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## Contents

Introduction.....	1
Getting Help .....	2
Getting Started .....	2
Labor .....	2
Marketing .....	3
Processing .....	3
Regulations.....	4
Budgeting .....	5
Production Notes.....	6
Selecting Stock.....	6
Nutrition .....	7
Milking.....	7
Production Records..	8
Health .....	8
Conclusion.....	10
References .....	12
Resources .....	12
Contacts.....	12
Web Sites .....	12
Associations .....	13
Periodicals/ Newsletters.....	13
Books/ Publications.....	13
Suppliers.....	14
Budgets.....	15

The sale of sheep milk or milk products is often more profitable than selling only lamb or wool. This publication explores the dairy sheep business and helps producers decide whether it is a viable option for their farms. Regulations governing the industry are discussed. Also addressed are production issues, animal health, stock selection, and nutrition issues surrounding dairy sheep. References and resources follow the narrative.



*Lacaune dairy sheep. Photo by Yves Berger, courtesy of University of Wisconsin Spooner Ag Research Center.*

## Introduction

A prospective dairy-sheep producer faces many potential challenges. First of all, any dairy operation requires a high degree of management skill. Raising dairy sheep involves two production systems—one for sheep and another for milk. People who haven't done either will need time to learn. Additionally, marketing sheep-milk products is a challenge. While the market for sheep-milk cheese is growing, it's still very small in this country and remains high-risk.

Production of sheep-milk cheese is a well-developed enterprise in parts of Europe. But sheep milk cheese production in the U.S. was unheard of until about 20 years ago, and is still rare. Some areas of the country lack markets for sheep milk. Still, some producers process the milk and market it directly to consumers.

Most sheep milk is made into cheese, or into products such as yogurt, ice cream, and soap. Prospective producers must invest

the time and effort to learn about product development and marketing.

Sheep exhibit a natural ability to efficiently process forage into meat, milk, and wool. To best take advantage of these traits, good grazing strategies must be developed—another area of special knowledge and management skills.

Finally, start-up costs can be high, and it may take several years to show a profit. Outside income or an extended line of credit may be required to subsidize the operation at first.

With all these concerns in mind, certain positives emerge in sheep dairying. A sheep dairy that delivers consistent products in a developed market can be far more profitable than an operation focused only on meat production. Sheep are also easier to handle and less expensive to maintain than cattle. And sheep milk can be frozen and stored for eventual sale as fluid milk or to make into cheese.

## Getting Help

As you plan a sheep dairy, explore several sources of information. The University of Wisconsin Cooperative Extension has published an excellent resource, *Principles of sheep dairying in North America*. This is a comprehensive and up-to-date publication, covering topics such as sheep milk and its uses, choosing a breed, nutrition, milking parlors and equipment, and the economics of raising dairy sheep. This publication can be downloaded from the Web at [http://cecommerce.uwex.edu/pdfs/A3767\\_Sheep\\_Dairying.pdf](http://cecommerce.uwex.edu/pdfs/A3767_Sheep_Dairying.pdf) or be purchased as a CD-ROM for \$20. To order, visit <http://cecommerce.uwex.edu/Showcat.asp?id=10>.

Another great resource is a publication from the dairy supply company DeLaval, entitled *System Solutions for Dairy Sheep*. This book covers breeds, handling, feeding, health, and layouts of housing and milking parlors for dairy sheep. For a free copy, contact Tess Wagner at 816-891-1573 or [tess.wagner@delaval.com](mailto:tess.wagner@delaval.com).

The Great Lakes Dairy Sheep Symposium is held each year. The proceedings from these meetings are available at [www.uwex.edu/ces/animalscience/sheep/Publications\\_and\\_Proceedings/res.html](http://www.uwex.edu/ces/animalscience/sheep/Publications_and_Proceedings/res.html). The proceedings are an excellent resource and include articles from researchers and producers on topics such as new research, new techniques, and practical tips to help producers.

*Practical Sheep Dairying*, by Olivia Mills, is another resource to explore. It is currently out of print from the U.S. publisher, but may be obtained through interlibrary loan or used book services. See the **Resources** section for additional publications, Web sites, and contacts.

In addition to exploring these written materials, a prospective producer needs to investigate the market, visit with other producers, and include family members in discussions. The remainder of this publication provides a brief overview of the dairy sheep business to encourage you and your family to consider carefully whether or not the business suits your family and farm goals.

At the end of each section are questions for your consideration.

## Getting Started

Before entering a commercial dairy sheep business, carefully consider the following elements:

- availability of labor
- marketing
- processing options
- regulations
- budgeting
- overall economic viability

### Have you considered:

- Am I a dairy person?
- Is my family interested in the enterprise?
- Where can I find more information?

## Labor

Labor is a major concern. Dairy sheep producers spend mornings and evenings—seven days a week, week after week—feeding, milking, and cleaning up. Do you enjoy sheep enough to meet these demands? Is your family supportive of this level of commitment? Many dairy producers face frustration and burnout after unsuccessful attempts to hire competent help. A family unwilling to help with the business may warrant a less demanding enterprise.

