients must not be treated with ionizing radiation, excluded methods, and synthetic solvents.

Select manufactured organic food sales by venue

Store	Entrees	Desserts	Frozen foods	Canned & jarred*	Pasta	Cereal	Oils	Soy
<i>Percent</i>								
Health/natural foods stores	42	82	47	68	59	64	75	21
Conventional stores	55	10	47	30	41	31	11	77

*The category includes soups, canned fruits and vegetables, and baby food.

Note: The percentages do not sum to 100 because manufacturers sell in other venues, such as food service and club stores, which are not listed.

Source: OTA 2001 Manufacturers' Survey; for products that contain at least 50 percent organic ingredients.

Where are organic manufactured foods sold?

In 2001, 45 percent of organic manufactured products were sold in conventional grocery stores compared with 31 percent in 1998 (OTA Manufacturers' Survey, 2001).

In 2000, 51.3 percent of frozen organic entrees, pizza, and convenience foods were sold in conventional supermarkets, which increased to 53.1 percent in 2001 (NFM, 2002, 2001).

The dollar amount of frozen organic entrees, pizza, and convenience foods sold in conventional stores, in the 12-month period ending June 2001, was \$74 million (Spins, as quoted in *Organic and Natural Business News*). The dollar amount sold in all venues in 2001 totaled \$152 million (NFM, 2002).



Credit: PhotoDisc.

Organic packaged grocery sales in natural products stores totaled \$652 million in 2000 and increased to \$1.6 billion in 2001. Organic frozen/refrigerated product sales totaled \$333 million in 2000 and increased to \$823 million in 2001 (NFM, 2001).

In 2001, 49 percent of manufactured organic foods were sold in health and natural foods stores, and 45 percent in conventional grocery channels.

In 1998, 62 percent of manufactured organic foods were sold in health and natural foods stores; 31 percent through conventional grocery channels (OTA, 1998).

Organic processed foods market facts:

Frozen organic fruit and vegetable sales as a share of total U.S. frozen fruit and vegetable sales: 1.34 percent.

Canned organic fruit as share of total U.S. canned fruit: 0.63 percent.

Canned organic vegetables as share of total U.S. canned vegetables: 0.43 percent. Source: *Nutrition Business Journal*

In 2000, frozen prepared foods were among the fastest growing processed foods categories.

Packaged groceries accounted for 15 percent of total organic sales.

Frozen foods accounted for 8 percent of organic sales. Source: Packaged Facts

Sales of four types of frozen organic vegetables (corn, broccoli, peas, and green beans) increased by 58 percent per year between 1991 and 1996 (Glaser and Thompson, 1999).

In the first half of 2000, more than 800 organic new processed products were introduced; the number of dessert items increased the most (Meyers and Rorie).

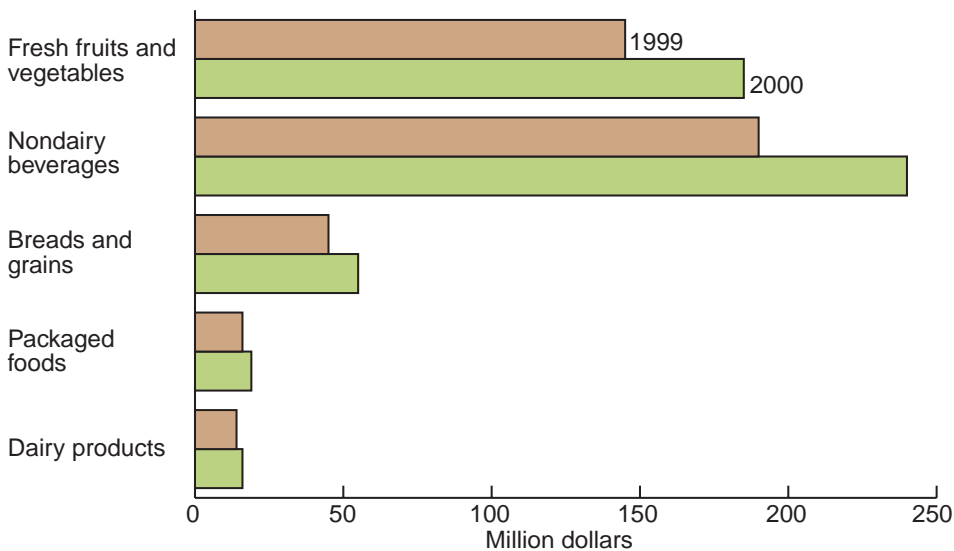
Organic baby food

In 2000, 73.9 percent of organic baby food was sold in conventional supermarkets, and 21 percent was sold in natural foods stores (NFM, 2001). In the 12-month period ending June 2001, sales of organic baby food in conventional supermarkets totaled \$50.6 million.

