

Organic Wheat Production in the United States: Expanding Markets and Supplies

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Abstract: Small markets for certified organic wheat and other grain crops began to emerge in the United States, Europe, and other countries during the 1990s. The range of organically-grown foods now includes cereals, pasta, flour, breakfast bars, bread, and other grain-based products. Organic wheat crops carry significant price premiums at the farm level, but pose substantial challenges to produce and move through the supply chain. The top organic wheat producing States in 1997 were Montana, with almost 32,000 certified acres and North Dakota (24,000 acres). The U.S. Department of Agriculture (USDA) recently finalized regulations on organic production and marketing that are expected to facilitate trade. However, the competition for international markets is likely to expand considerably, and U.S. organic grain exports may be increasingly difficult to maintain or expand in the coming decade without additional support measures.

Keywords: Wheat, identity-preservation, organic, organic certification, USDA organic rule, crop rotation, multifunctionality, exports.

Introduction

Organic agriculture was one of the fast-growing segments of U.S. agriculture during the 1990s, with total organic cropland doubling between 1992 and 1997 to approximately 850,000 acres. More recent estimates suggest this trend is continuing or accelerating (Greene, 2000a). While organic wheat and other grain crops are still only a small part of total U.S. production, interest is growing among farmers, input suppliers, food processors, and retailers and has been heightened by new USDA regulations that standardize requirements for organic production and marketing in the United States. Wheat and other crops grown under organic management are among the identity-preserved commodities that can carry significant price premiums at the farm level but pose substantial challenges to produce and move through the supply chain.

The range of organically-grown foods widened substantially during the 1990s to meet consumer demand, and now includes a variety of organic cereals, pasta, flour, breakfast bars, bread, and other grain-based products. Although natural food supermarkets are still the largest retail outlet for organically-grown foods, consumers purchased more than half of industry-wide sales of several organic product categories—including cold cereals, cookies, and snack bars—in conventional supermarkets in 1999.

The organic food processing industry includes manufacturers, millers, distributors, and exporters that specialize in handling organic commodities, as well as those that include organic products as only one segment of their operation. Eden Foods, for example, has been processing and retailing organic foods almost exclusively—including a line of organic pastas—since the late 1960s, and all of its plants, mills, and warehouses are certified organic. General Mills is one of the large, mainstream food companies that have entered the organic market in recent years, even though their products are mostly not made with organically-grown ingredients. General Mills began test marketing organic versions of its Gold Medal flour in Pacific Northwest supermarkets in 1998, and launched a major nationwide advertising campaign for its new wheat and corn organic cereal—Sunrise Cereal—in 1999.

State and private certifying programs have developed over the last several decades to define and enforce organic standards that meet consumer expectations. Over a quarter of a million people participated in USDA's organic rule-making process in the late 1990s, and final regulations were published in December 2000. By mid-2002, all except the smallest organic farmers and food processors will have to be certified by a State or private agency accredited under these national standards. These new regulations are expected to facilitate interstate and international trade in organically produced and processed crop and livestock products.

Organic product sales through all outlets in the United States have increased 20-25 percent annually between 1990 and

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2000, according to several industry sources, and reached \$7.8 billion in 2000. Organic food sales generally accounted for 1 to 2 percent of total food sales in the United States and other major markets for organic products (Japan, Denmark, France, Germany, the Netherlands, Sweden, Switzerland, and the United Kingdom). Annual growth rates are forecast at 20 percent or more for the next 5 to 10 years for most of these countries, according to the World Trade Organization/United Nations International Trade Centre. Demand is growing faster than supply in a number of these countries.

Exports account for under 5 percent of total U.S. organic sales, according to a recent study partially funded by USDA (Fuchshofen and Fuchshofen). The top markets for U.S. organic exports to Europe include the United Kingdom, with an export volume of more than \$30 million in 1999 and Germany (\$23 million in 1999). About a quarter of the U.S. export sales to the United Kingdom were for grains, including wheat, oats, barley, millet, and buckwheat. The export study indicates that demand for grains will rise in a number of European countries because bakery chains and supermarkets are increasing their sales of organic bread and baked goods. U.S. export volume to Japan was estimated at \$40 to \$60 million in 1999, and included wheat, durum wheat, and wheat flour exports.

