

Division of Marketing  
Agricultural Development and Diversification (ADD) Program

1990 Grant Final Report

Grant Number 05027

**Grant Title** Sheep Dairying in Wisconsin

**Amount Awarded** \$6,775.00

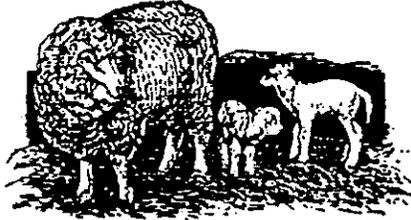
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Amery

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## *Sheep Dairying in Wisconsin*

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PROJECT REPORT

PROJECT DURATION: June 1990 - December 1991

Hal and Cyndi Koller  
Willowbrook Farm  
Amery, Wisconsin

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## Project Statement

The purpose of this project was to assess the potential for initiating and operating a dairy sheep operation in Wisconsin on a commercial level. As of this writing, Willowbrook Farm has successfully installed a dairy parlour and is in its third year of milk production. This has included two full seasons of milking in excess of 100 ewes and a third (fall) season of milking 30 ewes. The economic impact on the small farm has proven to be positive and the potential for even greater returns seems possible. This report includes an overview of the project and what has been accomplished, as well as statements as to what remains to be done to create a viable sheep industry in the state.

## Willowbrook Farm/Set Up

Willowbrook Farm is located in rural Polk County in Northwest Wisconsin. The Kollers manage a 300 ewe flock on 50-75 acres of rotated pastures and grow forage and row crops on an additional 120 acres of rented land. The farm consists of six out-buildings used for lambing, hay storage, lamb rearing, and a milking parlour. The Willowbrook flock consists of purebred Dorset and Dorset-cross sheep, run on an accelerated lambing program. A 200% lamb crop is the average productivity for the year with most lambs being born in mid-winter. The majority of lambs sold are by private treaty in the spring with the remainder going for breeding stock or to the local stockyard throughout the rest of the year. The flock is shorn on a nine month average. The milking season lasts approximately 6-8 months per year.

The dairy parlour is located in a 28' x 32' insulated metal building, and contains a partitioned 8' x 28' milk room, which houses the wash sinks, cooler, and freezer used for cleaning and milk storage. The parlour is heated and consists of a raised metal platform approximately 32' above the concrete floor. Attached atop the platform is a 12 headgate stanchion system. The headgates were manufactured locally using a french "cascading yoke" design (See Appendix I). Milking equipment includes a vacuum pump with a 2 1/2" vacuum line, a pulsator, 4 milking units, and 2 milk buckets (Surge/DeLaval) with detachable filter lids. (See Appendix I). The pulsator and milking units were purchased through Gascoigne and are manufactured specifically for sheep dairying. The rest of the equipment, including milking supplies have been purchased locally. Dairy start-up costs can be found in Appendix II.

## Dairy Process

Groups of 12 sheep enter the parlour through a walkway from an 18' x 36' loafing (waiting) area. They enter through a doorway and must walk up a 7' expanded metal ramp onto the platform. The first ewe into the parlour must walk to the furthest headgate in order to gain access to the feed. When the ewe reaches for the grain, she locks herself in place causing the next headgate to become accessible to the following ewe. This process continues until all 12 ewes are locked in place.

Once all 12 ewes are in place the udders are prepared for milking by washing, stripping, and drying. The milking units are then applied and the ewes are milked out in approximately 45 - 120 seconds. After the initial learning stage for both milker and sheep, groups of 12 could be processed through the parlour in 10-15 minutes by one person. The training period for ewes took anywhere from 2 to 7 days. The greatest difficulty was in establishing lead ewes. After their first season, ewes were quite familiar with the set up and adjusted their first day back.

During 1990 and 1991 the Kollers ran over 100 ewes per season through the parlour. Lambs were weaned at age 30 days with eligible ewes brought in groups to the parlour on a weekly basis. Of those, approximately 55% were established as suitable for milking on a production level. The reasons for non-acceptance included: (1) too late in lactation, (2) low milk production, (3) damaged udders, (4) mastitis or high somatic cell count, and (5) poor attitude. On the average, ewes settled in quite nicely to the routine and cooperated very well.

One of the most important tasks conducted during this project was milk testing through the Dairy Herd Improvement "Profitest" Program. Ewes were tested for amount of milk, percent butterfat, percent protein, and somatic cell count. Please refer to Appendix III for copies of the 1991 season Profitest summaries. Several interesting results were noted, but the most striking was that somatic cell counts could vary by millions from one week to the next. (Further discussion about this follows later in this report.

The 1990 milking season ran from December 1989 to July 1990. Production averaged 1.2 lb/ewe/day with the length of lactations ranging from 60-85 days. Also, 1990 included milking in September and October with limited production from 30 ewes which had already been in the parlour earlier that year. This group had been bred back for fall lambing and were milked later in lactation (starting at 45 days). This proved to be uneconomical as their production fell below .9 lbs/ewe/day.

