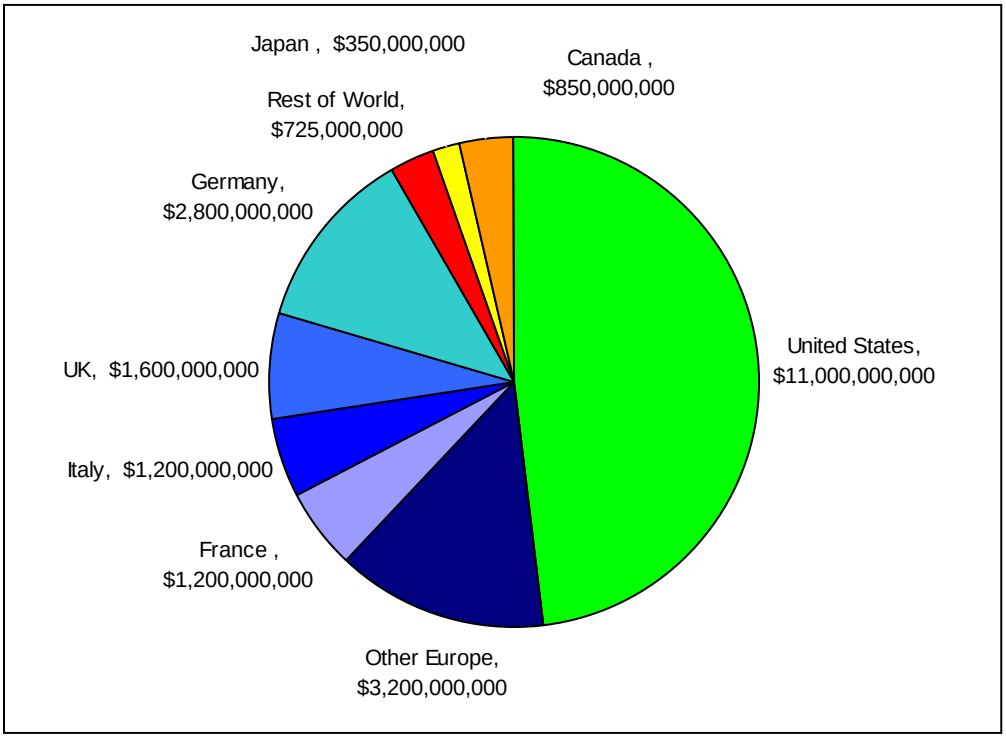
Science-Based Organic Farming 2008:
Toward Local and Secure Food Systems

Economics of Organic Agriculture

Organic farming is one of the fastest growing segments of U.S. agriculture. Growth in retail sales has equaled 20% or more annually since 1990, pushing global sales to an estimated $23 billion in 2002. Organic consumption in the United States accounts for roughly $11 billion of total global sales (See Figure 1).

Figure 1. Global Sales of Organic Foods, Circa 2002



Fresh produce accounts for 42% of total organic food sales in the United States. Nondairy beverages, breads and grains, packaged foods, and dairy are the other top-selling food categories (Dimitri and Green, 2002). Three main venues are used for the sale of organic food in the U.S. – natural food stores, conventional grocery stores, and direct-to-consumer markets. A small amount

of organic food produced in the U.S. is exported. The Marketing section of this handbook provides information about markets in Nebraska, focusing on direct sales and local organic grain buyers.

Transitioning to Organic Production

Producers transitioning to organic systems will likely experience a decline in yields during the first several years of conversion. However, once that conversion period ends, research shows that yields will rebound to levels approaching conventional levels. More importantly, premiums for organically produced crops and reduced production costs impact net return and profitability.

While more research is needed on the economics of transition, the long-term economic viability of established organic systems is quite positive. A 1999 Wallace Institute review of six midwestern land-grant university studies found:

- Organic grain and soybean production systems are "competitive with conventional production systems." In fact, with current market premiums, producers of organic grain and soybeans earn higher profits than conventional growers.