Wheat Crops are Central in Organic Farming Systems

Certified organic crops were grown on over 850,000 acres in 1997, and pasture and rangeland were certified on almost 500,000 acres, according to a recent Economic Research Service (ERS) report (Greene, 2000b). Almost every State in the United States had some certified organic crop production in 1997, and organic wheat was grown on over 125,000 acres—more than any other organic crop—in over two

dozen States. The top organic wheat producing States in 1997 were Montana, with almost 32,000 certified acres, and North Dakota, with about 24,000 acres, followed by Utah, Colorado, and Kansas (fig B-1).

The ERS report that contains the most recent national statistics on organic acreage analyzed data from 40 organic certification organizations in the United States—12 State and 28 private—that conducted third party certification of organic production in 1997. The Organic Crop Improvement Association, headquartered in Hitterdal, Minnesota, and Farm Verified Organic, based in Medina, North Dakota, are two of the largest private certifiers in the Midwest and certify organic crops in dozens of States. Over a dozen States also run organic certification programs, including the Departments of Agriculture in Colorado, Idaho, Iowa, Oklahoma, Texas, and Washington.

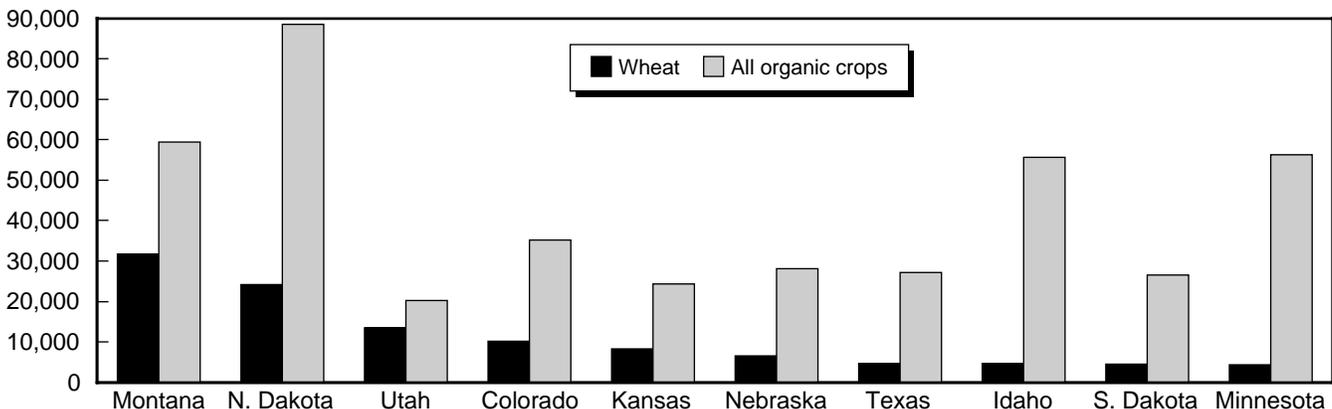
Certified organic wheat acreage was up 31 percent in 1997 from the private-sector estimates for 1995. Hard red spring wheat organic prices were at least 50 percent higher than U.S. cash and futures prices for conventionally-grown spring wheat during that period (Dobbs, 1999a). The number of organic farmers certified in the top organic wheat States was also up during this period and has continued to increase through 1999 (Organic Farming Research Foundation). The four chapters of the Organic Crop Improvement Association in Montana, for example, certified about 140 growers in 1999, up 60 percent from 1995. While both organic and conventional wheat prices are currently lower than they were in the mid-1990s, organic wheat crops are still garnering a premium.