The January to June 1991 season had a rolling flock average production of 1.47 lbs/ewe/day and the length of lactations increased approximately 15 days. This increase was attributed to several factors including: (1) Better overall flock management,

(2) More familiarity of sheep and operators with the dairying process, (3) Returning only more productive ewes to parlour, (4) Selecting replacement ewe lambs from higher producing ewes, and (5) Better feed program.

Several grain rations were tried during the milking seasons, both prior to weaning and during the dairying time. It was found that a corn/pellet ration with added fat (4%) seemed to be the best. (See Appendix IV). This was fed out at 1 1/2 pounds per milking (3 lb/day) and was easily consumed in the time ewes were present in the parlour. In addition, 5 lbs of alfalfa hay was fed post-milking. Only the highest quality hay produced on the farm was utilized. It might be noted that greater attention to hay quality may be one way do increase milk production, however, the Kollers' greatest emphasis thus far has been on the grain ration. No medications have been used in the feed for fear of inhibitor showing up in the milk.

## Marketing

Up to this point, all the milk produced by Willowbrook Farm has been sold to "LaPaysanne" cheese plant located in Hinckley, MN. The market has been very stable and the demand for sheep's milk and the subsequent products has been strong. LaPaysanne has been very active in stimulating interest in sheep dairying and has indicated the need for more milk. The low supply of milk to fill cheese orders has been a problem. As with any "new" industry, the need for producers to start up something unproven leaves a gap which prevents producer and processor from making necessary investments to establish a stable market and strong demand for milk. At this time, it is felt that even with the small amount of producers additional processors might be necessary to establish the needed "buffer" for others to start milking.

The price range from LaPaysanne on milk premiums is between \$.45/lb and \$.85/lb. The premiums are based on butterfat and bacteria count. The 1990 sliding payment scale read from LaPaysanne is in Appendix V. Obviously, good, clean milk will bring greater returns with minimal overhead charge, thus adding directly to the bottom line. Projected income from all sales; wool, lambs, and milk can be found in Appendix VII.

Current pricing on sheep milk cheese is between \$8.00 and \$12.00 per pound. The main sale markets are to the restaurants and deli's as well as to specialty cheese shops throughout the midwest. LaPaysanne also sells its cheese at farmers markets in the Twin Cities and by mail order. Please see Appendix V for some of the cheese varieties produced.

## Accomplishments of Project

This project has basically taken something never done in Wisconsin (and done by only a few throughout the United States) put it in place via set up of a sheep dairy, production of raw milk, marketed said milk, established production data, and made available for public consumption information of the investment economics of sheep dairying. Simply put sheep dairying, although not a household phrase, is fast becoming a well known activity in the state of Wisconsin.

In February, 1991 an open house was held at Willowbrook Farm with over 100 in attendance. Numerous media interests (radios, TV, and newspaper) have helped in the dissemination of information and in bringing the aspects of sheep dairying to those who may be interested in the endeavor. To date, the DATCP and the Kollers have responded with written information to over 200 inquires throughout North America. Pamphlets were also distributed in quantity from the DATCP booth at the 1991 Wisconsin State Fair. It appears that approximately 5 farms in Wisconsin have produced sheep milk up through this time.

One secondary accomplishment of this project, although not initially one of the goals, has been the establishment of guidelines for licensing and inspection of sheep dairies (see Appendix VI). By working with the inspection division of the DATCP, processors and this producer, necessary adjustments and establishment of basic guidelines have been made. This in the long run will make the process easier and more achievable for new producers entering the industry as well as for those agencies involved in assisting those entering. To date, the licensing has been under "food processing", but necessary steps to enact legislation putting sheep dairying under the same auspices of cows and goat dairy laws and regulations have been taken. In addition the economics of sheep dairying now has some preliminary results that show positive return on investment, a stable market, and an identifiable and dynamic demand for product. With future genetic improvements, increased market exposure, increased producers to stabilize milk supply, the activity of sheep dairying and subsequent sheep milk products will become a viable and expanding industry. Is this activity an industry yet? Simply put, the seed has been planted, fertilized, and germinated. With a little nurturing, growth is insured and yes, an industry has been born.

This project has served as an example of the many enterprises available for rural families to enter into that can positively impact family income with minimal investment. With many family farms unable to compete with larger enterprises in the cow dairy arena, this is one way the family farm may ensure its existence. Sheep dairying and sheep milk processing are sure methods of shoring up the economic losses in small rural communities in Wisconsin without reshaping the pastoral face of its landscape. This may be especially true in the more marginal agricultural areas of Wisconsin.

## Identifiable Needs Of This New Industry

Although the Willowbrook project has been an accomplishment in and of itself, the results have helped to identify several needs that would be positive enhancements for future profitability of sheep dairying. Listed below are those identified future needs with brief description.

