



SO....you are interested in milking sheep?

A bulletin of the

Wisconsin Sheep Dairy Cooperative

www.sheepmilk.biz

October 2008

TABLE OF CONTENTS

Introduction	3
Points to consider	4
Characteristics of dairy sheep	8
Sheep housing	10
Feeding	11
Health care and sanitation	13
Lamb management	14
Season of lambing	15
Milking facilities and equipment	16
Economics	18
Resources	25

INTRODUCTION

Sheep have been raised for their milk for thousands of years. Today the commercial dairy sheep industry is concentrated in the European and Mid-eastern countries on or near the Mediterranean Sea. France alone has almost one million ewes in dairy production. Most of the world's sheep milk is processed into cheese. Roquefort, the blue cheese of south central France, is one of the better known of the sheep milk cheeses. The U.S. annually imports more than 70 million pounds of cheese made from sheep milk.

It is estimated that 100 to 150 farms in the U.S. and Canada are now milking ewes. Sheep dairy farms are spread throughout North America with the largest concentrations located in northwestern Wisconsin, northeastern U.S. (New York, Vermont, and New Hampshire), and eastern Canada (Ontario and Quebec).

The market for sheep milk and sheep milk products appears very promising and growing. The Wisconsin Sheep Dairy Cooperative (WSDC) was created in 1997 by the dairy sheep producers of Wisconsin in response to this growing demand. The Coop is the only sheep dairy cooperative selling milk either fresh or frozen to many parts of the country. In its first year of existence WSDC marketed about 50,000 lbs of sheep milk and is now marketing close to 1 million pounds. In 2008, WSDC did not have enough milk to supply all of its clients and is actively recruiting new producers.

Please check the web site : www.sheepmilk.biz for more information on the Wisconsin Sheep Dairy Cooperative.

This bulletin was developed in order to help potential producers interested in sheep dairying to find information on all aspect of sheep milking as well as animals, equipment, contacts, reading material...

POINTS TO CONSIDER BEFORE GOING ANY FURTHER

A series of questions has been developed in order to help you understand the problems that you are going to be faced with. Most of the points would need to be answered before going any further. In order to answer many questions more information will be needed.

General

- Goals
 - Hobby?
 - Supplemental Income?
 - Primary Income?
- Expectations

(Note: most start-up operations only milk for a short period, if at all, during their first milking season. WSDC wants you to succeed).

 - How will you finance the start-up of your operation?
 - How will you cash flow the operation until you are able to sell your product(s)?
- Knowledge/Experience or need help.
 - Do you have knowledge/experience raising farm animals?
 - Do you have knowledge/experience milking animals?
 - Do you have knowledge/experience specific for sheep?
- Support
 - Do you have 100% support by all family members? **This is one of the most important points.**

Getting Started

- VISIT AS MANY SHEEP (AND GOAT) DAIRY FARMS AS POSSIBLE
 - Land and Buildings
 - How much land do you have/need?
 - Can you rent additional land, at a reasonable price, if needed?
 - What types of buildings do you have? Can they be used for housing and milking sheep?
 - How will the use of your land and buildings affect your tax liability?
 - Dairy Animals
 - If you already have sheep, will you breed them to become dairy animals?
 - If you will buy dairy sheep, how will you decide which ones to buy and how much to pay?
 - If you buy animals, are they from an established sheep dairy that can provide production records?
 - Does the farm use the same type of management system as your farm? Is it located in the same type of climate as your farm? Possible alternative: Will
-

the sheep you purchase readily adapt to your farm's climate and management system?

- Management
 - Will your operation be pasture or confinement based?
 - What type of record keeping system will you use for flock management: milk production, milk quality, genetics, animal health, animal treatment, lamb production?
 - What time of the year will lambing take place? How many lambing periods?
 - What effect will time of lambing have on the lactation of the ewes (length and level of production)?
 - Where will lambing take place (barn, pasture)?
 - How will lambs be raised (artificial rearing, MIX system, 30 day weaning)?
 - Do you have an experienced Sheep Vet available?
 - Do you know how to do vaccinations, deworming, hoof trimming, ... ?
 - How will you control parasites in lambs, in milking ewes?
 - What are the sources, availability, and costs of feed?
 - Do you have high quality forage available?
- Labor Plan
 - What types of labor are needed – construction, installation, maintenance, flock management, lambing, milking?
 - Who will do each type of work?
 - If you work off farm, how will you balance the demands of both jobs? Conflicts between the jobs?
 - If you will depend on kids and/or family, what will happen when their off-farm interests start to compete with farm work?
 - When kids grow-up, who will do the work they were doing?
 - If you plan to use hired labor, are workers readily available, how much will you need to pay?

Facilities

- General
 - Have you contacted your Dairy Inspector/Field Person/Building Inspectors – get them involved early and often.
 - Have you identified a dealer that can help you with specialized dairy sheep equipment?
 - Keep eye on the future – bulk tank, freezer size/capacity, pit, buildings, future owners.
 - Are you prepared for loss of power – milking / freezer?
 - Milking parlor
 - How many animals do you plan to milk once you reach full production?
 - Milking parlor configuration.
 - Will you feed in the parlor?
-

- How will you manage animals during foul weather (rain, sleet, snow, mud, slippery conditions)?
- Holding area for parlor?
- Platform vs Pit?
- Type of headgates (cascading, crowding, cast)?
- Lab for testing milk?
- Animal flow through parlor?
- Good lighting?
- Good ventilation?
- Temperature control?
- Fly control?
- Easy to clean parlor and holding area?
- Pipeline vs. buckets?
- Cleaning of pipeline - manual or automatic?
- Milk house
 - Close to parlor.
 - Access for bulk truck?
 - Easy to clean?
 - Good lighting?
 - Location of mechanicals (vacuum pump, compressor, ...)?
 - Water supply?
 - Electrical supply?
 - Means for disposing of waste water?
 - Size and shape of bulk tank?
 - Cleaning of bulk tank (manual or automated)?
 - Access by bulk truck.
- Freezer
 - Do you need a freezer? Freezer for milk must have adequate size/cooling capacity to freeze maximum expected load of milk within 12 hours.
 - Is your farm accessible by semi-trucks?