Organic baby food sales comprised 4.5 percent of all baby food sales in 1999. (NBJ, 2001).

Price premiums for organic baby food sold in conventional supermarkets ranged from 35 to 53 percent in 1999 (Thompson and Glaser, 2001).

Figure 4—Sales of select processed organic foods



Source: *Nutrition Business Journal*.

Organic Dairy Products

Organic dairy products, as defined by the USDA, are made from the milk of animals raised under organic management. The cows are raised in a herd separate from conventional dairy cows. The animals are not given growth hormones or antibiotics. The animals 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 stage of production, the climate, and the environment.

To convert from conventional to organic production, the cows must be fed a diet consisting of at least 80 percent organic feed for 9 months and then 100 percent organic feed for 3 additional months, or must be grazed on land that is managed under a certified organic plan. Otherwise, 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 must also be certified. The processor is required to keep organic and nonorganic products separated, and must prevent organic products from contact with prohibited substances. Nonorganically produced ingredients may be used when processing an organic product if there is no organic equivalent. Volatile synthetic solvents and other synthetic processing aids are prohibited.



Photo courtesy of Organic Valley Family™ of Farms, 2002.

Organic manufacturers' 2001 sales of dairy products were distributed as follows:

Health and natural food stores: 65% cheese, 50% yogurt, butter, cheese, sour cream and kefir; 33% milk and cream

Conventional supermarkets: 33% cheese; 47% yogurt, butter, cheese, sour cream and kefir; 65% milk and cream.

Source: OTA's 2001 Manufacturers' Survey.

Sales of organic dairy products, in millions of dollars

	1999	2000
Milk, cheese, butter, eggs, yogurt	394	480
Frozen dairy, ice cream	85	106
Canned milk	2	2

Marketing Channels

Milk (from one or several farms) – on-farm dairy (pasteurize and bottle) – regional distributors

Milk (from one or several farms) – off-farm dairy (pasteurize and bottle) – regional distributors

Milk (from one or several farms) – off-farm processors of cheese, butter, yogurt, or dry milk – distribute regionally and nationally

Milk (from several farms) – dairy (pasteurize and bottle, or process into cheese or ice cream, for example) – distribute nationwide through a marketing cooperative (under a brand name), mainly through private distribution networks, sometimes with a regional label.

Milk produced under contract (from several farms) – dairy (pasteurize and bottle, or process into cheese or ice cream, for example) – distribute nationwide under a brand name, mainly through private distribution networks

Milk Market Facts:

Organic milk first appeared in conventional supermarkets in 1993; 8 conventional supermarkets sold organic milk in December 1996 (Glaser and Thompson, 2000)

Organic milk, half and half, and cream sales in conventional markets:

1996: \$15.8 million; (Glaser and Thompson, 2000)
 1997: \$30.7 million (NFM).
 1998: \$46.0 million (Glaser and Thompson, 2000)
 1999: \$75.7 million (NFM)
 2000: \$104 million (NFM)

Organic milk, cream, half and half sales in natural products supermarkets:

1999: \$40 million (NFM)
 2000: \$55 million (NFM)

Price premium for organic milk over branded or private label conventional products was in the range of 50 – 72 percent between 1996 and 1999 (Glaser and Thompson, 2000).

The price premium for organic milk ranged from 47 percent to 76 percent in the Twin Cities region of Minnesota between 1995 and 1997 (Dobbs et al.).

The price premium for organic cheese ranged from 124 percent (1995) to 28 percent (1997) in the Twin Cities region of Minnesota (Dobbs et al.).