### 1. Improved Genetics in U.S. Dairy Sheep

As of yet no true "dairy" sheep has been identified in the United States. Future research on increases of milk production in U.S. sheep is probably one area that can most impact profit enhancement of sheep dairying. Current data shows many European dairy sheep are producing 6-8 lbs of milk for over 150 days of lactation. U.S. figures, albeit limited, are only at 1-2 lbs for only 100 days average lactation. The best way to gain in this area would be through the importation of sheep or germplasm of the more productive breeds worldwide. Current Federal Laws make it difficult, but with proper precautions and working with Federal agencies through a research agency (university, etc.) a positive influence on milk production could be realized. This could do in 2-3 years what may otherwise take 10-15 years.

### 2. Increased Cheese Processing/Milk Production (The Chicken & The Egg)

The greatest inhibiting factor influencing industry growth has been the hesitancy of processors and producers to make the investment of time and capital to enter the market. With over 40 million pounds of imported sheep milk products entering the country there is no question of the market. However, the fact that sheep milk is something new to many midwest cheese plants, coupled with the small volume and unsure supply of milk, has probably made new processors shy of undertaking the endeavor. More information made available to this segment (for instance, that sheep milk can be frozen and stored until enough volume is available for production) might stimulate enough entrepreneurs to make the first steps toward entering the market.

In addition, with only one or two processors of sheep milk currently buying milk in the Midwest many potential producers are hesitant to make the necessary investments to become sheep dairies for fear of being left in the lurch if those processors decide to leave the business. In addition, geographical distance to the plants may contribute to this reluctance. Consequently, at this point in time, it is felt that the greatest impact on growth would be for other processors of sheep milk to enter the industry. This would establish the necessary foundation on which producers will need to enter the supply side of the market. In addition, the nearest processor is located in Minnesota, not Wisconsin, and it

is felt that in order to capitalize on Wisconsin's "dairy heritage" a Wisconsin "grown" product would be a good marketing strategy. Future assistance via public agencies might be the necessary "spark" to help in this area.

### 3. Inserting Sheep Milk Into The "Ag 60" Law Provisions

Although too late in the winter 1992 session of the Wisconsin legislature, the need for sheep dairying to be put on equal terms with cow and goat dairying was identified as essential. This was especially made evident when the licensing fees for a Food Processing Licence went from \$40 to \$140 in 1992. Communication with senate and assembly representatives and the DATCP has been positive. However small, this detail remains important and will need necessary review and follow-up to ensure enactment of legislation that will not unnecessarily impede the sheep dairying enterprise.

### 4. More Research on the Dynamics of Somatic Cell/Mastitis in Sheep

During the course of the project, although not based on quantitative data, it was found that great variances in somatic cell counts occurred within individual sheep. In addition, mastitis and the loss of some ewes to "blue bag" was one problem which probably most affected productivity. There needs to be research done in this area which will help establish reasons, as well as, preventative measures for this phenomenon.

## Budget Analysis

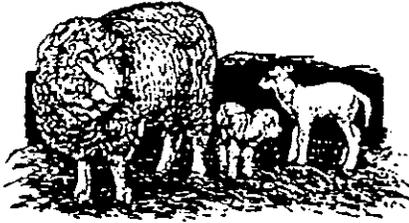
The initial budget proposed for the sheep dairying project totaled \$6775.00. The expenditure categories included wages for a hired hand (\$3600.00), travel (\$250.00), equipment (\$1415.00), supplies/materials (\$100.00), bookkeeping/clerical (\$960.00), data processing (\$250.00), and public information (\$200.00). The main focus was on installing a second headgate stanchion in the parlour and on information dissemination. After the first milking season, however, and with further knowledge of what the DATCP could provide in regard to report printing, the budget was revised as follows: Wages - \$3600.00, Travel -\$275.00, Phone - \$75.00, Equipment/Renovations - \$1925.00, Supplies/Materials - \$75.00, and Bookkeeping/Clerical - \$825.00.

A second milking set-up did not appear necessary during the course of this project as typically one person was doing the milking and could not realistically be expected to have 24 ewes in the parlour at one time. Furthermore, the total number of ewes being milked did not economically support the idea of an extra platform.

The revisions regarding information printing and dissemination were made as the DATCP was able to produce brochures on the project and to make mailings of such without funds being taken from the sheep dairy project budget.

The project entailed further budget altercations in that monies were used to complete DHIA testing, relocation of the milk room and a video of the project. The grant funds were used regularly to help support (and motivate) the Kollers to continue their efforts in enlightening the public on what sheep dairying is all about and the potential for its success on a commercial level.





## *Sheep Dairying in Wisconsin*

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### **Nature of Project**

The goal of this project is to initiate a working sheep dairy operation and utilize existing farm resources as well as provide additional income to a family farm. Because the United States imports an estimated 40 million pounds of sheep cheese annually, it is assumed there is a ready market for sheep's milk and its products. Presently, there are a few processors of sheep's milk in the Midwest, but the demand for the milk is high as well as for their products.