Milk Handling

- State dairy regulations
 - Your dairy inspector can be your worst enemy or your best friend, make him your best friend.
 - Milking
 - Written procedures for sanitizing and clean-up?
 - Written procedures for milking?
 - Train employees?
 - Fresh Milk
 - Are you close to WSDC producers shipping fluid milk? Can you be included in the milk pick up route?
-
-

- What do you do with the small amount of milk produced at the beginning and at the end of the milking season?
 - Frozen Milk
 - Very labor intensive but often necessary in early or late lactation (small amount of milk) even when shipping fresh milk.
 - May also be required for smaller, lower producing farms.
 - Method for filling of bags for milk to be frozen.
 - Pallet handling. Do you have the necessary equipment to load a pallet (2000 lbs) in a semi-truck?
 - Shipping options and costs.
-

CHARACTERISTICS OF DAIRY SHEEP

A few specialized dairy breeds have been developed over time throughout the world that are exceptional milk producers, e.g. East Friesian of Germany, Lacaune of France, Sarda of Italy, Chios of Greece, British Milkshope of the U.K., and Awassi and Assaf of Israel. These breeds will produce 400 to 1,100 pounds of milk per lactation. Due to very strict animal health regulations on the importation of live sheep, embryos and semen, many of these breeds are not available to producers in North America. However, **East Friesian** sheep are available in fairly large numbers and **Lacaune** sheep in smaller numbers in North America. It is hoped that there will be improved access to other specialized foreign dairy sheep breeds in the future.

Domestic breeds which appear to be the best adapted to dairy production are the Dorset, Polypay and Rideau Arcott. Individual ewes of many other breeds also are good milk producers. However, the milk production of domestic ewes (100 to 200 pounds per lactation) is far below that of the specialized dairy breeds.

Purebred or high percentage dairy ewes are often quite expensive. It is less expensive to start with purebred or crossbred ewes of domestic breeds and mate them to a purebred or high percentage East Friesian or Lacaune ram and continue to upgrade the dairy crosses through continuous mating with dairy rams. However, one has to realize that it will take longer to reach the full production potential of the animals, which can have a negative effect on the profitability of the operation during the first few years.

There are very large differences between breeds of sheep for all production characteristics so ewes that are milked can also be very variable depending upon the animals selected. Following are some realistic ranges for various characteristics and production traits:

Ewe Traits:

- Mature body weight - 150 to 190 pounds (average: 170 pounds)
- Attainment of mature size - 2 to 3 years
- Productive life span - 5 to 7 years
- Wool production - 3 to 10 pounds per year

Reproduction:

- Seasonal breeders - will mate from August through December
 - Length between estrous periods - 17 days
 - Gestation length - 147 days (~ 5 months)
 - Lambing months - January through May
 - Puberty - 7 to 10 months
 - First lambing - 1 or 2 years of age
-

Number of lambs per birth - 1 to 3 (average is 1.8 for Lacaune adult ewes and 2.2 for East Friesian adult ewes)

Lamb Growth:

Birth weight - 7 to 12 pounds

Survival of lambs to weaning - 85 to 95%

Weaning age - 30 days

Weaning weight - 20 to 35 pounds

Daily gain (postweaning) - .6 to .9 pounds per day

Lamb market weight and age - 115 to 140 pounds at 5 to 8 months

Lactation Traits:

Lactation length - 90 to 150 days for domestic ewes, 120 to 240 days for specialized dairy breeds

Milk production per lactation (mature ewes) - 100 to 200 pounds for domestic ewes, 300 to 650 pounds for crosses between domestic and specialized dairy breeds, 400 to 1,100 for specialized dairy breeds. **THE MILK PRODUCTION WILL VARY GREATLY ACCORDING TO THE TYPE OF MANAGEMENT.**

Fat content of milk - 6 to 8%

Protein content of milk - 5 to 7%

It is important to know that in general 85 to 90 % of the ewes present in the flock will be put at milking (open ewes, lambing problems, mastitis etc...)

SHEEP HOUSING

Most dairy sheep producers should have a barn or shed that can accommodate all their ewes. Fifteen to 20 sq. ft. of barn space per ewe is necessary to provide adequate space for ewes and lambs. The barn should have a porous floor (dirt, gravel, etc.) to allow moisture to move away from the sheep. The barn also should have good ventilation but be draft-free to prevent chilling of newborn lambs. Such a barn is a necessity for flocks which lamb in the winter.

The best information on sheep buildings and plans in the U.S. comes from the Midwest Plan Service (<http://www.mwps.org/>). The Sheep Housing and Equipment Handbook costs \$US 8.00, and is a good reference. The web site also has some free plans available. There is a plan for housing a 40-ewe flock and one for a 240-ewe flock available for free. All of these buildings would be suitable for a climate like Wisconsin with cold winters and moderately hot summers.

Often the choice of the lambing season will be dictated by the type of buildings already existing on the farm. It might not be economically feasible to build a new barn only to accommodate a winter lambing.

Ewes and lambs can be maintained in barns and dirt lots year round and fed stored feeds, but use of pasture will decrease feed costs. One acre of improved and fertilized pasture should support at least 5 ewes for the grazing season. Pastures can be fenced with traditional woven wire or with 3 to 5 strands of high tensile electric fencing. Greater efficiency of pasture use will be achieved if large pastures are temporarily subdivided into smaller paddocks with portable electric fencing.

