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Organic Dairy Sector Evolves To Meet Changing Demand

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Organic milk production has been one of the fastest growing segments of U.S. organic agriculture. Between 2000 and 2005, the number of certified organic milk cows increased an average of 25 percent each year to more than 86,000 in 2005. The number of

farms specializing in organic milk production more than tripled between 2002 and 2007, to more than 1,600. Many of these are small dairy operations that have switched to the organic approach to help improve farm profitability.

Organic milk cows comprised only about 1 percent of all U.S. milk cows in 2005. USDA estimates that organic milk's share of U.S. fluid milk sales increased from 2 percent in 2006 to 3 percent in 2008. Rapid growth in the sector has recently slowed, however,

- Declining demand for organic products in response to the economic downturn has slowed the rapid growth in organic milk production.
- Economic forces, primarily lower production costs, may be pushing organic dairies to be more like conventional dairies in terms of size, location, and the types of technologies used.
- More specific pasture requirements for organic certification proposed under USDA's National Organic Program may affect how the organic milk production sector evolves.

as a weaker U.S. economy dampened demand for organic food products.

Certified organic milk production systems rely on standards that prohibit the use of antibiotics and hormones in the cow herd and the use of synthetic chemicals in

feed production. Certified organic milk production systems are also required to accommodate the animals' natural nutritional and behavioral requirements, ensuring, for example, that cows have access to pasture. These requirements add to

production costs and create challenges for widespread adoption of organic practices, such as higher managerial costs, risks of shifting to a new way of farming, and significant time and costs associated with the transition to organic production.

Conversion to Organic Brings Challenges

Organic milk producers usually begin as operators of conventional dairies, and the transition to certified organic production can be challenging and costly. The transition requires changes in animal husbandry and land and crop management. Producers must also use new and different inputs and complete a complex certification process. To become a certified organic dairy under current standards of USDA's National Organic Program (NOP), the pasture and cropland providing feed must be managed organically for a minimum of 36 months. Current standards also require dairy cows to be fed 100-percent organic feed and to receive organic health care for 12 months before a herd is certified as organic. In particular, the animals must not be given hormones, such as recombinant bovine somatotropin (rBST), or antibiotics. Grazing is required for all animals over 6 months old.

These requirements mean that producers must procure products and feeds that meet organic standards. Organic feeds

can be priced significantly higher than conventional feeds. The management approach must be adjusted on most farms changing to organic practices because many conventional inputs, such as antibiotics, can no longer be used.

The time-consuming organic certification process requires farmers to develop an organic systems plan describing production practices and inputs. Detailed production records are required for 5 years after certification in order to document the farm's compliance with the regulations. Producers must provide USDA and its certifying agents access to the records.

Organic Milk Is More Costly To Produce

Organic milk production costs exceed conventional costs mostly because of higher feed costs and more intensive use of labor and capital per hundredweight (cwt) of milk produced. Organic operating costs were an estimated \$4.78 per cwt higher than that of conventional dairies in 2005. Estimated operating and capital costs for organic dairies, including costs incurred

during transition, were \$6.37 per cwt higher than for conventional operations.

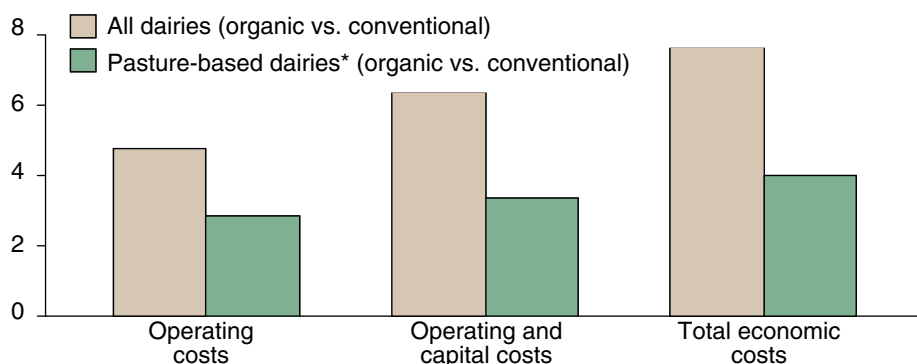
Organic dairies average 82 cows versus 156 cows for conventional dairies. The small size of organic dairies contributes to higher labor and capital costs per cwt of organic milk produced. In addition, milk yields on organic dairies are about 30 percent less than on conventional farms. Using pasture as a source of dairy forage is more common on organic dairies, helping reduce feed costs per cow, but also contributing to lower production per cow.