### Have you considered:

- Who will do the milking?
- Who will do the farming?
- Who will be in charge of flock health?
- Who will help you? How, and how much will you pay them?
- Who will do construction?
- Who will fix things that break?

### Related ATTRA Publications

Sustainable Sheep Production

Rotational Grazing

Meeting the Nutritional Needs of Ruminants on Pasture

Pastures: Sustainable Management

Integrated Parasite Management for Livestock

Grass-Based and Seasonal Dairying

## Marketing

If labor is available, the next concern is marketing. What product or products do you plan to sell? Is there an unmet demand for that product in your area? If so, what price can you realistically expect to receive? Can you make a profit at that price?

In the case of fluid milk, a prospective producer must first locate a reliable buyer. Judy Kapture, long-time producer and columnist for the *Dairy Goat Journal*, issues a strong warning to the farmer planning to start a goat dairy, which also applies to those planning to start a sheep dairy.

You are certainly wise to be cautious. I can tell far too many stories about people who used all their money to set up their farm as a goat dairy, and then never did sell any milk. Or their milk market fizzled out within a year... Get in touch with the (the buyer) to find out if they actually are planning to buy more milk. Learn the details—how much milk do they want from a farm, what do they pay for milk, is winter production a necessity, what do they charge for hauling, etc.

Then talk with some of the people who are shipping milk to them now. You want to find out if they feel the pay for the milk is good enough to make the goatkeeping effort worthwhile. (Remember that feed and other costs vary greatly and a “good milk price” in one area may be too low for another.) You may get some surprises when you ask this question... Be cautious about new startups. Sometimes they have a lot of enthusiasm but no idea how difficult it will be to market their milk or cheese or other product in the quantities they need... Are their patrons shipping milk to the buyer now? Talk to them, all of them. Are they getting paid? Is the buyer taking all the milk he promised he would?... How good is the market for what they are planning to sell? (Kapture, 2001)

Consider the same sorts of questions if you plan to process sheep milk into a product. Do you have the labor and expertise to run the dairy and make an additional product? Is there a market for the product in your area? Is the price you can charge for the product enough to make a profit?

Marketing may be one of your biggest obstacles. Because this is an industry in its infancy, there are few established markets.

The biggest demand for sheep cheese is on either coast. As with any other niche product, it takes a lot of effort to develop the market. Some producers are uncomfortable with marketing, while others find it exciting. You may want to read the ATTRA publications *Evaluating an Agricultural Enterprise*, *Adding Value to Farm Products*, and *Direct Marketing* for more information on this essential part of the business.

### Have you considered:

- Where and how will you market the milk?
- What is the market?
- Where is the market located?
- How much will you charge for the products? What does the competition charge?
- What kind of advertising will you need?
- What will you use to package? How will you label? What is your logo?

## Processing

Some producers choose not to deal with a milk buyer and work to increase farm profits by processing the milk themselves. Diverse products can offer more income and financial stability. These products might include fluid milk, cheese, yogurt, fudge, sheep-milk soap or lotions, sheepskins, or meat.

Cheese is a good alternative to selling milk, particularly if you like direct marketing. It is legal to use raw milk to make cheese if the product is aged at least 60 days before sale. (Dairy Practices Council, 1994) Fresh cheese must be made with pasteurized milk.

Cheese making classes are helpful. But experiment, practice, and sample regularly before trying to market farmstead cheese. You must abide by regulations (talk to your inspector about what is involved). Cheese making resources are discussed

### Related ATTRA Publications

Predator Control for Sustainable and Organic Livestock Production

Value-Added Dairy Options

Multi-Species Grazing

Dairy Farm Sustainability Checksheet

Small Ruminant Sustainability Checksheet

Small Ruminant Resource List

in *The Small Dairy Resource Book* (see **Resources**). Caprine Supply and Hoegger Supply are companies (see **Resources**) that offer several books about cheese making.

To locate the inspector with jurisdiction over your dairy and/or processing facility, go to the American Dairy Goat Association Web site, <http://adga.org/StartDairy.htm>, and scroll to your state. The contact information for the agency in your state is provided.

#### Have you considered:

- The kinds of products you are planning?
- Is the market saturated with this type of product? If it is, why would yours be successful?
- How much will your products cost to produce?

**C**ontact your state inspector early in the process of setting up a commercial sheep dairy.

Edible products require a Grade A dairy, a commercial kitchen, and appropriate licensing (contact your state agency for more details). Soap making does not. Soap is non-perishable, easy to ship, and does not require much milk. These advantages make soap an appealing option for small farm enterprises.

Processing beyond bulk fluid milk creates extra demands on sheep farmers. The dairying must still be tended and somehow also the processing, packaging, marketing, delivery, and paperwork. While diversifying products may add stability (not all the eggs in one basket), each new product requires more equipment, labor, storage space, production knowledge and skill, and outlets for marketing. Unless a large labor force is available, too much diversification is unsustainable. “If you try to produce a whole line of products,” points out Tatiana Stanton of Cornell University, “it can make really big marketing demands on you if you are not going to sell them to the same buyer.”