Sheep are often grazed with cattle, but ewes in lactation should be grazed separately so they do not have to compete with cattle for available forage. In areas where predatory animals are a concern, guard dogs, donkeys and llamas that have been bonded to sheep often are commingled with sheep as a deterrent to predators. Sheep should not be commingled with horses or pigs.

FEEDING

The **amount** of feed or more accurately the amount of dry matter intake and the **quality** of the forage given to the lactating ewe is one of **THE MOST IMPORTANT** factor of milk production.

Adequate amounts of clean water are essential for maximum production. Lactating ewes have the highest water requirement of any class of sheep at approximately 3 gallons per head per day.

Ewes can be fed a variety of feedstuffs. The most common feeds for sheep are pasture, hay (legume, grass or legume/grass mix), haylage, corn silage, grain (corn, oats or barley), soybean meal, loose salt with trace minerals added, and loose mineral supplements. The ewe's requirements are the greatest during the last month of gestation and during lactation. Table 1 presents some sample rations for a ewe throughout the year.

Table 1. Alfalfa Hay and Corn Rations for **155 Pound** Ewes

Stage of Production	Pounds of feed per ewe per day	
	Alfalfa hay	Corn
Dry and non-pregnant	4.0	
Flushing (2 weeks before start of breeding season and continues for 4 weeks)	4.0	1.00
Early pregnancy (first 4 months)	4.0	
Late pregnancy (last month)	4.0	1.00
Early lactation (first 60 to 70 days)	5.0	1.75
Mid lactation (~60 days)	5.0	1.50
Late lactation	4.0	1.00

A mineral mix prepared for sheep is offered free choice at all times. The alfalfa hay can be eliminated for ewes on high quality pasture.

Total feed requirements for a ewe for a year will be dependent upon her lactation length. A ewe milking for 180 days would require approximately 1600 pounds of alfalfa hay, 325 pounds of corn and 45 pounds of soybean meal per year if these were the selected feedstuffs with no access to pasture. Of course, grazing pastures would drastically reduce the amount of hay consumption but not necessarily of grain consumption.

Some feeds can impart undesirable flavors to the milk (e.g. fish meal) and should not be fed in large quantities during lactation. Copper can be toxic to sheep. Only mineral supplements and prepared feeds that have been specially formulated for sheep should be

fed, because many feeds for other livestock species contain added copper. Specially formulated mineral mixes for sheep also contain added selenium which is required by sheep but deficient in much of the Great Lakes' region.

Weaning age for lambs in non-dairy flocks is 60 to 90 days. However, in dairy flocks, lambs are weaned from the ewe onto dry feed diets at approximately 30 days of age or removed from the ewe shortly after birth and raised on milk replacer until 30 days of age. This is done in order to put ewes into the milking parlor while they are still producing adequate amounts of milk. Nursing and artificially reared lambs must be offered at all times a high concentrate (75+% total digestible nutrients), high protein (20-21%) ration in an area where they can escape from their mothers. This extra feed will improve their weights at weaning and adapt them to solid feed. Once they are weaned from their dams or from milk replacer, they should continue on this ration, with some alfalfa hay provided also, until reaching approximately 75 pounds. From 75 pounds to market weight, they can be fed a ration with a lower protein content (12%). Each lamb will require 350 to 400 pounds of feed from birth to market weight of 120 pounds. Feed costs can be reduced if lambs are raised on pasture, but their daily gains generally will be less. Pasture raised lambs also are more susceptible to predators and to infestation with internal parasites.

HEALTH CARE AND SANITATION

For the most part, health considerations for dairy sheep are the same as for sheep raised for meat and wool. Lambs should be vaccinated with a combination vaccine that gives protection against enterotoxemia and tetanus. Ewes should be given the same vaccine prior to lambing to provide passive immunity to the newborn lambs to these two diseases. If abortion disease is common in your area, ewes should be vaccinated against *Campylobacter fetus* and *Chlamydia psittaci*. Caseous Lymphadenitis (contagious abscess) caused by the bacterium *Corynebacterium pseudotuberculosis* is another disease detrimental to milk production and vaccination for this disease should be considered after consultation with a veterinarian. Lambs and ewes should be routinely treated for internal parasites, especially while on pasture.

Care must be taken to make sure that lactating ewes are not administered any drugs or compounds which may taint the milk or which will result in a positive drug test in the milk. Make sure compounds administered are approved for lactating animals. Lactating ewes should be monitored for mastitis. If treated the milk the ewe should be milked separately making sure that the milk does not go in the tank. Routine use of the California Mastitis Test (CMT) or of the PortaSCC will identify an incidence of subclinical mastitis for early treatment. WSDC commercialize only Grade A milk even for cheese making. The legal limit of somatic cells and of bacteria in grade A sheep milk is 750,000/ml and 100,000/ml respectively. It is important that the somatic cell count and the bacteria count stay well below the upper limit.

A complete flock health program should be developed in consultation with your local veterinarian.

Clean and bacteria free water is indispensable on a dairy farm. The water should be tested by an approved lab before starting any construction. See your local agricultural extension office on how to take the water sample. Water samples have to be taken every two years for grade A milk license.

A ewe and her lambs will produce about 7 pounds of manure per day. Combined with bedding material, this will result in production of 10 to 12 pounds of waste material per ewe per day while ewes are housed indoors. Provisions must be made for proper disposal of this material. Local and state regulations must be checked to determine the allowable amount of waste material that can be spread on your land.

A disposal method for carcasses of dead sheep also must be in place. This is an especially crucial problem because many rendering companies which collect dead stock at the farm will no longer pick-up sheep carcasses. Other disposal options to investigate include burying, land fills, and composting.