Organic milk products command higher prices at the grocery store. Because of the price premium relative to conventional milk, revenues are higher on organic operations, which helps offset higher production costs. The average price premium of \$6.69 per cwt in 2005 exceeded the additional accounting costs, including operating and capital expenses. However, the price premium did not cover the additional \$7.65 per cwt of total economic costs—including those for operator and other unpaid labor (see box, "Milk Production Costs Impact Production Decisions").

Organic milk production appears most competitive with conventional production among farms able to use pasture resources for a significant portion of dairy feed. Total economic costs average about \$4 per cwt higher for organic versus conventional pasture-based (50 percent or more of forage fed from pasture during grazing months) dairies, significantly less than the average milk price premium of \$6.69 per cwt in 2005. Thus, conventional dairies with suitable resources for organic pasture have been most likely to transition to organic production.

The additional production costs of organic versus conventional milk were less among pasture-based than among all dairies in 2005

Additional dollars per hundredweight



*Pasture-based dairies are those feeding 50 percent or more of dairy forage from pasture.

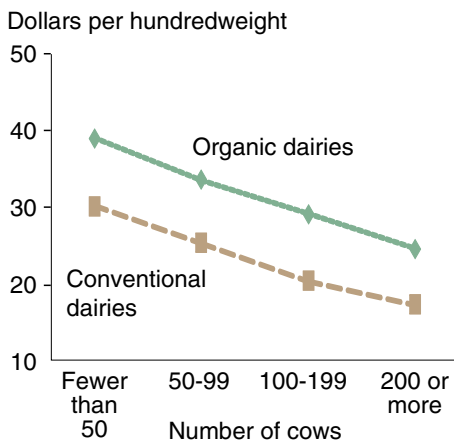
Source: USDA, Economic Research Service, using data from USDA's Agricultural Resource Management Survey, dairy version.

Larger Organic Dairies Have Lower Costs Than Smaller Ones

Most organic dairy operations are small; 45 percent milk fewer than 50 cows and 87 percent, less than 100 cows. While only about 13 percent of organic dairies have 100 or more cows, they account for nearly half of organic production. About a third of cows and production come from organic dairies with 200 or more cows.

Average operating costs, including feed, veterinary care, and medicine, are highest on the largest organic dairies. Total economic costs, however, are about \$14 per cwt less than on the smallest operations, due to lower average costs for capital assets (such as barns and milking parlors) and unpaid labor used in milk production (see box, “Milk Production Costs Impact Production Decisions”). The smallest organic dairies use about 20 percent less unpaid labor per farm, including farm operators, than do the largest dairies. Labor costs per cwt of milk are much less on the largest operations, however, because they produce about 1,700 percent

Costs declined with size of organic and conventional dairies in 2005



Source: USDA, Economic Research Service, using data from USDA’s Agricultural Resource Management Survey, dairy version.

more milk per farm than the smallest organic dairies.

The continued shift of production to large conventional dairy farms indicates that declining average costs of production

per unit as the operation grows—referred to as economies of size—play a major role in the structure of dairy farming. An examination of the relationship between average production costs and size among



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Milk Production Costs Impact Production Decisions

Costs of conventional and organic milk production are computed per hundredweight (cwt) of milk sold and divided into three categories: operating costs, operating and capital costs, and total economic costs.

- Operating costs include feed; veterinary and medical services; bedding and litter; marketing; custom services; fuel and electricity; repairs; hired labor; other costs; and operating interest.
- Capital costs include the annualized cost of maintaining the capital investment (economic depreciation and interest) in the dairy operation, and costs for non-real estate property taxes and insurance. The annualized cost of investments made during the organic transition is also part of capital costs.
- Total economic costs are the sum of operating and capital costs, plus opportunity costs for unpaid labor and land, and allocated costs for general farm overhead items.

Milk producers make decisions such as how much or whether to produce based on the relationship between expected production costs and expected product price, and the length of the planning period. In the short term, decisions are based only on operating costs, as all other costs are fixed. As the length of the planning period increases, producers face decisions about replacing capital assets and so they must consider both operating and capital costs. Most milk producers decide whether to stay in business when considering the substantial investment for replacing dairy facilities. The influence of opportunity costs on production decisions varies significantly among producers because many are willing to accept returns to these resources, especially operator labor, at less than assumed market values because of lifestyle preferences and costs of switching occupations, among other reasons.

organic dairies is strikingly similar to that for conventional dairies, only at higher costs. (See, “Increasing Size of Dairy Farms Driven by Declining Production Costs” in the December 2009 issue of *Amber Waves*).