Organic wheat farmers generally grow a diversity of crops because of the key role that crop rotation plays in controlling weeds and maintaining fertility in organic farming

Figure B-1

Top organic wheat States, 1997

Loss ratio



Source: Economic Research Service, USDA.

systems. Data from the organic certification agencies show that organic farmers are producing corn, soybeans, and other major grains and oilseeds, as well as crops such as spelt, millet, buckwheat, and rye that are not grown on a large scale in the United States. In North Dakota, organic rotations that include a green manure fallow every third, fourth, or fifth year are common, according to farm management and extension specialists in that State. The organic crop budgets published by North Dakota State University Extension Service (NDSU) do not include a specific rotation because growers use a lot of different rotations and their rotations continue to evolve over time as they experiment and use new techniques and adapt to changing market conditions (Swenson and Brummond). The crops covered by the NDSU organic crop budgets include spring wheat and durum, as well as feed barley, corn grain, oil and confectionery sunflowers, soybeans, oats, flax, field peas, millet, buckwheat, rye, and rotational green manure fallow (Swenson and Brummond).

While certified organic grain acreage was well under 1 percent of the U.S. total for corn, wheat, soybeans, and other major field crops, between 1 and 3 percent of the U.S. oats, millet, and rye crops were certified organic in 1997, and a majority of several specialty grains (spelt and buckwheat) were organic (table B-1). (Organic farming systems have been more widely adopted for U.S. horticultural crops, with about 2 percent of major fruit and vegetable crops under organic cultivation in 1997.)

The Rodale Institute Research Center in Kutztown, Pennsylvania, along with an increasing number of universities in the United States, are conducting farming system trials that compare organic rotations with conventional ones. Economic analysis of Rodale's 3-year organic rotation—

corn, soybeans, and wheat with two winter cover crops—suggests that per-acre returns can be competitive with and sometimes greater than for conventional grain rotations (Hanson, Lichtenberg, and Peters). However, the organic rotation required 20 to 42 percent more family labor at different points during the time period analyzed, 1982-1995, which is comparable with similar trial results in Prairie/Plains States. A recent review of the research on the economics of Midwestern organic grain and soybean production during the last several decades found that about half of the organic systems were 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). The University of California recently finished the last season of its third 4-year organic crop rotation—processing tomatoes, safflower, corn, and a wheat-dry bean double crop—in its 28-acre farming system trial comparing conventional and organic management. Economic analysis suggests that the organic rotations were more profitable than 2-year or 4-year conventional rotations, but that price premiums were key in maintaining their higher profitability (Clark *et al.*).

Organic grain buyers are located in dozens of States in the United States and in many other countries, according to various directories for the organic farming industry, and some States maintain a list of regional buyers. The Organic Trade Association, a business association that represents the organic industry in North America, listed over 70 import/export businesses in their 1999 industry directory. A number of companies have emerged in the United States to link organic grain farmers with food processors and other end users. Some of these companies own and operate specialty elevators, warehouses, transportation facilities, and conditioning equipment in numerous States and may service

Table B-1--Certified organic acreage for selected grain, legume, and oilseed crops, 1995-97

	Total certified organic		Change 1997/95	U.S. cropland 1997 2/	Certified organic/ Total
	1997	1995 1/			
	-----Acres-----		Percent	Acres	Percent
Grains					
Wheat	125,687	96,100	31	58,836,344	0.2
Corn	42,703	32,650	31	69,796,716	0.1
Barley	29,829	17,150	74	5,944,951	0.5
Oats	29,748	13,250	125	2,680,958	1.1
Millet	12,285	18,550	-34	358,885	3.4
Rice	11,043	8,400	31	3,122,120	0.4
Buckwheat	7,616	13,250	-43	25,299	30.1
Rye	4,365	2,900	51	268,452	1.6
Spelt	1,704	12,350	-86	4,648	36.7
Beans:					
Soybeans	82,143	47,200	74	66,147,726	0.1
Dry peas & lentils	5,187	5,900	-12	495,308	1.0
Dry beans	4,641	--	--	1,691,899	0.3
Oilseeds:					
Sunflowers	10,894	14,200	-23	2,534,708	0.4
Flax	8,053	5,850	38	139,776	5.8

-- Not available. 1/ Agrisystems International. 2/ U.S. Census of Agriculture.