For example, if you are a small producer and are going to sell fudge, soap, and cheese all to the same local food co-op or over the Web, that is one thing. You are going to have to do a lot more marketing if your cheese is going to cheese shops or restaurants, and your fudge and soap to gift shops. You may find in such a case that it is a terrible decision to expand your line. (Stanton, 2002)

The extra constraints of processing and marketing mean less time to spend with the animals. This is a trade-off to be considered. Will you provide the extra labor

required, or will you hire someone to process and market the products?

## Regulations

The U.S. Food and Drug Administration (FDA) drafted the Pasteurized Milk Ordinance (PMO) that states only pasteurized milk can be sold as Grade A. Enforcement of this ordinance is under the jurisdiction of state departments of health or agriculture (Zeng and Escobar, 1995). Local requirements may vary. Contact your state inspector early in the process of setting up a commercial sheep dairy. State inspectors may offer helpful suggestions and can assist you to plan and procure FDA-approved equipment. Many producers comment that state inspectors helped them avoid expensive mistakes. Locate the appropriate agency by finding your state on the list of contacts at <http://adga.org/StartDairy.htm>.

Scrapie is a fatal, degenerative disease that affects the central nervous system of sheep. It is of the class of diseases known as transmissible spongiform encephalopathies (TSEs). Other examples of TSEs include Bovine Spongiform Encephalopathy (BSE) or mad cow disease in cattle and Chronic Wasting Disease (CWD) in deer and elk.

There is no clear evidence that scrapie is transmissible to humans, but BSE has been linked to a rare but incurable neurological disease in humans. Therefore concern remains about scrapie’s potential to spread to humans. Negative public perception and the loss of export opportunities have encouraged efforts to eradicate scrapie from U.S. sheep.

Producers are required to participate in the Scrapie Eradication Program. Contact your state veterinarian for details, or go to the National Scrapie Education Initiative Web site, [www.animalagriculture.org/scrapie](http://www.animalagriculture.org/scrapie). First contact your state veterinarian to request a premises identification number. For additional information or for help in obtaining a premises ID number, call 866-USDA-TAG (toll-free). You will receive free ear tags with your premises ID printed on them. You must tag breeding animals over the age of 18 months before they leave your farm. In addition, an official Certificate of Veterinary Inspection (health certificate) issued by an accredited veterinarian must accompany breeding sheep that cross state lines (e.g., for show or for sale). (National Institute for Animal Agriculture, [www.animalagriculture.org/scrapie](http://www.animalagriculture.org/scrapie))

#### Have you considered:

- Do you know your inspector? Have you contacted your inspector?
- Can you comply with all regulations?

## Budgeting

Determine economic feasibility before starting a commercial sheep dairy. Many sample budgets are available, but each must be customized to fit an individual farm. Investigate local feed costs as well as the selling price of milk. Other key considerations include cost of building or converting barns, fences, and watering systems. Initial investment in livestock and in milking systems will be a large expense.

Bee Tolman, operator of the Tolman Sheep Dairy Farm, offered advice to prospective dairy farmers at the 8<sup>th</sup> Great Lakes Dairy Sheep Symposium in 2002.

Do a complete business plan before you do anything else. Include all financial statements in detail. Don't miss the details—they will be your undoing. And be conservative. I was advised by a goat dairy farmer (who has since folded) to add 30 percent to all budgeted costs. I didn't. I now know that if I had,

my plan would have been far more accurate. (Tolman, 2002)

As Tolman points out, talk to farmers who are currently in the business to ensure that your plan and your budget are realistic.

Begin your calculations by taking the following steps.

- *Research the market.* Is there a market? What is the current price for your product, whether fluid milk for processing, cheese, or soap? Is there a strong demand for your product?
- Estimate *production level*. How many ewes do you plan to milk? How productive will they be, on average? (Ask several commercial producers what their flock average is, and be sure to select ewes that can produce enough milk to be profitable.) Be realistic about production and marketing.
- Investigate *costs*. What does feed cost in your area? How much feed do you need to produce the planned quantity of milk? What about buildings, equipment, fencing, hay? You need to project marketing and hauling costs, health costs, utilities, supplies, breeding, and labor. Calculate initial cost of breeding stock, the cost to raise replacements, and build in an extra “cushion” for unexpected expenses. Remember, under-capitalization can doom even a good business plan.
- Consider *labor availability*. Plan for peak seasons such as lambing and breeding, and for processing and marketing.
- Create a *business plan*. Your lender will tell the figures needed; your local Cooperative Extension agent may be helpful. See also the **Resources** section for help with business plans.

The University of Wisconsin-Madison Center for Integrated Agriculture Systems has developed a budget for sheep dairies. It is an Excel program that allows

**D**etermine economic feasibility before starting a commercial sheep dairy.

you to enter specific numbers. The budget, along with detailed instructions for use, can be found at, [www.cias.wisc.edu/archives/2005/05/19/dairy\\_sheep\\_enterprise\\_budget/index.php](http://www.cias.wisc.edu/archives/2005/05/19/dairy_sheep_enterprise_budget/index.php).