Several small organic dairies appear to be earning enough to cover operating costs, but not the opportunity cost of their investments in capital and operators’ time. Large organic dairies are much more likely to generate returns above capital and labor costs than smaller operations, suggesting that organic production will migrate toward larger operations, as has conventional production. However, the additional costs of complying with organic pasture requirements and securing large volumes of organic inputs may limit the cost advantages of much larger organic dairies.

Large Organic Dairies Are Common in the West

The regional development of organic milk production has followed a path similar to conventional production. Historically, conventional milk production was concentrated in the Upper Midwest and Northeast, mostly in Wisconsin, Minnesota, New York, and Pennsylvania. In the past three decades, however, milk production expanded rapidly on large operations located in the South and West.

Organic dairy farms emerged in a number of regions during the 1990s, although the majority of organic dairies were located in the Northeast and Upper Midwest. Organic milk production was a good fit on the small, pasture-oriented operations in the Northeast, Wisconsin, and other parts of the Midwest. During the past decade, the number of States with organic milk operations expanded substantially, and California and Oregon



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are now among the leading organic milk-producing States.

More than 80 percent of U.S. organic dairies are located in the Northeast and Upper Midwest, but these operations are small and less productive than those in the West. Organic dairies have an average of 53 cows in the Northeast and 64 cows in the Upper Midwest, compared with 381 cows in the West.

The average milk yield per cow on organic dairies in the West is 2,700 pounds more than yields on organic dairies in the Upper Midwest, and 4,000 pounds more than in the Northeast. While the larger, more productive operations in the West make up only 7 percent of organic dairies, they account for 31 percent of U.S. organic milk cows and 37 percent of organic milk production.

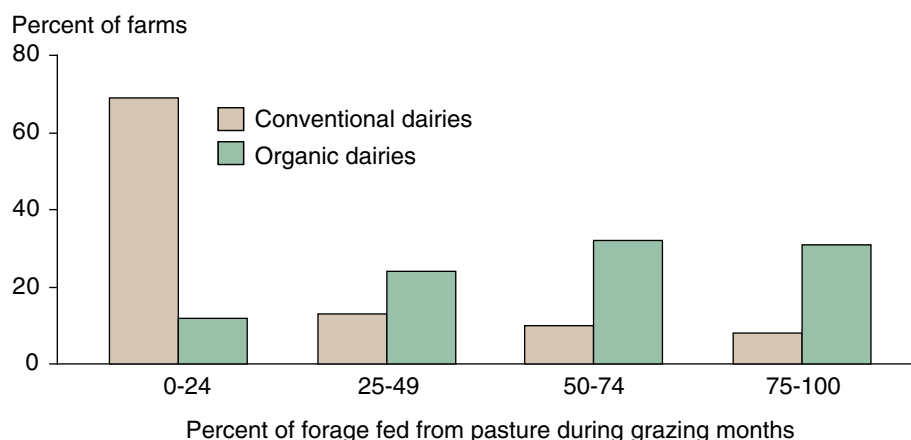
Average feed costs per cow are significantly less on organic dairies in the Northeast and Upper Midwest because homegrown feed and pasture are more

often used in these areas than in the West. Despite higher feed costs per cow and greater use of labor and capital, total economic costs per cwt of milk produced are lower for organic dairies in the West. This cost advantage is the result of size economies and much higher productivity per cow. Differences in milk yield and efficiency of labor and capital use may be partly attributed to the adoption of productivity-enhancing technologies on large organic dairies in the West.

