



Sheep - The Other Dairy Animal

Cows and goats usually get all the attention when milking animals are discussed. But learn how dairy sheep can be an attractive, low-capital alternative for your hobby farm.

by Heather Smith Thomas

Around the world, sheep are raised for milk as well as meat and wool, and traditionally there have been more sheep milked than cows and goats combined.

However, the U.S. dairy sheep industry is in its infancy, and American production of sheep milk cheese is currently only about 450,000 pounds per year—a very small percentage of the worldwide total.

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Vermont Shepherd holds several "Cheese Cave Open Houses" to provide the public with an opportunity to see how their cheese is made. The tours include cheese tasting, a tour of the cheese cave, and an explanation of the cheese-making process. Visitors can also view the dairy's sheep on pasture. However, the United States imports more than 70 million pounds of sheep milk cheese annually. The imported cheese goes to specialized gourmet markets and into the hands of savvy consumers. Thus, there is plenty of room in the market for our domestic production to expand.

SHEEP MILK AROUND THE WORLD

Sheep dairying is an important enterprise in many European, Middle Eastern and Mediterranean countries. There are more than 50 varieties of cheese, as well as various types of yogurt, ice cream and butter, made from sheep milk.

In France, Roquefort cheese is made from the milk of about one million Lacaune ewes, producing 16,000 tons of cheese annually. In Greece, 560,000 tons of ewe's milk is produced each year and made into yogurt, many cheeses (including Feta) and about 4,000 tons of butter. Sheep cheeses from Italy include the hard Pecorino, and the light, fresh Ricotta. Manchego is Spain's main sheep cheese.

In the United States, the dairy sheep industry is relatively new. According to David L. Thomas, professor of Animal Sciences and Extension Sheep Specialist at the College of Agricultural and Life Sciences, University of Wisconsin, Madison, in the early 1980s "Dr. William Boylan at the University of Minnesota developed the first research program with dairy sheep in the United States. His research program evaluated various domestic breeds of sheep for their suitability for commercial dairy production. His program provided needed information to the infant dairy sheep industry and gave the industry some public exposure." In 1982, U.S. dairy sheep took center stage at the World Sheep Festival in Bethel, Mo. As a result of all the publicity, private sheep dairies began to pop up, such as Stuyvesant, N.Y.,-based Hollow Road Farm owned by Joan Snyder and established in 1985. The genetic research begun at the University of Minnesota has since been taken over by the University of Wisconsin, and continues at their Spooner Research Station, in Spooner, Wis.



Today there are approximately 100 dairy sheep farms in the United States, with flocks ranging from 25 to 250+ ewes, and this number is slowly growing. Commercial farms are spread out over the states of Maine, Pennsylvania, Vermont, New York, Wisconsin, Oregon and California, and there are many others that milk a few sheep, but are not considered producers.

The Dairy Sheep Association of North America was formed in 2002 by a group of sheep dairymen in Wisconsin, New York, Vermont and Quebec. They held their charter meeting at the 2002 Great Lakes Dairy Sheep Symposium held at Cornell University in November.

WHY MILK SHEEP?

Sheep's milk, like goat's milk, has a higher percentage of small fat globules than cow's milk, making it easier to digest. Non-casein protein is twice that of cow or goat milk, which also enhances digestibility. Sheep's milk is pure white and rich tasting, and since it is higher in fat and protein than cow or goat milk, it has a sweeter taste. Sheep's milk is naturally very thick—most sheep milk is turned into cheese or yogurt, but it also makes a creamy, rich ice cream. Cheese made from sheep's milk is creamier and ages more mildly than goat's or cow's milk cheese, and has its own special flavor, texture and aroma.

Many hobby-farm families have a few sheep, and milking them could provide additional income if a local market for the milk exists. Sheep thrive on marginal land with minimal feed supplements, and can provide a triple income from wool, meat and milk. A few families do it all themselves—milking the sheep, making the cheese and marketing it—but others simply sell milk to a processor.

Ewes can be milked by hand, but for a large flock it is essential to have a milking machine. Sheep can be milked with a cow or goat milker fitted with smaller teat cups and a faster pulsator (which regulates the speed of milking). For sheep milking, a proper pulsator must generally be imported since they are not made in the United States.

Dairy Sheep Association of North America (DSANA)

With over 70 American and Canadian members, the Dairy Sheep Association of North America (DSANA) held its charter meeting in November 2002 during the 8th annual Great Lakes Dairy Sheep Symposium hosted by Cornell University in Ithaca, N.Y.