- Without a price premium for organic crops, half of organic systems were still more profitable than the conventional systems. Those systems less profitable than conventional quickly surpassed the conventional systems when organic premiums were figured in.

http://www.sare.org/publications/organic/organic07.htm

Organic Versus Conventional

A recent publication by the Economic Research Service (ERS, 2002) of the USDA entitled *Recent Growth Patterns in the U.S. Organic Foods Market*, sites several studies that compare the economics of organic and conventional farming systems. Several recent studies in the U.S. report that organic price premiums are key in giving organic farming systems comparable or higher whole-farm profits than conventional systems. Other studies indicate that organic systems are more profitable even without organic premiums because of lower input costs. A study of organic soybeans in the Midwest revealed that they were more profitable than conventionally-grown soybeans because of higher yields in dry areas and periods of drought and lower associated input costs. *Of particular interest is that NO studies have shown organic systems to be less profitable than conventional systems*.

As shown in Table 1 below, scientific studies across the U.S. have demonstrated the economic viability of organic cropping systems. Full citations for each study are given at the end of this section.

Table1. Yield and economic comparison studies of conventional and organic farming systems. Source: Delate et al., 2003

U.S. State	Year	Crops	Yields	Economics
South Dakota (Dobbs and Smolik, 1996)	1985-1992	Corn	No statistical difference between conventional and organic; Higher in organic in drought years	Cost of production (COP) similar to conventional; organic premiums were not calculated
South Dakota (Dobbs and Smolik, 1996)	1985-1992	Soybean	No statistical difference between conventional and organic	COP similar to conventional; organic premiums were not calculated
Pennsylvania (Hanson et al., 1997)	1981-1995	Soybean	No statistical difference between conventional and organic after 3 yr. rotation; higher in organic in drought years	COP 12% lower in organic across all rotations; organic premiums were not calculated
California (Clark et al., 1999)	1989-1996	Tomatoes	No statistical difference between conventional and organic	COP 5% higher in organic, but with organic premiums, superior economics with organic
New Jersey (Brumfield et al., 2000)	1991-1993	Tomatoes, pumpkin, sweet corn	Higher in conventional (statistics not shown)	COP higher in organic when previous crop costs (cover crops) and additional management over conventional (staking) included; net return per unit 5-16% higher in organic with organic premiums

Research at the Neely-Kinyon Long-Term Agroecological Research site in Iowa was conducted to examine the agronomic and economic performance of conventional and organic systems. Economic analyses from three years of production (1999-2001) indicate that both corn and soybean returns within the organic corn-soybean-oat and corn-soybean-oat-alfalfa rotations are significantly greater than returns in the conventional corn-soybean rotation. Table 2 shows the returns per acre for all crops within the three rotations. Both organic premium prices and government loan payments are included in the analysis to reflect the economic reality for Iowa's farmers.

Table 2. Returns to land, labor, and management ($/a), by crop and rotation, 1999-2001. Source: Delate et al., 2003.

Rotation	Corn	Soybean	Oat	Alfalfa	Average
C-SB (conventional)	$51	$95			$73
C-SB-O (organic)	$264	$470	$125		$286
C-SB-O-A (organic)	$272	$505	$112	$272	$290

C = corn, SB = soybean, O = oat, A = alfalfa

Price Premiums for Organic Grains, Oilseeds, and Legumes

The above comparisons of organic and conventional systems show that even though fresh produce tops organic food sales, grain and soybean farmers can also benefit from organic agriculture. 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 include traditional grains and oilseeds such as corn, soybeans, wheat, barley, oats, and rice, as well as nontraditional crops such as millet, buckwheat, rye, and spelt. Many of these crops can be contracted prior to planting.

Table 3 shows the price premiums for organic grains and oilseed for the time period between 1995 and 2000. Premiums are reported as the percent higher than prices for the conventionally produced equivalent.

Table 3. Price premiums for organic grains and oilseed: 1995-2001 [% above conventional crop prices]. Source: Bertramsen and Dobbs, 2002

	1995	1996	1997	1998	1999	2000	2001
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

What about GMOs?