Willowbrook Farms is the first licensed sheep dairy operation in Wisconsin and hopefully, through its success, will provide an impetus to others to begin sheep dairying. Already there are signs of this as other farms have initiated milking their sheep, and other processors have inquired about the availability of sheep milk.

Sheep dairying is relatively new to the United States, but in the Mediterranean Basin countries, it is a well established industry providing a relatively stable living for many family farms. Some of the more familiar cheese types from Europe are: Roquefort, Feta and Pecorino.

### **The Initial Help from the Grant**

The funding provided by the Agricultural Development and Diversification (ADD) Grant has been used to help facilitate further development of our project. In addition, remodeling to existing facilities has been accomplished to ensure conformation with existing state dairy regulations.

Because relatively little is known about the capabilities or quality of milk production in U.S. sheep, funding is being used to test individual sheep for both quality of milk and quantity of milk. It is through this testing that genetic advancement in sheep milk productivity will, hopefully, be accomplished.

The ADD grant has also helped in public awareness of sheep dairying. Through press releases and a field day, word about the potential of sheep dairying in this state is becoming well known.

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For ADD information:  
Erwin A. Sholts  
WDATCP - ADD  
P.O. Box 8911  
Madison, WI 53708  
608-266-9586

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## Benefits to the Family Farm

With many farm families searching for ways to stay on the farm or to begin farming, sheep dairying becomes a viable way of accomplishing this. Initial projections show that a farm possessing 100 ewes can increase their income from the sheep by 30 - 40 percent. This is through milking the ewes for 100 days, or producing 15,000 pounds of milk and selling it for \$50 to \$70 per hundredweight which is about \$90 per ewe additional income. Additional benefits would be realized by making use of available labor and utilization of available buildings and land that may have become obsolete or unusable for more traditional agricultural production.

## Projected Economic Impact on the State

This project should initiate plenty of interest in sheep dairying and ultimately cause the start up of several family sheep dairy operations as well as a few sheep milk processors.

If 100 farmers each milk 100 ewes and each flock produced 15,000 pounds of milk, it would provide an additional income of approximately \$800,000 to \$1,000,000. The projected start up cost of this would be about \$4,000 to \$6,000 per farm (assuming the sheep are already in place), with a relatively low variable cost other than labor. In addition, if the milk processors produced a projected 400,000 pounds of sheep milk cheese from the milk and sold it for \$6.00 a pound (current retail prices range from \$4.50 to \$12.00 per pound) after purchasing the milk from farmers, gross receipts would be approximately \$1.5 million.

The preceding scenario shows what might happen with a relatively small number of farms and processors starting up. Given the "specialty" nature of the products, this would be a great benefit to small local cheese plants by giving them additional products from their facility, ultimately, benefiting small communities throughout the state.

Additional information on sheep dairying can be obtained from:

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Willowbrook Farms  
Hal & Cyndi Koller  
RR 2, Box 261  
Amery, WI 54001  
715-268-7053

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North American Dairy  
Sheep Association  
(NADSA)  
RR 3, Box 4  
Hinckley, MN 55037  
612-384-6612

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**WILLOWBROOK FARMS  
DAIRY SHEEP OPERATION INFORMATION**

The following cost figures have been supplied by Hal and Cyndi Koller of Willowbrook Farms, Amery, Wisconsin. The figures are representative of their farm operation and yours may be different. The figures are to be used as a guide only. It is recommended that a similar cost analysis be determined for your farming operation.

ORIGINAL DAIRY START-UP COSTS - 1989

Bulk tank, double stainless steel sink, compressor, 2 surge buckets (used)	\$ 250.00
Vacuum pump (used)	100.00
12 headgate stanchion (cascading yoke)	900.00
Platform, ramp, door, paint	500.00
Milkroom alterations: glassboard, lighting insulation, etc.	350.00
Gascoinge milking equipment: claws, cups, liners, etc., and hoses - including lids	1,200.00
Hand sink	100.00
Heater for parlor (used)	150.00
Compressor, plumbing and heating labor	310.00
Extra freezer (used)	40.00
Misc. buckets, cleaning supplies, etc.	100.00
<b>TOTAL</b>	<b>\$4,000.00</b>

1990 RENOVATIONS/EQUIPMENT PURCHASES

Relocation of milkroom: wall residing, insulation, new hand sink, paint, electrical, etc.	\$1,925.00
Refrigerator (used)	75.00
Two filter lids	240.00
Parlor entry gate system	70.00
<b>TOTAL</b>	<b>\$2,310.00</b>