#### Have you considered:

- A good return on your investment? Is it guaranteed?
- Have you written a business plan?
- Who will keep the records?
- Who will do the accounting?
- What income will you live on the first few years?
- Do you have a contingency plan for when things go wrong?

**T**he East Friesian is the most common breed of dairy sheep.

## Production Notes

### Selecting Stock

Just as a cow dairy would typically start with Holstein, Jersey, or another breed of dairy cattle, a sheep dairy should begin with a breed of dairy sheep. The East Friesian is the most common breed of dairy sheep. With the importation of half-Friesian rams and frozen semen, there is now percentage breeding stock available in the United States. If you already own a flock, the most economical way to begin a dairy

may be to breed ewes to an outstanding dairy ram, and hold back the best daughters to build a dairy flock.

East Friesian and Lacaune sheep are commonly found in dairy flocks in the U.S. Many producers use various crosses of these breeds with domestic American breeds. For more specific information about dairy sheep breeds, see *Principles of sheep dairying in North America* and *System Solutions for Dairy Sheep (Resources)*. Yves Berger also has an article, *Breeds of Sheep for Commercial Milk Production*, that can be found in the Proceedings of the 10<sup>th</sup> Great Lakes Dairy Sheep Symposium, [www.uwex.edu/ces/animalscience/sheep/Publications\\_and\\_Proceedings/res.html](http://www.uwex.edu/ces/animalscience/sheep/Publications_and_Proceedings/res.html).

Regardless of the breed, buying stock from a reputable breeder is essential. These people have usually spent several years selecting healthy ewes that milk well. Reputable breeders will produce breeding and health records, and can help you decide which animals are best for your situation.

#### Have you considered:

- What kind of ewes do you need?
- How many do you need?
- Where will you get your stock?
- Can you visit a reputable breeder and purchase stock?



Friesian sheep. From [www.ansi.okstate.edu/breeds/sheep/friesianmilk](http://www.ansi.okstate.edu/breeds/sheep/friesianmilk).



Lacaune sheep. From <http://sheepdairying.com/breeds>.

## Nutrition

Feeding your flock is not simple. Nutritional requirements vary depending on size, age, and stage of sheep production. As ruminants, sheep health and productivity depends on proper function of their complex stomach systems. The rumen is “healthiest” when sheep eat good quality forages, such as vegetative pasture. To get the best milk production from sheep, provide high quality forages. This can be achieved by grazing sheep on appropriate pastures or by feeding hay or silage. For more information about pastures and rotational grazing, see the ATTRA publications *Sustainable Pasture Management*, *Rotational Grazing*, *Paddock Design, Fencing, and Water Systems for Controlled Grazing*, and *Matching Livestock Needs and Forage Resources*. Also check with your local Extension and NRCS agents for information about forage plants that do well in your area.

Concentrates (grain) are often fed to milking dairy ewes to supplement forages and better meet the ewes’ nutritional needs. Careful consideration is necessary when feeding concentrates. To properly meet the nutritional needs of your animals, forages should be tested and the amount of supplement determined based on the quality of the forages available and the feedstuffs used.

Feed a half a pound of supplement per ewe per day for ewes on pasture, recommends Bruce Clement, of the University of New Hampshire Cooperative Extension. (Clement, 2002) His study examined levels of supplement for dairy ewes and dairy goats. The study found no difference in milk yield, milk composition, or animal condition score among ewes fed a half a pound of supplement per day and those fed 1.5 pounds of supplement per day.

The study also found that milk yield and milk composition lowered when 2.5 pounds of supplement per day was fed. The study concluded that dairy sheep on well-managed pastures lactating in the three pounds per day range need no more than a half a pound per ewe per day concentrate

supplementation. (Clement, 2002) The article, including the formula for the concentrate, is available by downloading the proceedings from the 8<sup>th</sup> Great Lakes Dairy Sheep Symposium, 2002, at [www.uwex.edu/ces/animalscience/sheep/Publications\\_and\\_Proceedings/symposium%20PDF/Great%20Lakes2002%20symposium.pdf](http://www.uwex.edu/ces/animalscience/sheep/Publications_and_Proceedings/symposium%20PDF/Great%20Lakes2002%20symposium.pdf) (see page 66).

The best feeding regimen for your animals is found through experience and experimentation with your flock and farm. Regardless of what you feed your ewes, access to clean water is always necessary. Lactating ewes require approximately three gallons of water per head per day. This is the highest water requirement of any class of sheep. (Thomas, n.d.)

## Milking

Sheep milk production is usually seasonal, with lactation varying from three to eight months, depending on the breed. (Thomas, n.d.) Milk production per lactation period also varies. It can be as little as 100 pounds per lactation for domestic ewes, or as much as 1,100 pounds per lactation for dairy breeds. Crosses between domestic and specialized dairy breeds produce anywhere from 250 to 650 pounds of milk per lactation. (Thomas, n.d.)