The organization is a newcomer when compared to the centuries old dairy sheep associations in France and the British Sheep Dairy Association, created in 1982 by the late Olivia Mills. But with year after year success in cheese competitions such as the United States Championships (Wisconsin) and the World Championships (Chicago), as well as those sponsored by the American Cheese Society, North American dairy sheep farming and cheese making has gained legitimacy.

For more information about the Dairy Sheep Association of North America, visit www.dsana.org. Sheep's milk keeps well, and unlike goat's or cow's milk, it can be stored frozen without any loss of quality. Small dairies can collect and freeze it until they have enough to process or transport to a plant, and processors may pick up milk from small producers just once a month.

MILKING BREEDS

The major dairy breeds around the world are Awassi (Israel), Chios (Greece), East Friesian (Germany), Lacaune (France), Manchega (Spain) and Sarda (Italy). However, currently none of these can be imported as live sheep to the United States because of the risk of spreading the viral disease scrapie. The United States and Canada can import semen and embryos of the specialized dairy breeds from some countries under strict health protocols, which is being done. Due to breeding from those endeavors, East Friesian and Lacaune sheep are available in the United States and Canada.

In the 1980s, during the infancy of modern-day sheep milking, American producers made due with some East Friesian imports and the domestic meat and wool breeds, some of which produce milk better than others, but none quite so well as the specialized dairy breeds of Europe and the Middle East.

Joel and Cindy Teuscher started one of the first modern U.S. sheep dairies in the Northwest, in Geneva, Idaho. Joel began raising registered Columbia sheep in the 1970s, then added Suffolk, Rambouillet, Dorsets, Polypays and Natural Colored sheep to his flock. He began his dairy operation in March 1992, using their old family dairy barn and his flock of 200 sheep. He froze the milk for later shipment to a processing plant in Hinckley, Minn.



Queens of Clean

Cleanliness and udder health in dairy sheep is very important. Somatic cell count (SCC) is a measure of the white blood cell count in milk. The SCC in milk of an individual ewe indicates her udder health status, and bulk tank milk SCC can indicate the general state of udder health in a sheep flock.

Somatic cells are always present in milk, but the SCC will rise when an infectious agent enters the udder or when the udder has been injured. A major consequence of rising SCC is a decrease in raw milk quality, which has implications for milk processing.

Milking clean and dry teats is very important to reduce SCC and udder infection. Apply a teat disinfectant that covers the entire teat and wipe dry with a single use towel prior to milking. Apply a teat disinfectant immediately after milking.

Maintain dry and clean facilities to minimize bacteria load that the udder and teats are exposed to; also make sure pens are well bedded.

Source: Ministry of Agriculture and Food, Ontario, Canada

More on Wisconsin dairying...

The Teuschers found that ewes that suckled only one lamb had a higher incidence of mastitis, but Joel solved that problem by milking those ewes once a day while the lambs were growing up, feeding that milk to orphan lambs. They then started milking their ewes 30 days after lambing, weaning the lambs (which were started on grain soon after birth so the weaning process was not stressful).

Some ewes had poor dispositions for milking, say the Teuschers. Most would come into the barn with no hesitation in order to eat their grain, but some resisted and didn't want to be handled. Suffolks fared better than some other breeds, and since they have less wool on their udders and legs, they are also easier to clean and milk. The Teuschers found some of their ewes were better left to raise lambs than to be milked.

Dr. William Boylan, who started the University of Minnesota dairy sheep project for genetic research in the 1980s got an average of 125 pounds of milk per ewe, per 120-day lactation cycle, from a variety of breeds. These ewes were milked from the time their lambs were weaned at 30 days of age until the ewes dried up. The best milking ewes in the Minnesota dairy project were Suffolk (averaging 143 pounds of milk) until Dr. Boylan acquired Rideau Canadian ewes that averaged more than 159 pounds of milk per lactation cycle.

IMPROVING MILK PRODUCTION

The milking ability of any breed can be improved with selective breeding and heavy culling, and that includes U.S. dairy sheep. In the early 1990s U.S. production averaged between 97 and 170 pounds of milk per ewe, but some U.S. sheep now produce 500 pounds in a 200-day lactation cycle. Today, some flocks with East Friesian, Lacaune and crossed ewes average 500 to 600 pounds of milk. Dairy sheep in Europe and the Mediterranean produce between 300 and 1,400 pounds, but since many of these breeds aren't currently available to U.S. dairy farmers American producers are continually looking at ways to improve their breeds' production.