GRADUATED PROJECTED GROSS INCOME FROM MILK SALES

100 Dairy Ewes/60 Days of Milking Milk Value Calculated at \$60.00/cwt

Production Per Ewe Per Day	Milk Production	Value
1.0 lb/ewe/day	6,000 lbs	\$ 3,600
1.4 lb/ewe/day	8,400 lbs	\$ 5,040
2.0 lb/ewe/day	12,000 lbs	\$ 7,200
3.0 lb/ewe/day	18,000 lbs	\$10,800
4.0 lb/ewe/day	24,000 lbs	\$14,400

CONVENTIONAL vs. DAIRY OPERATION : FEED COSTS and RETURNS

Based on 200% Lamb Crop and Totally Purchased Feed

FEED COSTS - DAIRY		
Ewe:	D1 to D70 @ \$.22/day = \$15.40 D70 to D365 @ \$.08/day = \$23.60	Total \$39.00
Lamb:	D1 to D70 @ \$.40/day = \$28.00 50 lbs (day 70) to 110 lbs @ \$.30/lb = \$18.00	Total \$46.00
<b>TOTAL FEED COSTS</b>		<b>\$85.00</b>
CONVENTIONAL RETURNS (not including wool)		
Ewe:	\$0.00	Total \$ 0.00
Lambs:	1 lamb: 50 lbs @ \$1.00/lb = \$50.00 1 lamb: 110 lbs @ \$.60/lb = \$66.00	Total \$ 50.00 Total \$ 66.00
<b>TOTAL RETURNS</b>		<b>\$116.00</b>
<b>Conventional Returns over Costs \$31.00</b>		

CONVENTIONAL vs. DAIRY OPERATION (continued)

FEED COSTS - DAIRY		
Ewe:	D1 to D160 @ \$.22/day = \$35.20 D160 to D365 @\$.08/day = \$16.40	Total \$39.00
Lambs:	D1 to D70 @\$.50/day = \$35.00 .50 lb (day 70) to 110 lb @\$.30/lb = \$18.00	Total \$53.00
TOTAL FEED COSTS		\$104.60
DAIRY RETURNS (not including wool)		
Ewe:	110 lbs milk @ \$.60/lb = \$60.00	Total \$60.00
Lambs:	same as conventional	Total \$116.00
TOTAL RETURNS		\$176.00
Dairy Returns over Costs \$71.40		

FACTS ABOUT SHEEP MILK\*

	Sheep	Cow	Goat
Total Solids %	18.20	12.10	11.20
Protein %	5.98	3.40	2.90
Fat %	5.79	3.50	3.90
Calorific Value/100g	102	73	77

\* Taken from the British Sheep Dairying Association

This information has been presented with the assistance of the Wisconsin Department of Agriculture, Trade and Consumer Protection's (WDATCP) Agricultural Development and Diversification (ADD) program. For further information on the ADD program, contact WDATCP-ADD Program, P.O. Box 8911, Madison, WI 53708-8911.

WILLOWBROOK FARMS

SHEEP DAIRYING FIELD DAY

February 16, 1991

Hosts: Hal and Cyndi Koller

AGENDA: 10:30 Arrival  
11:00 Farm Tour  
11:30 Lunch  
Milking Parlor Tour  
Informal Discussions  
12:30 Introductions and Welcome - Kollers  
NADSA - Roger and Lucie Steinkamp  
DATCP - Jane Larson  
Milking Potential of U.S. Sheep - Yves Berger  
Dairy Regulations/Guidelines -  
Contracting for Milk Sales - Roger Steinkamp  
Sheep Milk Products - Roger and Lucie Steinkamp  
2:00 Milking Demonstration  
3:00 Meeting for Potential Producers

This is intended to be an informal day for all involved.  
Please feel free to mingle and ask questions. Thank you  
for coming - we hope you enjoy your day.

# PROFITEST

Northwest Field Division  
 403 Cedar Ave West  
 Menomonie, Wis 54751  
 (715) 235-1128

HERD NUMBER - 499030

Wisconsin DHI Cooperative  
 5301 Tokay Blvd  
 Madison, WI 53711  
 (608) 273-2820

Folk-Burnett DHI  
 Ag. Center Bldg. Box 243  
 Balsam Lake, WI 54810  
 (715)485-3108

KOLLER-WILLOWBROOK FARMS  
 RT 2 BOX 261  
 AMERY, WI 54001

Date Tested - 02-06-91

NAME	# MILK	% FAT	% PROTEIN	SCL (X 1000)
Herd Totals	905			
Ave / Cpw	57	7.15	6.10	386
1 266	31	5.5	5.8	58
2 8205	25	5.8	5.8	97
3 297	60	6.1	6.6	38
4 8107	52	5.4	6.1	106
5 879	152	7.3	6.3	316
6 198	21	4.9	5.6	154
7 1414	40	5.3	5.3	59
8 R40	40	8.7	7.0	63
9 0683	60	8.9	6.2	69
10 B327	25	8.0	6.2	6077
11 850	88	5.5	5.8	859
12 Y8	57	11.1	6.0	195
13 D98	20	7.8	6.2	59
14 S271	105	7.6	6.3	193
15 0677	40	6.6	5.8	277
16 DT927	90	7.5	5.8	71