Ewes can be milked by hand or by machine. Hand milking is only practical for small flocks. Bucket milking is a popular option in the U.S. There is also the parlor system with a pipeline going into a bulk tank. *Principles of sheep dairying in North America* and *System Solutions for Dairy Sheep* discuss the many types of milking set-ups and the necessary equipment. There are also many articles about various parlors and methods of milking in the Proceedings of the Great Lakes Dairy Sheep Symposium (see **Resources**).

### Have you considered:

- Can you graze your animals year-round?
- If not, where will you get hay?
- Will you feed a supplement?
- Can you formulate a ration? Do you know someone who does?

Sanitary practices are critical, whether hand milking or machine milking. A sanitary environment is vital to the health of your ewes and the safety of the milk. Sanitation requires time and money, but it is time and money well spent. It is cheaper to prevent disease and contamination than to treat it.

A good reference for producers considering a commercial dairy is *Small Ruminant Guidelines* from the Dairy Practices Council. These *Guidelines* include a wealth of technical information about the details of setting up a milking parlor, producing quality milk and farmstead cheese, proper handling of wastewater, and much more. The *Guidelines* are sold separately or as a set; the set costs about \$70.00, plus shipping and handling, and is assembled in a binder for easy storage and reference. For more about this resource, see [www.dairypc.org](http://www.dairypc.org), or call 732-203-1194. For a commercial dairy operation, this is an invaluable tool.

**K**eepproduction, health, and financial records in order to maintain an efficient operation.

#### Have you considered:

- How many ewes are you going to milk?
- What type of system/set-up are you going to use?
- How are you going to get the necessary equipment?
- Do you know the requirements you must follow to meet regulations?

### Production Records

Accurate records are essential to any good business, including a sheep dairy. Keep production, health, and financial records in order to maintain an efficient operation.

Production records (i.e., how much milk a ewe yields, length of lactation, etc.) help a producer identify the most productive animals. Records also identify animals not pulling their weight. As you consider a purchase, individual production records and those of its relatives offer the best assurance that you have selected a productive animal.

When examining production records, keep in mind that production is naturally much lower during the first lactation. Examine the records for overall production in pounds, length of lactation, and butterfat and protein percentages (if those are important to your operation). Bear in mind that your own management will be a major factor in the ewe's production on your farm; production records only verify that a ewe has the genetic potential to produce that quantity of milk.

It is also important to keep records of when ewes are bred, when they are due to lamb, the date and type of vaccinations, and the occurrence and specifics of any health problems. Records help you manage your flock and remain the best tool to identify unproductive animals. Elimination of unproductive animals improves the sustainability of your farm.

#### Have you considered:

- The types of records you will keep?
- How you will keep them—by hand, computer, type of software, etc.?
- How will you process the information the records provide?
- Who will keep and review records?

### Health

Healthy animals are essential to a productive operation. Acquiring healthy stock and keeping records are ways to maintain a healthy and productive flock. Health problems will arise in any flock, however. In these instances, work with a veterinarian. Find one who knows (or is willing to learn) about small ruminants and who seems compatible with you and with your management style. You may locate a small ruminant veterinarian by contacting the Association of Small Ruminant Practitioners at [www.aasrp.org](http://www.aasrp.org). (See the **Resources** section for full contact information for AASRP.)



## Reduce mastitis by observing the following rules

- Detect infected animals early; follow up with either a treatment or culling.
- Wash hands frequently during milking. Milkers should wear latex gloves to decrease the possibility of spreading bacteria from one udder to the other.
- Shut off the vacuum line when removing the teat cups to avoid possible infected milk droplets reaching the teat opening of the next ewe.
- Use correct vacuum level and pulsation.
- Do not-over milk; it can cause trauma to the teat and increase susceptibility to infection.
- Clean the milking machine thoroughly.
- Clean air lines thoroughly.
- Change teat cup liners and milk lines periodically.
- Provide abundant fresh bedding for ewes in confinement.
- Clean the water delivery system.
- Conduct a post dipping program.

(Berger et al., 2004)

This publication provides discussion about a few health concerns of particular concern to dairy sheep producers. Additional pertinent health topics are discussed in ATTRA's *Sustainable Sheep Production* and *Goats: Sustainable Production Overview*. (Goats and sheep share many of the same health problems, including internal parasites.)

### Mastitis

Mastitis is an inflammation of the mammary gland and may result in reduced production and profitability. It is usually caused by the bacterium *staphylococcus* or *streptococcus*, but it can also be caused by other bacteria or by improper milking machine operation. Symptoms include pain, heat, redness, swelling, and a hard udder. Ewes will not always show physical symptoms of mastitis. A decrease in milk production and an increase in somatic cell counts are good indicators of mastitis. Milk samples can be cultured to determine the organism causing mastitis. *Streptococcus* infections are responsive to antibiotics and are fairly easy to eradicate. *Staphylococcus* infections do not respond well to antibiotic treatment.