Sheep dairymen can speed up genetic improvement by sharing top sheep from many regions, using group breeding, ram circles and artificial insemination. Group breeding, a system that involves several producers with the same goals forming a cooperative, is used by sheep industries in New Zealand, Australia, South Africa and the United Kingdom. In group breeding, the performance of all animals is evaluated, and the best ewes and rams are put into a nucleus breeding flock that is managed by one of the breeders in the cooperative. The best rams are used within the nucleus flock and the next best go to the group members, who continue to send their best replacement ewes to the nucleus each year. This system can result in up to twice the rate of genetic improvement in cooperative flocks than in traditional within-flock selection.

In a ram circle, a group of dairy sheep breeders who live close together share each other's rams during the breeding season, rotating them around. Artificial insemination is an easier means for speeding up genetic improvement, but can be expensive and is not always reliable, due to the anatomy of the ewe's reproductive tract and the less-than-ideal quality of frozen ram semen.

SHEEP DAIRYING TODAY

David and Cynthia Major operate Vermont Shepherd, a sheep dairy in Putney, Vt. They began in 1988, milking sheep and making cheese, after traveling to the French Pyrenees to learn firsthand from experienced cheese makers. "Our operation



has grown, to where we are now milking 170 sheep, on a seasonal basis—when there's pasture," says David. They make Vermont Shepherd Cheese, an aged, raw milk sheep cheese, and two types of cheese from cows' milk. "We work with a couple of other sheep dairies in the area, doing cooperative curing of cheeses," he says. The Majors had always wanted to go into sheep farming, but low prices for wool and lambs in the 1980s led them to explore the cheese market. Wisconsin Sheep Dairying

Of the 100 dairy sheep farms in the United States, Wisconsin hosts 25, making it the largest sheep-milk producing state in the country. The Wisconsin Sheep Dairy Cooperative is the only sheep dairy coop in the nation. Formed in 1996, it markets the milk produced by its 20 member farms across the Midwest. (It marketed roughly 420,000 pounds of sheep milk in 2002, at about \$60 per 100 pounds.) By pooling the milk, enough can be provided to cheese makers for commercial production, ensuring a stable market.

University specialists have helped sheep dairies standardize production, develop systems to test milk for quality and work toward a branded product. Scientists at the University of Wisconsin at Madison are helping with genetic research. Dave Thomas, of the College of Agricultural and Life Sciences, is establishing and evaluating European dairy sheep in the United States. "Until the early 1990s there were no true dairy sheep in this country," says Thomas. "Producers only had breeds that had been selected for lamb and wool production. That's like trying to start a dairy with beef cows."

In 1993, the University was able to purchase two East Friesian rams. Thomas began crossbreeding and found that the hybrids produced twice as much milk as non-hybrids. In 1998 the University obtained Lacaune sheep and today this research flock is kept at the Spooner Agricultural Research Station in northern Wisconsin.

"There is a growing interest, and there are a number of people milking sheep the way the small-scale farmers have milked goats for years," says David. The Majors increased their milk production significantly through selective breeding and now have a profitable product they sell to restaurants, specialty food shops, mail-order and Internet sales as well as at their farm. Demand for "farmhouse" cheese led them to teach other Vermont farmers how to milk sheep and make raw cheese. In 1995 they began conducting workshops and six-week internships for prospective dairy sheep farmers.

The Majors ripen their cheese for four to eight months in a former apple storage facility they call the "cheese cave." Each wheel of cheese is turned and brushed every other day to develop its flavor to the fullest. Vermont Shepherd cheese consistently placed in the top two for Farmhouse Sheep's Milk Cheese by the American Cheese Society from 1993 through 1999. Their cheese also won "Best of Show" at the American Cheese Society's annual competition in California in 2000, and Best of Class, Sheep's Milk Cheese, United States Championship Cheese Contest in 2001.

The first year the Majors milked sheep, each ewe produced an average of 60 pounds of milk in just over two months of milking. By 2000, the average production was up to 340 pounds per ewe for a six-month milking period and today it is 500 pounds. "The difference is due to improved genetics and better management; production on our farm has been going up 20 to 30 percent per year," says David.

The amount of milk produced by sheep, compared to milk cows, is small, but sheep dairying takes less investment, and sheep's milk sells for five times more than cow's milk. For sheep producers who want to process their own milk or find a market for it, sheep dairying can be a way to increase the income from the flock.

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