LAMB MANAGEMENT

There are basically 3 options for lamb management:

The DY30 system. The ewes raise their lambs for 30 days after which the lambs are completely weaned and the ewes are put at milking twice a day. This is the easiest and cheapest way. However the total amount of milk sold per ewe will be less because the lamb(s) consume the milk during the first month which amount to about 25% of the total milk production. With very high milk producing ewes, this system might no longer be suitable because the lamb(s) cannot utilize all the milk and risks of mastitis are greatly increased.

The MIX system. The ewes raised their lambs for 30 days but one week after lambing the ewes are milked once a day in the morning after separating the lambs from their mothers overnight. The system works very well. The lambs adapt quickly at being separated from their mothers during the night and it does not affect their growth. A fair amount of milk is collected at the morning milking. However, the fat content of the milk during this period is very low which will drastically diminish the value of the milk if the milk is paid on component as it is now.

The Day1 system. All lambs are removed from their mother 24-36 hours after lambing. The ewes are milked twice a day and the lambs are raised on milk replacer with a lamb-bar system. In this system all the milk produced is sold but the cost is increased because of the purchase of milk replacer. The amount of work is also very much increased. The combination of lambing, raising lambs on milk replacer and milking could be overwhelming for beginners. Therefore this system **is not** recommended for beginners. A dairy sheep producer should start this system very progressively, first with the best ewes and then increasing the numbers yearly as knowledge and confidence grow.

SEASON OF LAMBING

Here again the producer has 3 options:

Spring lambing. Lambing in April-May allows for easier lambing and less need for expansive buildings. When in late spring, lambing can even occur on pasture. Moreover, the cost of feed is reduced because the higher nutritional needs coincide with the growth of the grass. Grass-only produced milk could be an excellent marketing tool. However, producers need to be aware that by lambing in spring the overall lactation length will be shorter (no more than 150 days) and therefore the overall milk production as well. Sheep being a fairly seasonal animal is sensitive to the length of day. When days are getting shorter the milk production will decrease rapidly. Dry off can be expected by the end of September or early October.

Winter lambing. Lambing in early January is very favorable for milk production. The animals eat more (hence more milk) when the weather is cold, the lactation length is increased to 200-240 days with a much higher overall milk production. When coupled with a Day1 System of lamb management, winter lambing is very favorable to high milk production. However, buildings are necessary in our area increasing the overall cost. Also, the need for expensive stored feed is at the highest.

All year around milking. All year around milking cannot be done with the same animal, but can be envisaged with 2 groups of animals, one group lambing in winter and 1 group lambing in the Fall. This system could be fairly interesting for reducing cost of equipment, because the equipment is utilized for a longer period and does not need to be as big because fewer animals are milked per day. For example, a parlor designed for 200 ewes can be used for 400 ewes with this system. Hormone treatment or light treatment might be necessary for a successful Spring breeding.

MILKING FACILITIES AND EQUIPMENT

Milking facilities and equipment will be one of the greatest expenditures of the dairy sheep operation. Before any facilities are built or equipment is purchased, visit as many dairy sheep farms as possible and visit with several dairy sheep equipment firms to determine what will work best on your farm. A milking parlor and milk room will be required. Producers should contact their State Department of Agriculture for regulations regarding requirements for such facilities.

Producers who will be milking less than 150 ewes should consider constructing a milking platform for the ewes to stand on while being milked. Most states will require the platform to be made of non-porous material, generally metal. The platform should be 32 to 36 inches off the floor with a ramp at either end for the ewes to enter and exit. One side of the platform will have a set of stanchions for securing the ewes and a manger for feeding grain. Adequate space must be available in front of the platform for a person to fill the manger with feed. The ewes are stanchioned side by side and milked from the rear. When stanchioned, the rear legs of the sheep should come within 3 to 5 inches of the edge of the platform. The width of the platform will depend upon the size of the ewes to be milked, but a width of 35 to 45 inches from the stanchion to the rear of the platform will accommodate most ewes. Commercially manufactured stanchions come in groups of 6, so one platform should be constructed to accommodate 6 or 12 ewes at one time. If desired, two platforms can be constructed and set parallel to each other, back to back, with 40 to 45 inches between platforms for the milker(s) and milking equipment. Two platforms allow ewes on one platform to be milked while ewes on the other platform are released and replaced, thus eliminating the need to stop milking to wait for ewes to enter the platform.

Producers with 150 or more ewes should consider constructing a "pit" parlor where the ewes enter at ground level and the milker stands in a pit. Sheep tend to move into the parlor faster in a pit system than in a platform system, and sheep are easier to train to the pit than the platform system. The pit and the area on which the sheep stand are constructed of concrete. The dimensions are the same for the pit and platform systems with one possible exception. With a pit system, there is a choice of three possible stanchion systems - the stationary stanchion used in the platform system, a movable stanchion or "Casse" system, or what is called the "rapid exit" system. Movable stanchions are mounted on wheels and moved forward to allow a greater area between the stanchion and the pit than is present on a platform. This greater area allows the ewes faster entrance to the stanchions. Once all ewes are stanchioned, the entire stanchion system is moved back until the ewes' rear legs are near the edge of the pit. This movable stanchion can accommodate ewes of different sizes. To install a movable stanchion, there must be at least 90 inches of area in front of the pit plus some additional area for feeding of the sheep.

Minimum milking equipment in the parlor will include a vacuum pump and line, one set of milking claws, and a milking bucket. Milking time is reduced with more milking claws and buckets. Use of buckets requires carrying of milk from the parlor to the milk room. Labor is reduced, but capital and maintenance costs increased if a pipeline is installed which transports the milk from the sheep to the milk room. In the milk room, the milk is deposited into a bulk tank for cooling.