Most Nebraska farmers currently use several types of GMO seed, the most common being Round-up Ready© soybeans, Round-up Ready© corn or *Bt* corn. Reduced herbicide and insecticide costs are often cited as primary reasons for the use of these technologies. Because GMOs are not allowed in organic production, farmers may be skeptical about the profitability of farming corn and soybeans organically. A study done by Michael Duffy at Iowa State University reveals that Iowa corn and soybean farmers are not benefiting economically from the use of GMO crops. In fact, Duffy states that, “Today the primary benefactors of biotechnology are the seed companies and chemical

companies." Table 4 shows some of the costs of production and returns to labor and management based on 2000 crop price averages.

Table 4. Comparison of returns to Iowa farmers for GMO and Non-GMO crops for the 2000 crop year. Source: Duffy, 2001.

	Soybeans			**Corn**	
	Herbicide-Tolerant	**Non-Herb. Tolerant**		**Bt**	**Non-Bt**
# of Fields	108	64	# of Fields	46	128
Yield	43.4 b/a	45.0 b/a	Yield	152 b/a	149 b/a
Seed Costs	$25.56/a	$21.21/a	Seed Costs	$33.05/a	$28.74/a
Herbicide Costs	$19.96/a	$26.15/a	Fertilizer Costs	$53.30/a	$48.67/a
Total Weed Mgmt Costs	$27.14/a	$34.80/a	Total Non-land Costs	$207.25/a	$197.00/a
Return to Labor and Mgmt	-$8.87/a	-$0.02/a	Return to Labor and Mgmt	-$28.28/a	-$25.20/a

These results show that the use of GMO seed is not necessarily linked to increased profits. This fact is important for conventional corn and soybean farmers considering the economics of organic production.

Calculating Your Costs for Organic Production

For a farmer to calculate costs of production and returns for an organic system, one method is to start with the annual publication from Cooperative Extension on costs of production of field crops (EC-xxxx). We all know that each farm differs in actual costs of each operation, but this publication gives a general guide to costs and can be modified according to individual experience and personal circumstances. The method is to make a detailed cropping system budget of the current crop rotation along with all associated costs. Then remove those costs that involve fertilizer and chemical materials and applications costs and add in cover crop seed and planting costs and additional cultivations or whatever else will change in the potential organic system. Most difficult will be calculating projected income, since prices fluctuate widely, and the best would be to talk to dealers to find out the most probable estimate of crop prices. Using projected yields from discussions with other organic farmers or from experience, it should be possible to project costs and returns for your farm. The Extension Circular with this information on costs of production is available from Cooperative Extension offices, or on the web:
Available:

References and Resources

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By Carolyn Dimitri and Catherine Green
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By Kathleen Delate, Michael Duffy, Craig Chase, Ann Holste, Heather Friedrich, and Noreen Wantate (2003)
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By Michael Duffy
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http://www.leopold.iastate.edu/pubs/speech/files/120501-who_benefits_from_biotechnology.pdf

Does Plating GMO Seed Boost Farmers' Profits?
By Michael Duffy and Matt Ernst
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http://www.leopold.iastate.edu/pubs/nwl/1999/1999-3-leoletter/99-3gmoduffy.htm

Got Organic? Natural Products Expo West Displays Growing Demand for All Things Natural
By Steve Hoffman
Article included at the end of this section.
http://www.greenmoneyjournal.com/article.mpl?newsletterid=29&articleid=312

Consolidation in Food and Agriculture: Implications for Farmers and Consumers
By Phil Howard (2003-2004 Winter)
CCOF (California Certified Organic Farmers) Magazine Vol. XXI(4): 2-6
Article included at the end of this section.
http://www.agribusinessaccountability.org/pdfs//264_Consolidation in Food and Ag.pdf

Useful Websites

Sustainable Agriculture Research and Education
This website has useful information about organic systems in general and the economics of organic agriculture specifically, including links to releveant resources.

http://www.sare.org/publications/organic/organic07.htm

Henry A. Wallace Institute
Although the study is dated, the study provides a good overview of the competitiveness of organic corn and soybean production with conventional systems.

http://v1.winrock.org/wallacecenter/documents/pspr13.pdf