Pasture Is a Primary Forage Source for Organic Dairies

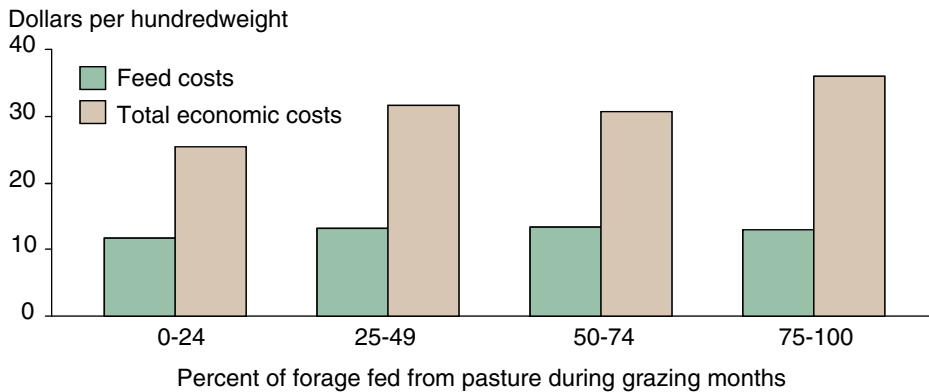
Access to pasture is required for organic certification of dairy operations. Conventional dairy operations, in contrast, largely confine milk cows in large barns and limit their access to pasture. Milk producers may find it easier and less expensive to maintain organic pastures than to purchase or produce organic crops and forage for dairy feed. Also, grazing may be less stressful for dairy cattle and

Organic dairies used pasture for feed more than conventional dairies in 2005



Source: USDA, Economic Research Service, using data from USDA’s Agricultural Resource Management Survey, dairy version.

Production costs were higher among organic dairies using the most pasture in 2005



Note: Total economic cost are the sum of operating and capital costs, plus opportunity costs for unpaid labor and land, and allocated costs for general farm overhead items.

Source: USDA, Economic Research Service, using data from USDA's Agricultural Resource Management Survey, dairy version.

help to reduce veterinary expenses, compared with conventional systems.

More than 60 percent of organic milk producers report that pasture comprises at least half of their total forage ration during the grazing months (an average of 6.5 months per year), compared with only 18 percent of conventional dairies. Nearly 90 percent of organic dairies obtain at least 25 percent of their total forage ration from pasture. In contrast, about 70 percent of conventional dairies report that pasture accounts for less than 25 percent of their total forage, and 40 percent report that none of their cows are pasture-fed.

Organic dairies that use pasture the most tend to be the smallest operations, to be located in the Northeast, and to produce less milk per cow. Large organic dairies in the West rely less on pasture, partly because of the significant amount of land required to supply pasture for large herds.

Using pasture for dairy feed costs less than higher energy feed sources, and average feed costs per cow decline as more pasture is used for dairy forage. Feed costs per cow are highest on organic dairies using the least pasture, but average feed costs

per cwt of milk vary little with the level of pasture use because production is higher on dairies using the least pasture. Average production per cow among dairies using the least pasture is over 30 percent higher than among those using the most.

Total economic costs per cwt are lower on organic dairies using the least pasture due to size economies and because adding pasture to the feeding system requires more labor. Thus, organic dairies using the least pasture are more likely to generate returns above capital and labor costs than those using more pasture, suggesting that the confinement technology typically used for conventional milk production may become more commonly used among organic milk producers.

Changes in Pasture Rules May Affect How the Organic Dairy Sector Evolves

USDA's National Organic Program (NOP) rules state that ruminant animals must have access to pasture, but they do not indicate how much pasture should be allocated or how much feed should be provided by pasture. The most common technology used on conventional dairy

operations confines milk cows in large barns and limits access to pasture. Some organic producers have been able to utilize this same technology to become larger and take advantage of size economies.

Thus, how organic certifiers interpret the pasture rule has important implications about the land requirements and costs of organic milk production for large organic producers and those evaluating the transition.

Partly in response to comments, complaints, and noncompliance regarding the use of pasture on organic dairy operations, USDA issued a proposed rule in October 2008 seeking to clarify and strengthen the NOP's pasture requirement, indicating a minimum forage requirement from grazing. The proposed rule would amend livestock and related provisions of the NOP and likely would ensure that much of U.S. organic production remains on relatively small operations. The economic relationships among different-sized organic operations and pasture use suggest that stronger pasture requirements in the NOP could result in higher organic production costs and organic milk prices if the production from some larger, lower cost operations could no longer be certified organic. However, the revised rules would better assure consumers that the USDA organic label means that organic milk comes from dairy cattle that graze pasture. **W**

This article is drawn from . . .

Characteristics, Costs, and Issues for Organic Dairy Farming, by William D. McBride and Catherine Greene, ERR-82, USDA, Economic Research Service, November 2009, available at: www.ers.usda.gov/publications/err82/