Organic dairy products (milk, butter, cheese, eggs, yogurt) comprised 0.9 percent of total U.S. dairy sales in 2000 (*Nutrition Business Journal*).

In 1997, there were 12,897 certified organic dairy cows. New York was the top producer (3,386 dairy cows), followed by Wisconsin (2,509) and Minnesota (2,425). Pennsylvania, California, and Maine also had over 1,000 organic dairy cows each (Greene).

The number of certified organic milk cows nearly tripled between 1992 and 1994 and more than doubled between 1994 and 1997 (Greene).



Photo courtesy of Organic Valley Family™ of Farms, 2002.

Share of dairy product sales in natural foods supermarkets and conventional grocery stores

In conventional supermarkets, milk, half & half, and cream is the second leading category of organic food sales, with sales equal to \$119,315,772 in the 12-month period ending June 2001*

Product	1999		2000		2001	
	Natural	Conventional	Natural	Conventional	Natural	Conventional
	<i>Percent</i>					
Milk, half and half, cream	35.1	64.6	34.6	65.3	30.53	69.25
Cheese and cheese alternatives	85.4	14.6	46.3	51.7	43.71	55.97
Yogurt and kefir	56.8	43.2	52.4	47.4	43.17	56.70

*SPINS, as quoted in *Organic and Natural News*, 2001.
 Source: *Natural Foods Merchandiser*, 2000, 2001, and 2002.

Organic Meat, Poultry, and Eggs

Producing organic beef has three phases. The first is cow-calf, which is the period from birth to weaning, when the calf weighs approximately 500 pounds. The second phase is backgrounding, or the period between weaning and the time the calf weighs 900 pounds. The finishing phase, done in a feedlot for conventionally produced beef, is a 3-month period prior to slaughter, by which time the calf weighs between 800 and 1,200 pounds. During the cow-calf and backgrounding phases, the animals must be fed organically grown pasture and hay; some farmers choose to add organically grown grain to the cattle's diet during the last months prior to slaughter.

Organic farmers must maintain organic pasture for the cattle to graze on throughout all three production stages (thus, the term "grass-fed"). The farmer may produce the supplemental feed, such as grain or hay, may grow a portion and purchase some, or may purchase all the feed. Organic grass-fed beef production, from birth to slaughter, takes approximately 26 – 28 months.

Organic hog production begins with the gestating sow, right before giving birth (farrowing), building a cozy place to

birth her litter, where the sow and her litter will live for 1 week after birth. After nursing for 5 weeks, the pigs are weaned and then pastured. Pigs not raised on pasture may live in indoor or indoor/outdoor housing. Since hogs eat their bedding, it must be organically produced. Bedding materials might include small-grain straw, corn stalks, soybean straw, or grass hay (Gegner). Pasture-raised hogs eat grass, legumes, standing crops and other ground cover (Gegner). The farmer may produce the supplemental feed, such as grain or hay, may grow a portion and purchase some, or may purchase all the feed. The hogs reach market weight (240 – 260 pounds) in 6 to 6.5 months from birth.

Organic poultry (chicken and turkey) are raised organically, beginning from at least the second day of life. Some farmers purchase chicks from a certified organic hatchery while others begin raising the chicks organically when they arrive on the farm. The birds eat organically produced grain, and are market weight in 70 to 81 days. The farmer may produce the supplemental feed, such as grain or hay, may grow a portion and purchase some, or may purchase all the feed.



Credit: USDA.

Organic Pork & Poultry Marketing Channels

National distribution:

Farm – cooperative (also processes) – retailer

Farm – processor – distributor – retailer

Local distribution

Farm – consumer pickup on farm

Farm – consumer via farmers market

Farm – consumer via internet sales



Photo courtesy of Organic Valley Family™ of Farms, 2002.

Organic Beef Production and Marketing Channels

Nationwide Distribution

Cow/calf farm – pasture farm – cooperative (also processes) – retailer

Cow/calf & pasture farm – cooperative (also processes) – retailer

Cow/calf farm – pasture farm – farm – processor – distributor – retailer

Cow/calf & pasture farm – farm – processor – distributor – retailer

Local distribution:

Cow/calf farm – pasture farm – consumer

Cow/calf & pasture farm – consumer

Nationwide distribution often relies on a brand name or marketing cooperative. Several small, often family-run, farms raise livestock or poultry organically, which are processed by the cooperative or firm holding the brand name. The meat products are distributed to retailers by the cooperative or a distribution firm.