After the milk is cooled, it can be transported to the processing plant. However, some producers might have to freeze their milk. If so the milk is then moved from the bulk tank to plastic bags and frozen. Therefore, adequate freezer space is necessary for the storage of several days of production. The ability to freeze milk on the farm and deliver large quantities to a processing plant at infrequent intervals has allowed the establishment of dairy sheep farms great distances from the processing plant. The type of freezer and the speed at which the milk can be completely frozen is extremely important for a long conservation of the milk. Home-type freezers have no air flow and cannot freeze the product fast enough therefore this type of freezer is **not allowed by WSDC**. Below is the size of compressor needed for different amount of milk put in the freezer at one given time. Before purchasing or building a freezer the producer should contact the Quality Representative of WSDC for more information on the type of freezer needed.

<u>Compressor size</u>	<u>Low outside air temp limit</u>	<u>High outside air temp limit</u>
3 hp	700 lbs	300 lbs
3.5 hp	900 lbs	500 lbs
4 hp	1100 lbs	700 lbs
4.5 hp	1300 lbs	900 lbs
5 hp	1600 lbs	1200 lbs
5.5 hp	1800 lbs	1400 lbs

ECONOMICS

In a dairy sheep operation, milk is the major source of revenue and should be considered as such meaning that the milk production should receive the producer's complete attention. Lamb production, although a major source of income, will provide less than 50% of the total income. Wool become negligible and efforts to increase its value might infringe on the overall milk production (shearing twice a year, hence reducing the value of the clip, is necessary in some type of management).

Milk is sold to a processor for conversion to cheese (yogurt and ice cream also are made from sheep milk) through the Wisconsin Sheep Dairy Coop. WSDC is a dairy plant and as such is allowed to sell milk to any other dairy plant. Because of its IMS status (Interstate Milk Shipment) WSDC can sell grade A milk in any States. WSDC looks for markets and sells the milk in behalf of the producers anywhere in Wisconsin or the United States. Currently (2008) WSDC sells the milk at \$90/cwt and the producer receives between \$75 and \$80/cwt according to the amount of fat, protein and somatic cells in the milk. Frozen milk is sold at a slightly higher price and producers receive compensation for handling and packaging the frozen milk.

Producers are urged to make **their own budget for their own situation**. Interactive spreadsheets are very useful by allowing change of any number in the spreadsheet (number of animals, price...) according to the type of management , feed sources etc... A very good and simple spreadsheet can be found in the WSDC web site at www.sheepmilk.biz

Below are two examples of a budget using this spreadsheet.

The first example is for an existing sheep farm of 150 ewes reconverting to dairy sheep using crossbred dairy ewes, with a spring lambing, letting the ewes raise their lambs for 30 days and with all lambs raised on pasture, and hiring someone to do all the milking. It is a low input operation intended to provide an additional income.

The second example is a 300 dairy sheep farm seeking a full income from the sheep operation. The farm does a winter lambing in January and all lambs are raised on milk replacer to maximize milk production. Lambs are raised to 120 pounds in complete confinement. Hired labor is used for milking and other tasks.

Both operations buy all the forage, grain and straw. Of course all numbers can be changed to fit the situation of any individual farm. The right choice of management for any given individual is essential for the future success of the operation.

**CALCULATION OF RETURN TO LABOR & MANAGEMENT
IN A 150 DAIRY SHEEP OPERATION
WITH SPRING LAMBING AND DY30 LAMB MANAGEMENT**

Information About Your Flock

Are you or will you be a member of WSDC (yes=1, no= 0)	1
Number of ewes in the flock	150
Number of ewes desired for the following year	150
Percentage of ewes lambing	94%
Average number of lambs born per ewe	2
Percentage of dead lambs	10%
Percentage of ewe loss	3%
Percentage replacement	20%
Number of rams	3
Number of ewe lambs sold for breeding	10
Number of ram lambs sold for breeding	1
Average weight of lambs at sale	90
Average weight of ewes	160
Average milk production per ewe (pounds)	350
Average # of ewes milked per hour	60
Average set up and cleaning time before and after each milking	0.5
Average # of days each ewe is milked	150
Percentage of milk sold frozen	50%

Flock Results

Number of lambs born	282
Number of lambs raised	254
Number of replacement ewe lambs to keep	35
Number of lambs for sale	219
Number of lamb sold for meat	208
Number of cull ewes	30
Number of ewes milked (90% of total ewes)	135
Minimum number of acres of improved pastures (8 ewes/acre)	19

Price of Products for Sale

Price of lambs at sale per pounds	\$ 1.00
Price of breeding ewe lambs	\$300.00
Price of breeding ram lambs	\$600.00
Price of cull ewes per pound	\$ 0.25
Price of wool including LDP	\$ 0.42
Average price of fresh milk per pound	\$ 0.75
Average price of frozen milk per pound	\$ 0.85