# PROFITEST

Northwest Field Division  
403 Cedar Ave West  
Menomonie, Wis 54751  
(715) 235-1128

HERD NUMBER - 499030

Wisconsin DHI Cooperative  
5301 Tokay Blvd  
Madison, WI 53711  
(608) 273-2820

Polk-Burnett DHI  
Ag. Center Bldg. Box 243  
Balsam Lake, WI 54810  
(715) 485-3109

HAROLD KOLLER  
WILLOWBROOK FARMS  
RT 2 BOX 261  
AMERY, WI 54001

Date Tested - 02-12-91

NAME	% MILK	% FAT	% PROTEIN	SCC (X 1000)
Herd Totals	1597			
Ave / Cow	71	7.42	5.78	143
1 7146	85	6.7	5.8	502
2 198	10	4.5	5.8	75
3 8107	55	6.8	6.2	165
4 D95	27	7.3	6.5	40
5 2960	90	6.5	5.4	163
6 D1292	120	8.8	5.3	31
7 297	69	7.5	6.4	64
8 Y8	60	10.3	6.4	143
9 879	160	8.1	6.0	82
10 1414	60	6.9	5.7	165
11 8205	25	6.7	6.1	162
12 DF81	170	8.6	4.9	134
13 266	35	6.5	6.2	68
14 DT927	80	7.4	6.2	42
15 B327	25	7.5	6.0	146
16 R40	45	9.3	7.1	101
17 0677	30	8.0	5.5	47
18 885	45	6.7	6.2	168
19 5271	104	5.8	5.5	192
20 D9528	56	5.9	5.9	117
21 D93239	30	9.3	5.8	113
22 B86	27	7.9	6.3	350
23 0483	11	5.8	5.4	67
24 850	33	5.9	5.6	147

# PROFITEST

Northwest Field Division  
403 Cedar Ave West  
Menomonie, Wis 54751  
(715) 235-1128

HERD NUMBER - 499030

Wisconsin DHI Cooperative  
5301 Tokay Blvd  
Madison, WI 53711  
(608) 273-2820

BOB TIETZ  
POLK-BURNETT DHIC  
BOX 243  
BALSAM LAKE, WI 54810

HAROLD KOLLER  
WILLOWBROOK FARMS  
RT 2 BOX 261  
AMERY, WI 54001

Date Tested - 03-03-91

NAME	# MILK	% FAT	% PROTEIN	SCC (X 1000)
Herd Totals	2626			
Ave / Cow	77	8.34	5.83	347
1 879	92	7.1	6.1	137
2 F81 25	80	9.1	5.4	24
3 DT956	60	6.9	4.7	105
4 275	132	9.0	5.4	62
5 D9S232	20	11.1	7.9	337
6 98	124	8.8	4.9	125
7 264	120	8.8	5.5	45
8 282	100	8.6	5.6	51
9 7146 97	10	10.0	5.7	186
10 2960 93	20	7.2	5.7	125
11 D9S239 8	20	6.6	5.7	67
12 1024	150	8.5	5.2	62
13 9355	120	7.3	5.2	48
14 885 91	50	7.3	6.5	49
15 864	132	8.6	6.7	226
16 TEDDY	210	7.4	5.7	255
17 0678	60	7.0	5.3	138
18 8107 85	30	7.9	6.6	94
19 1292 86	100	8.6	5.9	38
20 0683 79	80	8.8	6.0	70
21 OT927 94	80	10.1	7.3	41
22 B88	80	7.3	5.5	78
23 B87	90	9.1	6.0	80
24 9T71	70	6.7	5.4	77
25 SNFFOLK	96	5.6	5.0	275

# PROFITEST

Northwest Field Division  
403 Cedar Ave West  
Menomonie, Wis 54751  
(715) 235-1128

Wisconsin DHI Cooperative  
5301 Tokay Blvd  
Madison, WI 53711  
(608) 273-2820

HERD NUMBER - 499030

HAROLD KOLLER  
WILLOWBROOK FARMS  
RT 2 BOX 261  
AMERY, WI 54001

BOB TIETZ, MANAGER  
POLK-BURNETT DHIC  
BOX 243  
BALSAM LAKE, WI 54810

Date Tested - 03-03-91

	NAME	# MILK	% FAT	% PROTEIN	SCC (X 1000)
26	Y64	40	10.2	6.1	229
27	S271 80	70	7.5	5.3	1784
28	BB61 84	52	10.6	6.5	152
29	D952 96	90	9.3	6.0	66
30	B84	40	11.8	7.5	701
31	99	104	7.6	6.0	4474
32	Y68	4	11.9	6.8	2099
33	100	50	10.0	7.0	441
34	71	50	10.5	8.7	69