Organic livestock, poultry, and egg market facts:

Eleven percent of the meat sold in natural products stores in 2000 was organic (NFM).

Sales of organic eggs in natural foods stores and conventional supermarkets totaled \$37.3 million in 1999, and \$42.3 million in 2000 (NFM, 2001). In 2000, consumers purchased 64.9 percent of all organic eggs in conventional supermarkets, 35 percent in natural foods stores, and 0.1 percent direct from the producer (NFM, 2001).

Organic meat comprised 3 percent of total organic sales in 2000 (Myers and Rorie).

According to the OTA Manufacturers' Survey, members reported that sales of meat and poultry products increased 151 percent between 1999 and 2000. Members also reported that 78 percent of organic meat was sold in natural foods stores and 15 percent was sold in conventional supermarkets (OTA 2001).

Certified organic livestock is well under 1 percent of total U.S. livestock. However, the number of dairy cows and layer hens produced under certified organic farming sys-

tems increased sharply during the 1990s, and the market for organic meat products is expected to grow now that organic labeling is permitted (Greene).

Farmers and ranchers raised certified organic cows, pigs, and sheep in 23 States in 1997 (table 15). Dairy cows led, with 12,897 animals certified organic in 1997. New York was the top producer (3,386 dairy cows), followed by Wisconsin (2,509) and Minnesota (2,425). Pennsylvania, California, and Maine also had over 1,000 organic dairy cows each (Greene).

Thirteen States contained 4,429 certified organic beef cows in 1997, and almost 40 percent of which were in Michigan. Only 482 hogs and pigs were certified organic in 1997 (Greene).

The United States had 537,826 certified organic layer hens in 1997, along with 38,285 organic broiler hens, 750 turkeys, and 221,389 unclassified organic poultry animals. California was the leader in organic poultry production, with 350,000 organic birds, followed by New York (161,304) and Pennsylvania (66,300 birds) (Greene).



Photos courtesy of Organic Valley Family™ of Farms, 2002.

What are organic meat, poultry, and eggs?

Organic meat, poultry, and eggs, as defined by USDA, 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 was a risk to soil or water quality.

Livestock intended for meat products must be raised organically from the last third of gestation. Livestock used as breeder stock can be brought from a conventional operation provided that the ani-

mal is raised organically for the last third of gestation, and the offspring is raised organically from birth.

Poultry and layer hens must be under continuous organic management from the second day of life (most producers start raising poultry from day-old chicks). The recommended method of farming is for poultry to have access to the outdoors during the months when it is feasible. In order to become certified, the producer must demonstrate how access to the outdoors will be encouraged and maximized.

Organically produced feed grain is created in certified organic mills. Cows, hogs, and poultry are processed in certified organic plants.

Organic Fibers

Several types of fiber are organically produced, including cotton, rayon, and linen. Certified organic cotton was produced in 4 States—Texas, New Mexico, Missouri, and California—on 9,974 acres in 1997. Texas had over three-fourths of the U.S. organic cotton acreage in 1997, much of it operated by an organic cotton marketing cooperative that formed in the early 1990s and is still active. Certified organic cotton acreage in 1997 was 70 percent lower than in 1995, and accounted for only 0.1 percent of U.S. cotton acreage. Currently, the organic cotton market is more developed than markets for other organic fibers.

Several major clothing companies tested organic cotton clothing lines without commercial success in the mid-1990s. These companies have now switched to a new approach—blending organic with conventional cotton—to help stabilize the market and encourage organic production (Bunin, 2000).



Credit: Digital Stock

What are organic fibers?