Source: Economic Research Service, USDA

organic growers in a dozen States or more. Organic grain production is often contracted prior to planting as a way to manage traceability and other qualities. One company based in Illinois, for example, offers contracts specifically for organic wheat, corn, soybean, black bean, buckwheat, sunflower, popcorn, spelt, and milo crops under organic certification. According to North Dakota farm management specialists, contracts for organic crops 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 (Swenson and Brummond). Some organic farmers produce and market their product through cooperatives, and a few of the cooperatives that have entered the organic market over the last several decades focus on marketing grains and soybeans to domestic and international markets.

Organic certification organizations require growers to keep detailed records of their input use and other farm activities and to have on-farm inspections. In contrast, other grain crops with value-added attributes, such as high-oil corn and food-grade soybeans, do not require as close monitoring of farm production because tests can quickly and inexpensively confirm the enhanced qualities of these products (Hoffman, Chambers, and Pho). The fees charged by State and private certifiers for providing organic certification services, which may include membership fees, inspection fees, pesticide residue testing fees, and others, represent an ongoing added production expense in certified organic farming systems. Also, most of the State and private certifiers require a 3-year transition (conversion) period before certifying crop acreage and livestock (USDA's new uniform standard requires a 3-year transition period), and farmers cannot obtain certified organic price premiums during this period.

Obstacles to adoption in the United States may include large managerial costs and risks of shifting to a new way of farming, limited awareness of organic farming systems, lack of marketing and technical infrastructure, and inability to capture marketing economies (Dobbs *et al.*, 1999b; Lohr and Salomonsson). State and private certifier fees for inspections, pesticide residue testing, and other services represent an added production expense for organic producers. Furthermore, farmers cannot command certified organic price premiums during the 3-year conversion period required before crops can be certified as organic, although some companies may contract crops in transition.

National Organic Standards Set In December 2000

Congress passed the Organic Foods Production Act of 1990 in order to establish consistent national standards for organically-produced commodities. The final regulations were published late last year and the USDA has initiated an 18-month transition period for affected growers, processors,

and certifiers to come into compliance.² These regulations require that all organic growers and handlers (including food processors) will have to be certified by a State or private agency accredited under the uniform standards developed by USDA, unless they sell \$5,000 or less per year in organic agricultural products. Most of the State and private certifiers that currently certify growers are expected to apply for accreditation under the national certification program.

In USDA's final rule, organic production is defined as, "A production system that is managed in accordance with the 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."

The national organic standards address the practices and substances used in producing and handling crops, livestock, and processed agricultural products. 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. Organic grain producers must comply with management requirements for the land they use and adhere to practice standards for soil fertility, seed selection, crop rotation, and pest, weed, and disease management. All producers and handlers must comply with recordkeeping requirements to prevent commingling of organic and nonorganic products. The standards include a national list of approved synthetic, and prohibited nonsynthetic, substances for use in organic production and handling. Organically-produced food cannot be produced using genetic engineering and other excluded methods, sewage sludge, or ionizing radiation.

The USDA regulations also contain requirements for organic food labeling which apply to raw, fresh products, and processed foods that contain organic ingredients, and are based on the percentage of organic ingredients in a product. Food 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. 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 can be levied on any person who knowingly sells or labels as organic a product that is not produced and handled in accordance with the regulations.

² USDA is currently implementing these organic regulations, and all agricultural products that are sold, labeled, or represented as organic must be in compliance with them after the 18-month transition period is completed in late 2002. For further information, visit USDA's Agricultural Marketing Service/National Organic Program (NOP) website at www.ams.usda.gov/nop/, or contact NOP staff at (202) 720-3252.

