IMPRESSIONS OF DAIRY SHEEP PRODUCTION IN THE U.K. AND FRANCE

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We were fortunate to obtain a grant from the Babcock Institute for International Dairy Research and Development of the University of Wisconsin-Madison to travel in the U.K. and France from June 18 to July 2, 1995 to view their dairy sheep industries. The specific goals of our visits were:

1. Visit dairy sheep producers to learn of technology which could be applied to Wisconsin dairy sheep production.
2. Locate sources of superior dairy sheep genetics for possible purchase and importation to Wisconsin.
3. Study genetic improvement programs for sheep in place in both countries for their potential for implementation in Wisconsin.

Our trip included visits to nine commercial dairy sheep farms (four in the U.K. and five in France), a dairy sheep research farm in France, four sheep A.I. centers (one in U.K. and three in France), a meat sheep research farm in France, the offices of both the Meat and Livestock Commission and the National Sheep Association in the U.K., the Royal Highlands Agricultural Show in Edinburgh, Scotland, and the National Sheep Institute at Rambouillet, France. We were assisted greatly with arrangements by Olivia Mills, Secretary of the British Dairy Sheep Association, Henry Lewis of the U.K. Meat and Livestock Commission and Francis Barillet of the French National Agricultural Research Institute's (INRA) station near Toulouse. We were joined in France by Kristin Tondra, a veterinary medicine student from the University of Minnesota, who served as a very valuable French interpreter for me (Dave Thomas). This allowed Yves the ability to speak with our hosts in his native French without having to break the conversation to interpret for me.

One week in each country was not enough time to learn all there is to know about their dairy sheep industries, and some of the impressions we came away with may not be true of the real situation. However, we had a very intense visit with a packed schedule every day, and we feel that we gained a tremendous understanding of dairy sheep production in these two countries.

The U.K. and France were chosen as the countries for our visit for several reasons. Each of us were familiar with both countries - I had traveled in both countries before, and Yves had worked and traveled previously in the U.K. and, of course, was very familiar with his native France. With Yves' French language skills, communications would not be a problem. We had good personal and professional contacts in both countries that were willing to assist in the planning of our visit. Sheep dairying is a relatively recent farming enterprise in the modern U.K., and the problems U.K. producers dealt with were apt to be similar to the problems facing U.S. dairy sheep producers (e.g. availability of improved genetics, dairy sheep management, milking technology, marketing). France is the largest producer of sheep's milk for commercial processing, and their dairy sheep industry is highly organized and utilizes the latest in technology. The French dairy sheep industry would be an example of where the U.S. industry may be in the future.

General Description

Agricultural production is heavily subsidized in Europe by payments to farmers from the European Community (EC) and from individual countries following guidelines developed by the EC. In the U.K., the annual subsidy payment on a ewe was about $28.00 but could rise to as much as $50.00 for ewes run on rough hill country. In France, the annual ewe subsidy was $30.00 to $40.00. For most meat sheep producers in both countries, this subsidy means the difference between profit and loss. However, for dairy sheep producers, it is less important because the net income per ewe is higher for dairy ewes compared to meat ewes. In France, the ewe subsidy accounts for less than 10% of gross income of dairy sheep producers. There is general recognition that the EC ewe subsidies (along with other agricultural subsidies) will be phased out in the future. This prospect has increased the interest in dairy sheep production in both countries among current meat sheep producers. Cow milk production in EC countries is now controlled by a quota system, but ewe milk production is not under a quota. Therefore, some dairy cattle producers are looking seriously at dairy sheep production.

There are approximately 100 dairy sheep producers in the U.K. milking 20,000 to 30,000 ewes. The flocks are spread throughout the country. We drove from south of London to southern Scotland to visit four dairy flocks. Producers often do not have neighbors involved in sheep dairying that they can turn to for help and guidance. There is little research conducted on dairy sheep in the U.K. In these respects, the U.K. industry is very similar to ours. The British Dairy Sheep Association does take an active role in bringing results of dairy sheep research from throughout the world to their members through their newsletter, and the association has recently embarked on an embryo transfer program to make superior East Friesians available to their industry. Pure East Friesians and East Friesian crosses were the most common dairy animals.