# PROFITEST

Northwest Field Division  
403 Cedar Ave West  
Menomonie, Wis 54751  
(715) 235-1128

MERD NUMBER - 499030

Wisconsin DHI Cooperative  
5301 Tokay Blvd  
Madison, WI 53711  
(608) 273-2820

Folk-Burnett DHI  
Ag. Center Bldg. Box 243  
Balsam Lake, WI 54810  
(715) 485-3108

WILLOWBROOK FARM  
RT 2 BOX 261  
AMERY, WI 54001

Date Tested - 03-19-91

NAME	# MILK	% FAT	% PROTEIN	SCC (X 1000)
Herd Totals	2237			
Ave / Cow	68	7.23	5.90	683
1 006482	63	7.1	5.7	112
2 0089879	90	6.4	6.1	8699
3 B92	75	6.7	7.2	553
4 0054TED	130	8.7	6.4	1514
5 0058	112	7.1	5.6	257
6 0053	70	7.6	5.4	162
7 1081	96	6.6	5.2	34
8 0055	95	6.9	6.3	201
9 0087	62	7.0	6.0	71
10 0084	63	7.7	6.2	43
11 0052	20	7.1	5.9	5431
✓12 0080	55	7.7	5.3	2091
13 R39	55	8.7	5.8	870
14 Y64	50	7.5	6.0	393
15 0060846	80	8.1	5.6	68
16 0051DT95	38	6.0	5.3	101
17 0059123	60	7.5	5.6	565
18 0057E88	52	7.0	6.3	634
19 00749355	95	6.4	5.0	79
20 0061	33	7.4	6.1	60
21 0065116	102	6.6	6.3	59
22 0098	75	6.9	5.2	45
23 0079	44	7.8	6.0	38
24 0068	89	6.3	6.0	11
25 007272	84	6.9	6.1	0

# PROFITEST

Northwest Field Division  
403 Cedar Ave West  
Menomonie, Wis 54751  
(715) 235-1128

Wisconsin DHI Cooperative  
5301 Tokay Blvd  
Madison, WI 53711  
(608) 273-2820

Folk-Burnett DHI  
Ag. Center Bldg. Box 243  
Balsam Lake, WI 54810  
(715)485-3108

HERD NUMBER - 499030

WILLOWBROOK FARM  
RT 2 BOX 261  
AMERY, WI 54001

Date Tested - 03-19-91

	NAME	# MILK	% FAT	% PROTEIN	SCC (X 1000)
26	00858107	35	7.2	6.2	117
27	YEARLING	82	8.8	6.9	137
28	0069887	50	6.8	5.7	70
29	0063884	42	8.3	5.8	26
30	0067	67	7.6	5.7	44
31	0066	52	7.4	6.3	41
32	0100	71	6.4	5.6	30
33	0062	50	6.5	5.3	292
	0094DT927	38	sour Sample		



Northwest Farm Services  
 103 Cedar Ave West  
 Menomonie, Wis 54751  
 (715) 235-1123

Wisconsin DHI Cooperative  
 3301 Tokay Blvd  
 Madison, WI 53711  
 (608) 273-2320

Polk-Burnett DHI  
 Ag. Center Bldg., Box 143  
 Balsam Lake, WI 54810  
 (715) 485-3108

HERD NUMBER - 459030

WILLOWBROOK FARM  
 RT 1 BOX 261  
 AMERY, WI 54001

Date Tested - 04-08 71

NAME	% MILK	% FAT	% PROTEIN	SCC (X 1000)
Herd Totals	2306			
Ave / Cow	62	7.30	5.46	69
1 115 0065	72	9.2	6.2	53
2 0075	72	7.8	5.2	37
3 TED0054	103	7.8	5.8	42
4 0060	72	7.5	5.7	30
5 HAMP	72	7.2	6.1	327
6 0059	48	7.5	5.7	203
7 0699	72	10.2	4.9	296
8 0079	36	9.1	5.8	122
9 0061	24	8.2	6.7	52
10 844 0055	43	6.9	6.1	104
11 B87 0069	72	7.3	5.4	114
12 264 0087	77	6.8	5.7	60
13 B92 0070	48	7.9	5.3	33
14 262	76	6.7	5.1	36
15 SHROP	77	6.6	4.7	34
16 B86 0084	72	8.5	5.5	29
17 82 0064	77	7.6	6.0	30
18 0071	32	7.3	5.7	57
19 0678 0053	41	10.0	5.2	36
20 72 0072	77	8.1	6.2	27
21 B107 0057	81	7.4	6.5	55
22 275 0030	94	7.3	5.5	39
23 1001	72	8.1	5.3	33
24 9335 007	84	6.4	5.3	22
25 00 0036	82	6.6	4.7	31

# PROFITEST

Northwest Field Division  
 403 Cedar Ave West  
 Menomonie, Wis 54753  
 (715) 235-1128