One Regional Effort To Expand Markets and Supplies

Several public and private regional projects were undertaken in the 1990s to examine the obstacles to increased organic production and work on ways to expand the availability of organically-produced food at the regional level. One of these projects, the Upper Midwest Organic Marketing Project (UMOMP), contributed to the strengthening of the markets for organic wheat and other foodgrains in the United States during this period. The project, funded primarily by The Pew Charitable Trusts, was implemented by the Midwest Organic Alliance and aimed to expand both the demand for and the regional supply of organic grains, edible beans, and dairy products in Minnesota, Wisconsin, Iowa, and the Dakotas. The Alliance developed production and marketing strategies during 1995—including a training program for grocery employees, an organic farming curriculum, and an organic meat-marketing infrastructure for its five-State region—and carried out these strategies in 1996 and 1997 (Dobbs, *et al.*, 1999). Consumer demand efforts were focused on the Twin Cities of Minneapolis and St. Paul. The Twin Cities already had a fairly strong network of natural food retail cooperatives, but the involvement of most mainstream grocery stores in promotion and sale of organic foods was quite modest prior to initiation of the UMOMP. The Alliance also evaluated changes in organic prices and sales volume of organic products marketed in the Twin Cities market during this period, and identified obstacles to expanding organic production in the Upper Midwest.

The Alliance collected data to compare retail prices of selected organic and comparable non-organic products in the Twin Cities market at the beginning of the project in mid-1995, and twice each year in 1996 and 1997. Three wheat-based products—bread, whole wheat flour, and pasta—were included in the sample data. All three organic wheat-based products received premiums during most of the study period, ranging from 0 to 26 percent for the pasta to 21 to 63 percent for the whole wheat flour.

Sales of other organic products also increased during this time period, based on data from A.C. Nielsen, which tracked sales volume of selected organic products to mainstream supermarkets. Sales volume in the Twin Cities market for the top 12 organic product brands increased 20 percent from 1995 to 1996 and 34 percent from 1996 to 1997. The Midwest Organic Alliance also obtained sales volume data from a local distributor which showed their sales of top organic food brands to natural food cooperatives in the Twin Cities area were up 30 percent from 1995 to 1996 and another 13 percent from 1996 to 1997.

One concern prior to initiation of the project was whether there would be adequate first-stage or intermediate products (e.g., flour) processing capacity within the five-State region for organic grains and edible beans. Therefore, organic

processing volumes at six key plants were monitored. Wheat was the principal organic commodity processed at four of those plants, but oats, barley, millet, rye, and flax also were processed at some of them. Project evaluators interviewed the managers of these six plants and observed operations at some of them. The Midwest Organic Alliance and project evaluators concluded that processing capacity was not—at least as of 1996 and 1997—a constraint to growth in the Upper Midwest organic food industry. A number of the plants processed both conventional and organic grains and edible beans. As organic demands expand, they either add more shifts or process less conventional product to make room for more organic product. Several plants appeared to have the capacity to do more of either or both before they would need to invest in more physical plants. However, the techniques used by processors to prevent commingling of organic and nonorganic products are costly. Also, the more a plant can concentrate on organic processing, the more efficient it is likely to be, by shutting down to convert less often and by more regular scheduling of its organic runs. As demand for organic grains and edible beans continues to grow, both conversions and investments in new plant capacity are likely. Organic processors seemed attuned to industry trends and had potential expansion plans ready. However, there were some capacity problems during this period. Organic manufacturers sometimes had to wait longer than they would have liked for their processing to be worked into schedules. Also, processing capacity seemed to be inadequate for some specialty crops.