The French industry is much more localized, organized and technically supported than that in the U.K. The industry is located in three main regions: south-central France around Roquefort, the Pyrenees Mountain region near the border with Spain and the island of Corsica. Within the three regions, there are 745,000 ewes that are milk-recorded (600,000 of these are in the Roquefort area). About 500,000 of these ewes are artificially inseminated each year with semen from rams selected for high breeding values for milk production and maintained in one of four A.I. centers. Flock size in Roquefort varies from approximately 400 to 1,000 ewes. Milk production, selection of A.I. rams, milk marketing and processing, and cheese merchandising are highly controlled by producer organizations with major assistance from scientists and technical support from the government. The Lacaune is the most common dairy breed in the Roquefort area.

Milk vs. Lambs

In both countries, milk is sold to commercial processors for $.55 to $.60 per pound. Lactation yields we encountered varied from approximately 350 to 750 pounds for an estimated variation in milk income per ewe across flocks of approximately $200 to $450. U.K. and French dairy sheep farmers receive $85 to $100 per head for an 85-pound market lamb, so lamb production is an important source of income. Since both the French and U.K. markets discriminate against the poorer conformation of dairy breed lambs, producers try to lessen this effect by breeding poorer milk-producing ewes to meat-breed rams (generally Rogue de l'Ouest, Charollais or Meat Lacaune in France and Suffolk, Texel or Charollais in the U.K.) One U.K. producer we visited was maintaining a Texel-East Friesian crossbred milking flock to maintain high value for all lambs. Of course, lamb income is even more important to U.S. producers than it is to these European producers given the

smaller amount of milk income received from U.S. ewes, but if our industry evolves similar to those of the U.K. and France, we will need to continue to be concerned about the value of the lamb produced from our dairy operations.

Milking Systems and Equipment

Virtually all milking in both countries is by machine in parlors. Hand milking is done in the Pyrenees Mountain region in the mountains in the summer after the ewes are moved from the lowland farms. Of the farms we visited, only one in the U.K. was milking into buckets; all others were using pipelines. All farms in France were milking from a pit with 12 to 24 ewes on each side. Of the four farms in the U.K., two were milking from a pit and two were milking on a platform. One of the producers using a platform would prefer a pit. The two "pit" units observed in the U.K. were only milking ewes on one side but could eventually accommodate ewes on both sides as the flock expanded. Both of these units, however, had the pipeline located on the side of the pit (low line) versus above the pit (high line) so milking ewes on the opposite side was going to result in a major cost for another set of milking units or conversion to a high line. Most farms visited in France had a high line. All of the farms visited in the U.K. were using a "cascading yoke" type of stanchion, and all farms visited in France were using the "indexing" stanchion system where ewes are free to take any stanchion upon entry, and the entire stanchion system is moved back towards the pit once all ewes are stanchioned. In both countries, we saw all the major brands of milking equipment in use - sometimes several brands were mixed on the same farm. All producers seemed pleased with their particular equipment. A double-12 system in France cost approximately $30,000, and a double-24 system was about twice the cost.

It appears that all major manufactures of sheep dairy equipment represented in Europe produce quality equipment. For ease and cleanliness in milk handling, serious dairy sheep producers are using pipeline milking systems. Pit systems are preferred. Our observations would tend to recommend the indexing over the cascading yoke for stanchioning ewes due to faster movement of ewes in and out of the parlor, and the high line over the low line in order to save cost on number of milking units required in a pit system.

Milking Procedure

The milking time per ewe varied between the countries. Of the three flocks we saw milked in the U.K., each could stanchion 12 ewes at a time and it took one person approximately 18 minutes between batches (1.5 minutes per ewe). These flocks were milking between 180 and 240 ewes, therefore each milking would take 4.5 to 6.0 hours not including set-up and clean-up time. Due to the time required to milk, milking was done only once per day. Producers estimated that milk production only decreased by approximately 20% when moving from twice-per-day to once-per-day milking, probably because of the large udder capacity of the East Friesian. In France, with 24 ewes on each side and two people milking in a pit, a batch of 24 ewes was milked every 5 minutes (12 to 13 seconds per ewe or 300 ewes per hour). Ewes were milked twice per day in France.

The main reason for the differences in milking time were different pre- and post-milking treatments of the udder between countries. On the farms we visited in the U.K., udders were washed very thoroughly and dried prior to milking and sprayed with a teat dip after milking. In France, there was no cleaning of udders prior to milking and no post-milking treatment. French farmers indicated no milk sanitation problems with this lack of udder treatment, and their official reports of somatic cell and bacterial counts that we viewed verified this. A study needs to be conducted under U.S. conditions comparing these two extremes of udder treatments for their effects on milk quality.