RECEIPTS

Lambs sold for meat		\$	18,747		
Ewe Lambs sold for breeding		\$	3,000		
Ram lambs sold for breeding		\$	600		
Fresh milk		\$	17,719		
Frozen milk		\$	20,081		
Packaging of pallets of frozen milk (WSDC members only)		\$	1,125		
Culled ewes		\$	1,200		
Wool		\$	514		
Other income					
Other income					
Total receipt					\$ 62,986
VARIABLE EXPENSES					
Ewe Feed	Quantity	\$	Unit		
# months on pasture	6	\$ 2.00	month/ewe	\$	1,836
# months average quality hay (3% DM intake)	6.5		month		
Tons of average quality hay needed and price	77	\$120.00	ton	\$	9,266
# months good quality hay (4% DM intake)	0	\$ 0.09	lb		
Tons of good quality hay needed and price	0	\$180.00	ton	\$	-
# months average hay for rams (5lb/day/ram)	6		month	\$	-
Tons of average quality hay for rams and price	2	\$120.00	ton	\$	180
# months corn for rams (2lb/day/ram)	2	\$ 0.07	lb	\$	25
# months corn at 1 lb/day/ewe	3	\$ 0.07	lb	\$	905
# months corn at 2 lbs/day/ewe	2	\$ 0.07	lb	\$	1,085
Mineral 20 lbs/ewe/year		\$ 0.40	lb	\$	1,224
Total Ewe Feed					\$ 14,522
Lamb Feed	Quantity	\$	Unit		
Creep feed 21% CP	30	\$ 0.16	lb	\$	1,218
Finish ration 13% CP	0	\$ 0.12	lb	\$	-
# days on pasture	130	\$ 0.03	day/lamb	\$	990
High quality hay for replacement ewes (2.5 lb for 120 days)	6	\$180.00	ton	\$	1,025
Corn replacement ewes (1 lb for 120 days)	120	\$ 0.07	lb	\$	277
Milk replacer	0	\$ 1.04	lb	\$	-
Total Lamb Feed					\$ 3,510
Other Expenses	Quantity	\$	Unit		
Shearing	1	\$ 2.50	/ewe	\$	375
Marketing-trucking		\$ 7.00	/ewe/lamb	\$	529
Milk production testing (# of times tested)	3	\$ 1.20	/ewe/time	\$	486
Vet-Med		\$ 5.50	/ewe	\$	825
Supplies sheep		\$ 6.00	/ewe	\$	900
Supplies milking		\$ 10.00	/ewe	\$	1,350
Bedding straw (lb/ewe)	50	\$ 0.04	/lb	\$	300
Electricity freezer (very variable)		\$ 0.05	/lb of milk	\$	1,181
Electricity other				\$	1,013
Machine operation cost				\$	-

Ram cost (1/3 of rams changed every year)				\$	600		
Maintenance and repair				\$	500		
Vehicle expenses				\$	500		
Hired labor for milking (hours)	825	\$ 10.00	/hour	\$	8,250		
Hired labor for other (hours)	0	\$ 10.00	/hour	\$	-		
Unplanned and unforeseen expenses				\$	2,000		
Other Equipment rental				\$	1,000		
Other							
Interest on operating loan		6%		\$	2,270		
						\$ 22,079	
Total Variable Expenses						\$ 40,110	
FIXED EXPENSES							
	Investment	Terms	Interest %	High Debt	Low Debt		
Farm payment	\$ 200,000	30	6	\$ 14,530			
Livestock	\$ 45,000	20	6	\$ 3,923			
Sheep Equipment	\$ 5,000	15	6	\$ 515			
Buildings	\$ 10,000	15	6	\$ 1,030			
Milking equipment	\$ 10,000	15	6	\$ 1,030	\$ 1,030		
Freezer	\$ 12,000	15	6	\$ 1,236	\$ 1,236		
Pick up truck (used)	\$ 10,000	4	6	\$ 2,886	\$ 2,886		
Machinery	\$ -	5	6	\$ -	\$ -		
Feed storage	\$ -	10	6	\$ -	\$ -		
Property Taxes				\$	2,000	\$ 2,000	
Insurance				\$	1,000	\$ 1,000	
Total				\$	28,149	\$ 8,151	
RETURNS					High debt	Low debt	
Total Income					\$	62,986	\$ 62,986
Less Variable Expenses					\$	40,110	\$ 40,110
Return to Labor and Capital					\$	22,876	\$ 22,876
Less Fixed Expenses					\$	28,149	\$ 8,151
Return to Labor and Management					\$	(5,273)	\$ 14,725
Per Ewe					\$	(35)	\$ 98

**CALCULATION OF RETURN TO LABOR & MANAGEMENT
IN A 300 DAIRY SHEEP OPERATION
WITH WINTERR LAMBING AND DY1 LAMB MANAGEMENT**

Information About Your Flock

Are you or will you be a member of WSDC (yes=1, no= 0)	1
Number of ewes in the flock	300
Number of ewes desired for the following year	300
Percentage of ewes lambing	94%
Average number of lambs born per ewe	2
Percentage of dead lambs	18%
Percentage of ewe loss	5%
Percentage replacement	25%
Number of rams	6
Number of ewe lambs sold for breeding	30
Number of ram lambs sold for breeding	2
Average weight of lambs at sale	120
Average weight of ewes	160
Average milk production per ewe (pounds)	650
Average # of ewes milked per hour	110
Average set up and cleaning time before and after each milking	0.5
Average # of days each ewe is milked	210
Percentage of milk sold frozen	10%

Flock Results

Number of lambs born	564
Number of lambs raised	462
Number of replacement ewe lambs to keep	90
Number of lambs for sale	372
Number of lamb sold for meat	340
Number of cull ewes	75
Number of ewes milked (90% of total ewes)	270
Minimum number of acres of improved pastures (8 ewes/acre)	38

Price of Products for Sale

Price of lambs at sale per pounds	\$ 1.00
Price of breeding ewe lambs	\$300.00
Price of breeding ram lambs	\$600.00
Price of cull ewes per pound	\$ 0.25
Price of wool including LDP	\$ 0.42
Average price of fresh milk per pound	\$ 0.75
Average price of frozen milk per pound	\$ 0.85