Other causes of mastitis may include injury, malnutrition, or a contaminated or malfunctioning milking system. The first line of defense against mastitis is healthy teat skin. The cause of teat injury must be quickly identified and eliminated. Fluctuations in the milking vacuum and improperly designed or improperly functioning milking equipment must be investigated. Mastitis is also linked to diets deficient in vitamins A and E, selenium, and copper. (Pugh, 2002)

### Ovine Progressive Pneumonia (OPP)

Ovine progressive pneumonia, a chronic progressive pneumonia, is one of the most economically damaging diseases affecting sheep in North America. (Pugh, 2002) Pneumonia causes losses from sick animals, reduced production, and decreased sales. Signs of OPP include listlessness, emaciation, and difficulty breathing. Nasal discharge and coughing may also be seen. (Pugh, 2002) A vaccine is not available, so the only prevention is to keep animals with OPP out of your flock. This is

**O**vine progressive pneumonia, a chronic progressive pneumonia, is one of the most economically damaging diseases affecting sheep in North America. (Pugh, 2002)

accomplished through a blood test (ELISA), which can be conducted at a diagnostic lab prior to purchase. (Pugh, 2002)

## Internal Parasites

The control of internal parasites is a major concern for small ruminant producers, especially in humid regions. Control of these parasites is becoming increasingly difficult due to parasite resistance to treatments. Not only are dewormers less effective, but in many cases milk cannot be used during treatment due to drug residues. Therefore, learn to control parasites in your dairy business without relying on chemical dewormers.

Internal parasites are especially a problem in warm, wet climates and in settings where animals are grazed. Control of internal parasites can be nearly impossible where animals graze close to the ground on densely stocked pastures. Therefore, good pasture management (to avoid overgrazing) is critical to the health and productivity of your flock. In addition, several new techniques are aimed at controlling internal parasites without a complete dependence on commercial dewormers. These techniques include Smart Drenching and FAMACHA®. For more information on these and other techniques, visit the Southern Consortium for Small Ruminant Parasite Control Web site at [www.scsrpc.org](http://www.scsrpc.org). Be sure to consult with your veterinarian on this issue and on other health problems.

**I**f you can answer all or most of the questions presented, then you are well on your way to starting a successful sheep dairy.

### Have you considered:

- Do you have a veterinarian willing to work with you?
- Does your veterinarian have experience with sheep, or a willingness to learn about sheep?
- Do you have the knowledge to handle minor health concerns?

## Conclusion

The decision to start a sheep dairy is not an easy one. You probably will not become rich, but if you like sheep, have the markets and an understanding of them, and have the time to build a business, this can be a rewarding enterprise.

There is much more to learn about dairy sheep production, and the **Resources** section will help you to find more information. Your best sources of information are other farmers; talk to as many as you can, and learn from their experiences.

Have you considered the questions posed to you in this publication? If you can answer all or most of the questions presented, then you are well on your way to starting a successful sheep dairy.

### Acknowledgments

Many of the "Have you considered?..." questions were taken from the following.

Berger, Y. 2000. As a producer, should I consider sheep dairying? Sheep! Magazine. Vol. 21, No. 7, p. 4.

Kapture, J. 2001. Dairy operation requires ingenuity, perspiration, and more.... Sheep! Magazine. Vol. 21, No. 1, p. 12-15.

## Northland Sheep Dairy, New York By Karl North Pros and Cons of Milking Sheep

It should no longer need arguing that the most sustainable way to make milk is from grass. In some ways sheep are well suited to this sort of dairy farming. They both graze and spread manure more evenly than cows. Milking parlor and other handling machinery is economical because of their small size. All of ours is farm-built. A lactation of less than six months mirrors the grass season length in this [New York] climate, making seasonal dairying a natural. We time lambing for the beginning of grass in May; the lactation ends in early fall, and the flock finishes stockpiled pasture by the end of December.

Sheep milk, mild and unpretentious as mammary products go, nonetheless possesses qualities that become obvious in the processing. The yoghurt is thicker and smoother than cow or goat varieties, without additives. Cheeses do not need the extra butter fat of double and triple creme to come out rich and smooth. Thick milk and fine fat globules are an advantage in fudge-making too. Cooking down, a mix of half maple syrup and half sheep milk becomes a velvety confection.

Now for the disadvantages. Although sheep milk has about twice the solids of cow or goat milk (less useless water to transport all over the country), this hardly compensates for the low yield per milking ewe. Dairy sheep breeds can average three quarts a day or more over a five-month lactation, but like high production Holstein cattle, they force the farm into a high input mode in order to serve their special feed, shelter, and medical needs. We began with ordinary meat sheep—all that were available at the time. After 12 years of genetic selection both for a rustic, pasture-based life and for milk yield, the latter has doubled, but still averages only 1.6 quarts per ewe per day, and that only at the peak of their lactation. The upside of this equation is our success in maintaining our goal for an extremely low input operation. We are currently experimenting with various degrees of cross-breeding with the East Friesian, a dairy sheep of long pedigree in Northern Europe. Our goal is to discover what percentage of Friesian will add to milk yield without upsetting our low input system.

The second main disadvantage of sheep, whether for milk or meat, is the damage internal parasites can do to the health and growth of lambs. Here as elsewhere in farming there is a management solution to replace the chemical quick fix. But it takes a level of organization and development of the forage acreage of the farm that we have attained only in the last two years.