Several other things may have contributed to longer milking times in the U.K. The shape of the East Friesians' udders in the U.K. were much more variable than those of the Lacaune ewes in France. The East Friesian flocks tended to have more ewes with large pendulous udders and/or extremely large teats. These types of udders may have a tendency to become dirtier, and they also required extra time in milking (e.g. they required the fitting of a "sagi" hook to support the udder, the teat cups fell off, etc.). Several of the East Friesian ewes had a second milk let down, and the milker would go back and milk such ewes a second time before releasing the batch of ewes. The East Friesian ewes were producing approximately twice as much milk per milking as the Lacaune ewes which will account for some of the difference in milking time. Facilities for moving sheep into and out of the parlor were better developed and more efficient in France than in the U.K.

A major factor determining the profitability of a dairy sheep operation is the number of ewes that can be milked per hour or the parlor time required to produce a pound of milk. Research evaluating the effects of facilities, breed of sheep and udder treatments on milking time is an urgent need of our industry.

Start, End, and Length of Milking Period

As we visited farms, it became apparent that quoted lactation yields can be very misleading because there is tremendous variation between countries and even from flock to flock within countries on stage of lactation when milking begins and length of the milking period.

The general system is somewhat similar among flocks in France. Lacaune ewes appear to be fairly aseasonal, and ewes are artificially inseminated the last two weeks of June and lamb in December. Ewes nurse their lambs for 30 days, and start to be milked in January. Cheese plants in the Roquefort area start operation in mid-December to catch milk from some early lambing ewes and continue to purchase and process milk through the middle of July. In the Pyrenees Mountain region, the cheese plants close in June when the sheep are moved to mountain pastures. Reasons given for cheese plants closing at this time are: 1) tradition, 2) less pasture available in summer, 3) poorer cheese maturation in the summer, and 4) to give shepherds a vacation. When cheese plants close, ewes are still producing milk. A few plants will make some yogurt, and some traditional farmstead cheeses are made from this milk. However, most flocks try to dry ewes off as soon as possible after the plants close because there is little overall demand for the milk at this time and prices are low. Producers will switch from twice-a-day to once-a-day milking, then to once-a-day milking every other day, then to three milkings a week, etc. until the ewes dry off. Most ewes will continue to produce reasonable levels of milk for one month after the cheese plants close, and if managed for milk production can continue for an additional one month into September. Official milk production is recorded from the time the lambs are weaned at 30 days of age until the cheese factory closes and averages 165 days for recorded flocks. During this 165 day period, Lacaune ewes average about 560 pounds of milk. This is their "commercial lactation yield" and not their "biological yield". Comparisons of the lactation yield of Lacaune sheep in France with other breeds in other countries need to consider these differences in management.

Systems vary more in the U.K. In most flocks the East Friesian and East Friesian-cross ewes lamb in the spring. One farm we visited weans lambs at 48 hours of age and raises them on milk replacer. They wean the lambs onto dry diets at approximately 28 days of age. Their total cost in raising each lamb to market weight is approximately $50.00. Ewes are milked until they dry off after 150 to 210 days. Lactation yields average about 650 pounds. Another flock visited in the U.K. doesn't wean the lambs until the lambs are eight to nine weeks old. Ewes are then milked for approximately 5 months and produce approximately 340 pounds of milk. Another flock weans lambs

at 6 to 8 weeks of age after which the ewes produce about 440 pounds of milk over a 5 month milking period.

These three flocks produce from 340 to 650 pounds of milk per ewe - all with East Friesians, but with considerably different management systems.

Milk Marketing

In the Roquefort area of France, most producers sell their milk to a cheese plant. Each producer has a quota of milk for which he will receive the Roquefort price of $.66 per pound, the next amount of milk over the quota is paid for at the Feta price of $.43 per pound and production over the Feta quota is paid for at the milk powder price of $.19 per pound. Producers averaged approximately $.55 per pound for their milk. In the Pyrenees Mountain region there has been a dramatic increase in milk production, and the top cheese price has dropped from $.58 to $.54 per pound in recent years. Some producers in the Pyrenees Mountain region process all their milk into cheese in small, but very modern, plants on their farms. The cheeses are then cured and marketed by a cooperative under one label. A cheese processing technician, hired by the cooperative, visits each farm four or five times each year to consult on cheese making in order to standardize the product across farms. As indicated earlier, in all regions, some traditional cheeses are made and marketed by the farmers after the commercial cheese plants close.

In the U.K., I did not hear of any large commercial cheese plants processing sheep's milk. Of the four producers we visited, three were processing their own milk and selling the product. The other producer was selling to a small cheesemaker and receiving $.55 per pound for the milk.