RECEIPTS				
Lambs sold for meat				\$ 40,858
Ewe Lambs sold for breeding				\$ 9,000
Ram lambs sold for breeding				\$ 1,200
Fresh milk				\$ 118,463
Frozen milk				\$ 14,918
Packaging of pallets of frozen milk (WSDC members only)				\$ 836
Culled ewes				\$ 3,000
Wool				\$ 1,028
Other income				
Other income				
Total receipt				\$ 189,301
VARIABLE EXPENSES				
Ewe Feed	Quantity	\$	Unit	
# months on pasture	6	\$ 2.00	month/ewe	\$ 3,672
# months average quality hay (3% DM intake)	2		month	
Tons of average quality hay needed and price	48	\$120.00	ton	\$ 5,702
# months good quality hay (4% DM intake)	4.5		month	
Tons of good quality hay needed and price	143	\$180.00	ton	\$ 25,661
# months average hay for rams (5lb/day/ram)	6		month	\$ -
Tons of average quality hay for rams and price	3	\$120.00	ton	\$ 360
# months corn for rams (2lb/day/ram)	2	\$ 0.07	lb	\$ 50
# months corn at 1 lb/day/ewe	3	\$ 0.07	lb	\$ 1,809
# months corn at 2 lbs/day/ewe	4	\$ 0.07	lb	\$ 4,342
Mineral 20 lbs/ewe/year		\$ 0.40	lb	\$ 2,448
Total Ewe Feed				\$ 44,044
Lamb Feed	Quantity	\$	Unit	
Creep feed 21% CP	80	\$ 0.16	lb	\$ 5,920
Finish ration 13% CP	300	\$ 0.12	lb	\$ 12,257
# days on pasture	0	\$ 0.03	day/lamb	\$ -
High quality hay for replacement ewes (2.5 lb for 120 days)	15	\$180.00	ton	\$ 2,673
Corn replacement ewes (1 lb for 120 days)	120	\$ 0.07	lb	\$ 724
Milk replacer	0	\$ 1.04	lb	\$ -
Total Lamb Feed				\$ 21,574
Other Expenses	Quantity	\$	Unit	
Shearing	2	\$ 2.50	/ewe	\$ 1,500
Marketing-trucking		\$ 7.00	/ewe/lamb	\$ 1,379
Milk production testing (# of times tested)	7	\$ 1.20	/ewe/time	\$ 2,268
Vet-Med		\$ 5.50	/ewe	\$ 1,650
Supplies sheep		\$ 6.00	/ewe	\$ 1,800
Supplies milking		\$ 8.00	/ewe	\$ 2,160
Bedding straw (lb/ewe)	250	\$ 0.04	/lb	\$ 3,000
Electricity freezer (very variable)		\$ 0.05	/lb of milk	\$ 878

Electricity other				\$	2,835	
Machine operation cost				\$	2,000	
Ram cost (1/3 of rams changed every year)				\$	1,200	
Maintenance and repair				\$	1,500	
Vehicle expenses				\$	1,000	
Hired labor for milking (hours)	1241	\$ 10.00	/hour	\$	12,409	
Hired labor for other (hours)	600	\$ 10.00	/hour	\$	6,000	
Unplanned and unforeseen expenses				\$	5,000	
Other Equipment rental				\$	-	
Other						
Interest on operating loan		6%		\$	6,732	
						\$ 53,310
Total Variable Expenses						\$ 118,928
FIXED EXPENSES						
	Investment	Terms	Interest %	High Debt	Low Debt	
Farm payment	\$ 200,000	30	6	\$ 14,530		
Livestock	\$ 90,000	20	6	\$ 7,847		
Sheep Equipment	\$ 10,000	15	6	\$ 1,030		
Buildings	\$ 30,000	15	6	\$ 3,089		
Milking equipment	\$ 60,000	15	6	\$ 6,178	\$ 6,178	
Freezer	\$ 12,000	15	6	\$ 1,236	\$ 1,236	
Pick up truck (used)	\$ 10,000	4	6	\$ 2,886	\$ 2,886	
Machinery	\$ 20,000	5	6	\$ 4,748	\$ 4,748	
Feed storage	\$ 5,000	10	6	\$ 679	\$ 679	
Property Taxes				\$ 2,000	\$ 2,000	
Insurance				\$ 1,000	\$ 1,000	
Total				\$ 45,221	\$ 18,727	
RETURNS				High debt	Low debt	
Total Income				\$ 189,301	\$ 189,301	
Less Variable Expenses				\$ 118,928	\$ 118,928	
Return to Labor and Capital				\$ 70,373	\$ 70,373	
Less Fixed Expenses				\$ 45,221	\$ 18,727	
Return to Labor and Management				\$ 25,152	\$ 51,647	
Per Ewe				\$ 84	\$ 172	

RESOURCES

Must read

<http://www.uwex.edu/ces/animalscience/sheep/>

Proceedings of all the past Great Lakes Dairy Sheep Symposia. A huge amount of information.

<http://www.attra.org/attra-pub/PDF/dairysheep.pdf>

A good synopsis of dairy sheep

<http://learningstore.uwex.edu>

Principles of sheep dairying in North America. The only compiled information in America. A CD available for purchase or to look at on the web.

Practical Sheep Dairying (out of print). Can sometimes be found in your local library

Author: Olivia Mills

Publisher: HarperCollins

ISBN: 0722507313

System Solution for Dairy Sheep

A De Laval publication. Can be requested through the De Laval headquarter. See address in "Milking Equipment" below.

Producers to visit and talk to in Wisconsin

Tom Kieffer, Strum	tdkieffer@tcc.coop	715/695-3617
Larry Meisegeier, Bruce	rrsf@brucelet.net	715/868-2285
Paul Haskins, River Falls	phaskins@sheepmilk.biz	715-441-2362
John Mayer, Clear Lake	clearlakeshepp@yahoo.com	715-220-1675
Rich Toebe, Catawba	JumpRiverShepherds@centurytel.net	715-474-3485

Milking equipment

DeLaval, Inc. (It would be better to contact your local DeLaval dealer)

11100 N. Congress Ave

Kansas City, MO 64153-1296

Tel: 816-891-7700

Web: www.delaval.com

Westfalia Surge

1880 Country Farm Drive

Naperville, IL 60563

Tel: 877-973-2479

Fax: 630-369-9875

Web: www.westfaliasurge.com

The Schluter Company

216 Center Street

P.O. Box 548

Janesville, WI 53547

Tel: 608-756-1269

The Coburn Company (WSDC is an official dealer for Coburn. Therefore equipment can be purchased at a wholesale price by members)