First the main forage fields of the farm must be fenced, supplied with water, cleared of trees and rocks to permit haying, and all must produce a quality of forage suitable for either hay or pasture, and for empty, dry stock or lactating ewes and growing lambs. Then a three-year rotation can be devised that always puts the weaned lambs on parasite-free pasture, by grazing them on fields used only for hay the year before. The main forage fields are divided into three sections, and the rotation proceeds as a given field is used for hay, then weaned lambs, then ewes (with lambs until weaned). Plans for the future are to add enough animal units of another hardy pasture species, like a few Highland cattle, along with our team of Haflinger draft horses, to balance the dairy ewe and lamb flocks, and provide the annual alternation of stock that we need for sustainable pest control in the sheep.

Lastly, although the sheep dairy industry in the United States has barely begun, there are already signs that wholesaling sheep milk may be dogged by the same profitability problems that have plagued cow dairies: forcing unwanted expansion, the use of high production (but also high maintenance) dairy breeds, debt, and a downward spiral of quality of life for the whole farm ecosystem (people, animals, plants, and soil).

To avoid this we planned for on-farm artisanal quality cheese-making and direct marketing of most of our products in a local farmers market. It was an easy decision, for when we started farming in New York we had just come from years of homesteading in France, where just this sort of small, vertically integrated dairy farm, and weekly local farmers' markets as well, are old traditions. Still, the sale of cheese, lamb, yarn, and tanned skins from a base flock of only 50 ewes barely provides a livable income, and then only because we enjoy considerable self-sufficiency in food (vegetables, meat, and dairy), energy (solar, wood heat, and draft horses), and of course fertilizer.

A younger couple (we are pushing 60) could operate the farm with 100 ewes and bring in a net cash income of close to \$20,000 without a great deal more capital investment. But the quality of life is excellent; we are free of much of the cost/price squeeze and resultant debt that is destroying family-scale dairy farming, and we enjoy the diversity of work: milking, processing, marketing, haying and logging mostly with draft horses, sheep and horse husbandry, composting and spreading, sheep dog training, gardening, and building and repairing simple structures and equipment with simple tools. Work gives way to semi-vacation when the grass season ends.

Visit [www.geocities.com/northsheep](http://www.geocities.com/northsheep) or e-mail Karl North at [northsheep@juno.com](mailto:northsheep@juno.com) for more information about his operation.

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[www.luresext.edu/goats/library/fact\\_sheets/d04.htm](http://www.luresext.edu/goats/library/fact_sheets/d04.htm).

## Resources

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## Web Sites

### University of Wisconsin-Extension Sheep Department

[www.uwex.edu/ces/animalscience/sheep/Publications\\_and\\_Proceedings/res.html](http://www.uwex.edu/ces/animalscience/sheep/Publications_and_Proceedings/res.html)

**Wisconsin Sheep Dairy Cooperative**

[www.sheepmilk.biz](http://www.sheepmilk.biz)

**Small Ruminant Dairy Project**

[www.uvm.edu/sustainableagriculture/smallrumi.html](http://www.uvm.edu/sustainableagriculture/smallrumi.html)

**The Hometown Creamery Revival**

[www.smalldairy.com](http://www.smalldairy.com)

**Spoooner Agricultural Research Station-Sheep Dairy**

[www.uwex.edu/ces/sars/sheep.htm](http://www.uwex.edu/ces/sars/sheep.htm)  
[www.sheepmilk.biz/spoooner.htm](http://www.sheepmilk.biz/spoooner.htm)

**Southern Consortium for Small Ruminant Parasite Control**

[www.scsrpc.org](http://www.scsrpc.org)

**National Scrapie Education Initiative**

[www.animalagriculture.org/scrapie](http://www.animalagriculture.org/scrapie)

**Associations****American Sheep Industry Association**

9785 Maroon Circle, Suite 360  
Centennial, CO 80112  
303-771-3500  
303-771-8200 FAX  
[www.sheepusa.org](http://www.sheepusa.org)

**Dairy Sheep Association of North America**

[www.dsana.org](http://www.dsana.org)

**American Cheese Society**

304 West Liberty St., Suite 201  
Louisville, KY 40202  
502-583-3783  
502-589-3602 FAX  
[acs@hqtrs.com](mailto:acs@hqtrs.com)  
[www.cheesesociety.org](http://www.cheesesociety.org)

**American Association of Small Ruminant Practitioners (AASRP)**

1910 Lyda Avenue, Suite 200  
Bowling Green, KY 42104  
270-793-0781  
[www.aasrp.org](http://www.aasrp.org)

**Periodicals/Newsletters****sheep! Magazine**

145 Industrial Drive  
Withee, WI 54498  
[www.sheepmagazine.com](http://www.sheepmagazine.com)

*Subscription is \$21 per year.*

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[www.uvm.edu/sustainableagriculture/smallrumi.html](http://www.uvm.edu/sustainableagriculture/smallrumi.html)

**Books/Publications****Principles of sheep dairying in North America**

Berger, Y., P. Billon, F. Bocquier, G. Caja, A. Cannas, B. McKusick, P. Marnet, and D. Thomas. 2004. University of Wisconsin-Extension, Madison, WI. 151 p.