Some of the lessons learned from this regional project to expand organic food markets and supplies in the Upper Midwest have special significance for wheat and other food grains at this stage of the U.S. organic farm and food system's development (Dobbs, *et al.*, 2000):

- For mainstream grocery stores to commit to promotion of organics, assurance of adequate and consistent supplies of organic products is necessary. This requires coordination of brokers, distributors, and some national suppliers.
- Although this regional project appeared to have had definite impacts in the short span of a couple of years, consumer education about organic food and agriculture is a long-term process. Public and private sector institutions need to develop funding sources and mechanisms for ongoing educational and awareness efforts.
- Industrialization of agriculture issues that confront conventional farmers also are of great concern to organic stakeholders. The need to diversify (versus the need to specialize), as well as the desire to maintain a 'family farm' structure, may conflict with forces pushing farmers to integrate processing and distribution segments of the food chain. Processor needs for steady, consistent supplies of quality organic products could lead to more vertical integration and contract growing.

■ To balance bargaining power, farmers who are beginning organic production may wish to operate through marketing cooperatives. However, formation of a 'new generation of cooperatives' also entails challenges. Cooperatives must have sufficient capitalization and volume of product committed before launching formal marketing and processing activities. Excessive emphasis on short-term profits can be risky; and developing and honoring long-term relationships may be more important than seeking the highest available prices. Also, organic cooperatives may want to cultivate long-term domestic markets along with their export markets to reduce the risk inherent in the export markets. Burgeoning cooperatives might also consider developing a niche role that serves members' needs and seeks to complement existing firms that are already important to the organic industry.

A public/private research partnership was recently funded by USDA to work at the national level on objectives that are similar to those of the Upper Midwest Organic Marketing Project, to revitalize small and mid-sized farms through organic research, education, and extension. The partnership includes four universities—the Ohio State University, North Carolina State University, Iowa State University, and Tufts University—and the nonprofit Organic Farming Research Foundation, headquartered in Santa Cruz, California.

Policy and Export Issues

Governmental efforts in the United States to facilitate organic production have focused primarily on developing national certification standards, although USDA has recently begun several small organic programs, including export promotion, farming systems trials, and weed management research. Also, the Agricultural Risk Protection Act, enacted in June 2000, states that crop insurance products cover "good farming practices, including scientifically sound sustainable and organic farming practices," and USDA is examining risk management products offered through Federal crop insurance that would better meet the needs of organic producers. USDA has also started a pilot program in 15 States to provide financial assistance for certification costs (U.S. Department of Agriculture, 2000). Several States also offer some support for organic conversion. Iowa offers organic farmers \$50 per acre, up to a maximum 40 acres, to experiment with organic production for a 3-year period under USDA's Environmental Quality Indicators Program (EQIP), and Minnesota provides payments for organic certification costs.

U.S. support for organic farming is still very small compared with Europe, where most countries have been providing substantial financial support for organic conversion since the late 1980s. The European Union (EU) had about 1.5 percent of its cropland and pasture under organic management in 1997, compared with only 0.1 percent in the

United States. The EU currently has 145,000 farms and 10 million acres—3 percent of the total agricultural land area in the EU—either in conversion or under full organic management (Organic Centre Wales). The basis for the organic support policy in Europe is the multifunctionality view of agriculture, in which agriculture produces not only food but also environmental and social goods. Organic agriculture is considered by many researchers and policymakers in Europe to be quite effective in providing some of these environmental and social goods.

Organic grain and soybean farmers in the United States fared well in the growing international export markets during the late-1990s. Although consumer demand for organic foods in the major organic export markets in Western Europe and Japan is expected to continue growing at a fast pace, the competition for those markets is likely to increase considerably. U.S. organic grain and soybean exports may be increasingly difficult to maintain or expand in the coming decade without additional support measures for organic farming in the United States (Dobbs and Pretty, 2000b). Organic supplies from within the existing EU are likely to expand substantially, for one thing. Lower and "decoupled" Common Agricultural Policy farm support, in combination with higher and broadened supports for organic production in EU countries, could result in a major expansion of organically-farmed land in EU countries over the next decade. Also, some east and central European countries could become major, low-cost suppliers of organic products. As those countries begin to acquire EU membership, they will provide even more competition for U.S. organic exports.

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