P.O. Box 147

Whitewater, WI 53190

Tel: 1-800-776-7042

Web: www.coburnco.com

Milk testing

DHIA

National Dairy Herd Improvement Association

Suite #102, 3021 E. Dublin Granville Road

Columbus, OH 43231

Tel: 614-890-3630

Fax: 614-890-3667

Email: dhia@dhia.org

Web: www.dhia.org

Agsource

135 Enterprise Drive

PO Box 930230

Verona, WI 53593-0230

608-845-1900

Performance recording software

EWE BYTE Sheep Management System

P.O. Box 375

Fergus

Ontario N1M 3E2

Canada

Tel: 519-787-0593

Fax: 519-787-2675

Email: ewebyte@sentex.net

Web: www.ewebyte.com/Index.htm

Importation of germplasm and artificial insemination

USDA-APHIS (importation regulations, importation permits)

USDA-APHIS

Veterinary Services-National Center for Import/Export

4700 River Road Unit 40

Riverdale, MD 20737

Tel: 301-734-3277

Fax: 301-734-4704

Web: www.aphis.usda.gov/vs/import_export.htm

Small Ruminant Genetics

R.R. 3

Markdale

Ontario N0C 1H0

Canada

Email: wooldrift@bmts.com

Web: www.srgenetics.com

Super Sire Limited (source of semen, embryos, artificial insemination)

34503 Meridian Road

Lebanon, OR 97355

Email: supersireltd@yahoo.com

Website: www.toprams.com

Centre d'Insemination Ovine du Quebec (source of semen, embryos, artificial insemination)

198, avenue Industrielle, C.P. 1539

La Pocatière (Québec)

GOR 1ZO

Canada

Tel: 418-856-5422

Fax: 418-856-1030

cioq@globetrotter.qc.ca

GENELEX (source of Lacaune from France):

Upra-Lacaune

Route de Moyrazès

12033 Rodez Cedex 9

France

Tel: (33) 565 73 78 14

Fax: (33) 565 73 78 15

upra.lacaune@worldonline.fr

BRITBREED Ltd.

Dr. James Mylne, Director

1 Airfield Farm

Cousland, Dalkieth

Midlothian EH22 2PE

Scotland

Tel: 01875 320727

Fax: 01875 320734

Web: www.britbreed.co.uk

Associations

Dairy Sheep Association of North America

Carol Delaney, Secretary

University of Vermont

570 Main St., 200B Terrill Hall

Burlington, VT 05405

Tel: 802-656-0915

Fax: 802-656-8196

Email: carol.delaney@uvm.edu

Web: www.dsana.org

Wisconsin Sheep Dairy Cooperative

N 50768 County road D

Strum, WI 54770

Tel: 715-695-3617

Email : kieftl@win.bright.net

Web: www.sheepmilk.biz

Cooperative Laitiere Ovine du Quebec

8200 Monseigneur de Laval
Becancour, Quebec
Canada, GOX 1 BO
Tel: 819-294-2657

Ontario Dairy Sheep Association

Wooldrift farm
RR3
Markdale, Ontario NOC 1HO
Canada
Tel: 519-538-2844
Fax: 519-538-1478
wooldrift@bmts.com

Vermont Shepherd

875 Patch Road
Putney, VT 05346
Tel: 802-387-4473
Fax: 802-387-2041
vtsheprd@sover.net
www.vermontshepherd.com

The British Sheep Dairying Association

BSDA Secretary
The Sheep Centre
Malvern, Worcestershire WR13 6PH
ENGLAND
Tel: +44(0)1684 892 661
Fax: +44(0)1684 892 663
Email: bsda@btopenworld.com
Web: www.sheepdairying.com

Research - Extension

University of Wisconsin-Madison

Yves Berger (management)
Spooner Agricultural Research Station
W6646 Highway 70
Spooner, WI 54801
Tel: 715-635-3735

Fax: 715-635-6741

Email: yberger@facstaff.wisc.edu

Jim Path (milk processing)

Center for Dairy Research

Babcock Hall 226B

1605 Linden drive

Madison, WI 53706

Tel: 608-262-2253

Email: cheeseout@aae.wisc.edu

Dave Thomas (genetics)

Department of Animal Sciences

1675 Observatory drive

Madison, WI 53706

Tel: 608-263-4306

Fax: 608-262-5157

Email: dlthomas@wisc.edu

Bill Wendorff (cheese, dairy products)

Department of Food Science

Babcock Hall A203B

1674 Linden drive

Madison, WI 53706

Tel: 608-263-2015

Email: wlwendor@wiscmail.wisc.edu

The Babcock Institute for International Dairy Research and Development

240 Agriculture Hall

1450 Linden Drive

Madison, WI 53706-1562

Tel: 608-265-4169

Fax: 608-262-8852

Email: babcock@calshp.cals.wisc.edu

Web: <http://babcock.cals.wisc.edu>

University of Vermont

Carol Delaney (management)

Small Ruminant Dairy Specialist, UVM Extension

570 Main St., 200B Terrill Hall

Burlington, VT 05405

Tel: 802-656-0915

Fax: 802-656-8196

Email: carol.delaney@uvm.edu

Journals, Books, Resource Materials

Journal of the Dairy Sheep Association of North America

Patt Elliot, Editor

23246 Clark Mountain Road

Rapidan, VA 22733

Fax: 540-854-6443

everona@vabb.com

Sheep Dairy News

Secretary, British Sheep Dairying Association

The Sheep Centre

Malvern, Worcestershire WR13 6PH

ENGLAND

Tel: +44(0)1684 892 661

Fax: +44(0)1684 892 663

Email: bsda@btopenworld.com

Web: www.sheepdairying.com