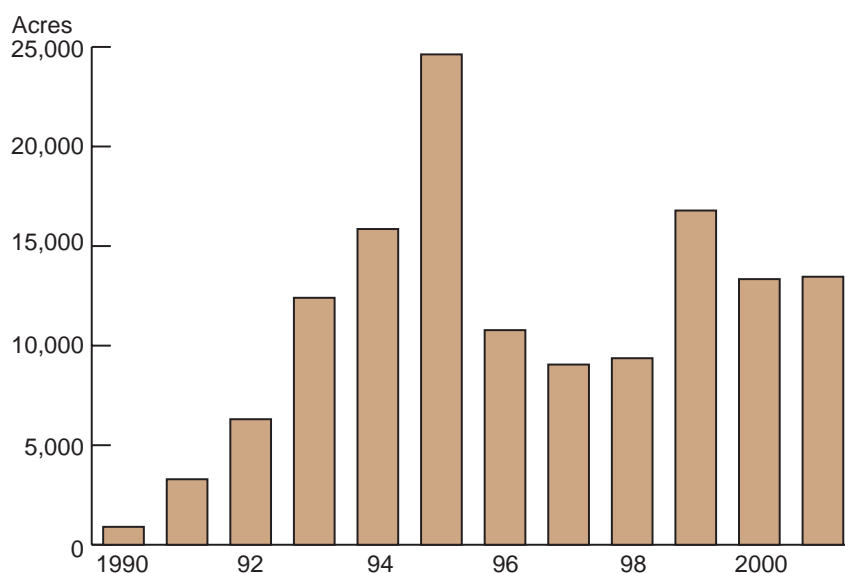
Organic fiber production relies on ecologically based practices, such as biological pest management and composting, and crops are produced on land that has had no prohibited substances applied to it for at least 3 years prior to harvest. Soil fertility and crop nutrients are managed through tillage and 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.

Acres of certified organic and transitional land and production by State

	1997	2001	2000 production
	<i>Acres</i>	<i>Acres</i>	<i>Bales</i>
Texas	8,134	8,338	3,128
Arizona	0	1,303	2,122
California	756	828	1,630
New Mexico	512	470	1,146
Missouri	572	400	510
Kansas	0	70	5
Tennessee	0	50	0

Source: 1997, Greene; 2000 and 2001, Organic Trade Association.

Figure 5—Organic cotton acreage, 1990 to 2001



Source: Organic Trade Association.

Organic Herbs and Flowers

Most organic herbs and flowers (excluding those used as an intermediate good) are sold locally and direct to the consumer, through internet sales, CSAs, or farmers markets. Natural products supermarkets throughout the United States sell organic herbs (most of which are grown locally). Natural products supermarkets in the Pacific Northwest have just begun selling organic flowers.

What are organic herbs and flowers?

Organic herb and flower 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.



Credit: USDA.

Marketing chain for organic herbs and flowers

For herbs as a final product and flowers:

Producer – consumer

Producer – processor – wholesaler – retailer

For herbs used as an intermediate good:

Producer – processor – manufacturer

Organic herb and flower market facts:

Organic herbs are used for culinary purposes, dietary supplements, such as St. John's Wort, and for personal care products, such as body lotion. Those used for culinary reasons are either sold as spices to consumers or are sold in large quantities to manufacturers to use in manufacturing prepared foods (Frontier).

Certified organic herbs were cultivated on 6,407 acres in 1997, wild organic herbs were also harvested from an additional 83,388 uncultivated acres⁴ (Greene).

Producers grew certified organic herbs for culinary and medicinal uses in 32 States. California was the largest producer of cultivated organic herbs, with 1,062 acres, followed by Washington (846 acres) and Illinois (797 acres). Seven other States (Oregon, North Carolina, Florida, Missouri, Minnesota, Colorado, and Wisconsin) had over 200 acres of cultivated herbs. Hundreds of different types and varieties are being cultivated in these States (Greene).

Idaho had 52,000 acres of wildcrafted St. John's Wort, a popular medicinal herb, in 1997. Florida had 25,000 acres of certified organic saw palmetto berries (which have medicinal uses) and maypop (which have culinary and medicinal uses), indigo (which is used as a natural hair dye), polk (a wild salad green), and other crops. Oregon certified 6,000 acres of lake algae (which has medicinal uses) and St. John's Wort (Greene).

Certified organic cut flowers were produced in a dozen States on 288 acres in 1997. California was the largest producer with 145 acres (Greene).

⁴Wild crops are plants or portions of plants that are harvested from land that is not maintained under cultivation or other agricultural management.