One of the producers was processing all of his milk into cheese. In 1994 he made about 2.5 tons of cheese, and in 1995 he expects to make about 3.0 tons. The cheese is sold through a wholesaler for approximately $6.00 per pound. This producer showed us his accounting records which showed a net profit from 140 dairy ewes of $18,200 in 1994. In addition to his dairy ewes, he has approximately 250 ewes for lamb production and 90 beef cows.

Another U.K. producer makes ice cream and yogurt and packages fluid milk on the farm. There appears to be a good demand for fluid sheep's milk among persons allergic to cow's milk. The milk is packaged in plastic pint pouches, frozen and sold frozen. This particular farm sells approximately 1,000 pints of frozen milk per week for $.92 per pint to a wholesaler or $1.10 per pint direct to consumers. Milk in excess of their processing capacity is sold to a small cheese plant for $.55 per pound. This farm has been milking ewes for 8 years. They currently milk 240 ewes but are moving to 400 ewes. A third producer makes cheese, yogurt and ice cream and packages fluid milk. This farm is expanding its processing, storage and sales area.

If the U.K. flocks we visited are indicative of the industry in that country, the dairy sheep industry feels it is important to add value to sheep's milk on the farm in order to make the best returns.

Milk Recording and Genetic Improvement

Of the four flocks we visited in the U.K., only one was recording milk production of individual ewes. As far as we could determine, there was no program in place for the progeny testing of promising young ram lambs. As mentioned earlier, the British Dairy Sheep Association had organized an embryo transfer program where top-producing ewes from a private U.K. flock with milk recording had been superovulated, inseminated with semen from some top foreign East Friesian rams and served as embryo donors. The resulting lambs were on the ground and would be sold to dairy sheep producers.

The French have a highly organized and effective program of genetic improvement which is a model of national genetic improvement among all livestock species. Nine milk recording centers provide technicians to record monthly milk production on over 700,000 ewes. Ram lambs from high-producing ewes are reared at one of four A.I. centers. Half of these ram lambs are culled on the basis of growth, structural soundness and breed type. Fresh semen collected from the remaining ram lambs is used on enough ewes to produce at least 30 daughters over several flocks. The ram lambs wait in the A.I. center until their daughters' first lactation records are obtained. Rams with daughters with poorer production are culled and the proven rams are retained. Proven rams remain in the A.I. center until they are surpassed in breeding value by younger rams. Proven rams average about 4.5 years of age with the oldest about 8 years of age. In each flock, half of the ewes are mated to young rams for progeny testing and the other half are mated to proven rams. During the A.I. season in the Roquefort area, each of the two A.I. centers will collect semen from 200 rams per day and perform 4,000 to 5,000 inseminations per day. During the year, each center will perform approximately 200,000 inseminations with fresh semen on synchronized ewes with a conception rate of 67%. This program results in an annual genetic improvement in milk production of approximately 13 pounds of milk per ewe.

Availability of Improved Genetics

Currently, it is not possible to bring semen, embryos or live sheep to the U.S. from Europe. USDA has proposed to change these rules to allow such genetic material to be imported if it goes into flocks enrolled in the Voluntary Scrapie Flock Certification Program. Only semen and embryos would be allowed to come from countries that have the cattle disease, BSE. Hopefully, these rule changes will be made soon.

Dairy sheep breeding stock in the U.K. is available from private breeders through private genetic companies. If allowed by USDA, East Friesian genetics from the U.K. and other countries in Europe and perhaps other dairy breeds from Europe will be available from these companies.

Lacaune breeding stock in the French genetic improvement program is under the control of two producer organizations. These organizations have dealt with breeding stock exports on a limited basis to a few countries in Europe but have not decided on a policy for export of breeding stock to other countries including North America. While semen and embryos from a few Lacaune sheep from the periphery of this national genetic improvement program may become available to North America in the near future, it may be of questionable genetic value. The ideal situation would be to obtain semen from the elite, proven rams in the A.I. centers where you are assured of top quality genetics that is going to improve each year. Availability of such genetic material in the near future is not known.

Optimism

The dairy sheep producers we visited were very optimistic about the financial future of dairy sheep production. In the U.K., this optimism was based on the production of a high quality and high value product to fill a specialty or gourmet market. In France it was based on a large commercial industry with a track record of profitability. Every farm we visited in France had a son "chomping at the bit" to take over the family farm, because a dairy sheep farmer made a good living. It was uplifting to see young talented people so excited about a career in agriculture. This has not been the case for several years in American agriculture. Perhaps sheep dairying can change that.