*Cost is \$20 for a CD version of the publication.*

*Order from:*

Cooperative Extension Publishing  
877-WIS-PUBS (947-7827)  
<http://cecommerce.uwex.edu>

**System Solutions for Dairy Sheep**

Alfa-Laval. 1981. Alfa-Laval AB, Tumba, Sweden. 141 p.

*No charge.*

*Order from:*

Tess Wagner  
DeLaval  
816-891-1573  
[tess.wagner@delaval.com](mailto:tess.wagner@delaval.com)

**Proceedings of the Great Lakes Dairy Sheep Symposium**

[www.uwex.edu/ces/animalscience/sheep/Publications\\_and\\_Proceedings/res.html](http://www.uwex.edu/ces/animalscience/sheep/Publications_and_Proceedings/res.html)

*Copies of the 1<sup>st</sup> through 3<sup>rd</sup> Proceedings can be purchased from:*

Wisconsin Sheep Breeders Cooperative  
7811 Consolidated School Road  
Edgerton, WI 53534  
608-868-2505  
[www.wisbc.com](http://www.wisbc.com)

*Copies of the 4<sup>th</sup> through 7<sup>th</sup> Proceedings can be purchased from:*

Yves Berger  
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W6646 Highway 70  
Spooner, WI 54801-2335  
715-635-3735  
715-635-6741 FAX  
[yberger@wisc.edu](mailto:yberger@wisc.edu)

### **Practical Sheep Dairying**

Mills, O. 1989. Thorsens, Wellingborough, England. 224 p. Out of print.

### **Small Ruminant Guidelines**

[www.dairypc.org](http://www.dairypc.org)

*Dairy Practices Council.  
Cost is \$70 for complete set.  
Order from:*

732-203-1194  
[www.dairypc.org](http://www.dairypc.org)

### **The Small Dairy Resource Book**

Dunaway, V. 2002. Hometown Creamery Revival. 56 p. Out of print.

*Can be viewed on-line at  
[www.sare.org/publications/dairyresource/dairyresource.pdf](http://www.sare.org/publications/dairyresource/dairyresource.pdf).*

### **Building a Sustainable Business: A Guide to Developing a Business Plan for Farms and Rural Businesses**

DiGiacomo, G., R. King, and D. Nordquist. 2003. Minnesota Institute for Sustainable Agriculture, Saint Paul, MN, and the Sustainable Agriculture Network, Beltsville, MD. 280 p.

*Available for \$14.00 + \$3.95 S/H by calling 800-909-6472 or e-mailing [misamail@umn.edu](mailto:misamail@umn.edu).*

*For further ordering instructions or to view the publication, visit <http://www.misa.umn.edu/vd/bizplan.html>.*

### **The Legal Guide for Direct Farm Marketing**

Hamilton, N. 1999. Drake University, Des Moines, IA. 240 p.

*\$23.00, including shipping.  
Order from:*

Karla Westberg  
Agricultural Law Center  
2507 University Ave.  
Des Moines, IA 50311  
515-271-2947  
[Karla.westberg@drake.edu](mailto:Karla.westberg@drake.edu)

*For more information, visit  
[www.statefoodpolicy.org/legal\\_guide.htm](http://www.statefoodpolicy.org/legal_guide.htm).*

### **Home Cheese Making: Recipes for 75 Homemade Cheeses**

Carroll, R. 2002. Storey Books. Pownal, VT. 288 p.

*Cost \$16.95.  
Order from:*

Storey Publishing, LLC  
800-441-5700 (toll-free)  
[www.storey.com](http://www.storey.com)

### **Cheesemaking Made Easy**

Carroll, R., and R. Carroll. 1995. Storey Communication. Pownal, VT. 144 p.

## **Suppliers**

### **Caprine Supply**

P.O. Box Y  
DeSoto, KS 66018  
913-585-1191  
800-646-7736 (toll-free)  
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[www.caprinesupply.com](http://www.caprinesupply.com)

### **Hoegger Supply Company**

P.O. Box 331  
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800-221-4628 (toll-free)  
770-461-7334 FAX  
[www.hoeggergoatsupply.com](http://www.hoeggergoatsupply.com)

### **DeLaval, Inc.**

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816-891-7700  
[www.delaval.com](http://www.delaval.com)

**Westfalia Surge**

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Naperville, IL 60563  
877-973-2479  
630-369-9875 FAX  
*www.westfaliasurge.com*

**The Schlueter Company**

3410 Bell Street  
Janesville, WI 53545  
608-755-5444  
608-755-5440 FAX

**The Coburn Company**

P.O. Box 147  
Whitewater, WI 53190  
800-776-7042 (toll-free)  
*www.coburnco.com*

***Budgets*****University of Wisconsin-Madison Center for  
Integrated Agriculture Systems**

*www.cias.wisc.edu/archives/2005/05/19/  
dairy\_sheep\_enterprise\_budget/index.php*

**Small Ruminant Dairy Project**

Contact Carol Delaney at 802-656-0915.

For additional resources, please refer to ATTRA's  
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**Dairy Sheep**

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