Wisconsin DHI Cooperative  
 5301 Tokay Blvd  
 Madison, WI 53718  
 (608) 233-0820

Polk-Burnett DHI  
 Ag. Center Bldg. Box 243  
 Balsam Lake, WI 54810  
 (715) 405-5108

HERD NUMBER - 499030

WILLOWBROOK FARM  
 RT 1 BOX 261  
 AMERY, WI 54001

Date Tested - 07-08-91

	NAME	# MILK	% FAT	% PROTEIN	SCC (X 1000)
26	8881 0078	60	5.8	5.5	115
27	BO SPECK	56	6.7	4.9	90
28	R39	21	7.4	5.1	42
29	DT927 00	48	7.4	6.7	17
30	D9T238	0	10.3	4.0	435
31	9T22	0	7.2	5.0	197
32	D44	94	5.3	4.9	38
33	0067	84	6.3	5.5	33
34	253	0	6.6	4.7	61
35	0692	60	7.8	4.9	43
36	NT DOR	53	8.5	4.7	121
37	0068	48	9.4	6.5	57
38	0098	110	6.9	5.1	29
39	0057	48	6.6	5.9	152
40	0063	48	4.6	6.2	73
41	8224	94	6.3	5.3	50
42	F1596	60	4.3	4.4	25

# PROFITEST

HERD NUMBER - 499030

WILLOWBROOK FARMS  
RT 2 BOX 261  
AMERY, WI 54601

Northwest Field Division  
403 Cedar Ave West  
Menomonie, Wis 54751  
(715) 235-1120

Wisconsin DHI Cooperative  
5301 Tokay Blvd  
Madison, WI 53711  
(608) 273-2920

Folk-Burnett DHI  
Ag. Center Bldg. Box 243  
Balsam Lake, WI 54810  
(715)485-3100

Date Tested - 04-24-91

NAME	N MILK	% FAT	% PROTEIN	SCL (X 1000)
Herd Totals	2892			
Ave / Cow	66	5.62	5.25	902
1 TED0054	94	6.3	6.3	2309
2 HAMP	120	6.2	5.0	274
3 0059	60	6.1	5.9	305
4 0087	48	5.5	6.6	650
5 0058	132	5.6	5.7	210
6 N988 <i>out 3-29</i>	96	4.2	6.5	1505
7 990	84	4.4	5.1	521
8 9439	84	2.3	5.2	87
9 0053	48	5.7	5.7	61
10 0085	24	6.2	6.1	170
11 0075	79	5.2	5.7	69
12 0098	79	5.5	5.0	50
13 0064 <i>out 3-29</i>	67	9.3	6.3	721
14 SHROF	53	7.2	6.0	9202
15 0084	60	6.0	6.2	4339
16 0094	48	7.8	7.7	548
17 R39	84	7.2	5.5	165
18 B44	72	6.4	4.8	63
19 0069	24	5.5	5.2	116
20 0057	51	4.6	4.7	116
21 0056	91	5.2	5.7	206
22 1160065	67	4.5	6.5	154
23 268	168	5.8	5.7	273
24 0072	60	5.7	6.5	309
25 0060	72	6.2	6.3	58

# PROFITEST

Northwest Field Division  
403 Cedar Ave West  
Menomonie, Wis 54751  
(715) 235-1120

Wisconsin DHI Cooperative  
5301 Tokay Blvd  
Madison, WI 53711  
(608) 273-2920

Polk-Burnett DHI  
Ag. Center Bldg. Box 343  
Balsam Lake, WI 54810  
(715) 485-3109

HERD NUMBER - 499030

WILLOWBROOK FARMS  
RT 2 BOX 261  
AMERY, WI 54601

Date Tested - 04-24-91

	NAME	% MILK	% FAT	% PROTEIN	SCC (X 1000)
26	0070	72	6.1	6.0	37
27	0074	60	5.5	5.7	56
28	8224	57	6.1	5.5	134
29	0071 <i>OUT 3/29</i>	48	5.8	6.0	125
30	N143	103	3.3	5.3	67
-----					
31	0079	76	5.7	6.3	66
32	1081	48	9.2	6.2	149
33	0073	53	6.5	5.8	103
34	N981	60	5.1	5.6	97
35	N988	60	5.4	6.1	3092
-----					
36	N292	96	3.0	6.3	1534
37	0055 <i>OUT 3-29</i>	48	7.1	7.6	9742
38	0063	24	7.0	6.6	5494
39	253	24	7.8	7.2	3584
40	0068 <i>OUT 3/29</i>	29	7.6	7.1	900
-----					
41	0699	72	5.1	5.5	230
42	9T22	48	5.1	6.0	308
43	0692	60	4.6	5.6	37
44	NDDR	29	5.8	5.5	38

# PROFITEST

For Order: Phone 214  
 403 Cedar Ave West  
 Menomonie, Wis 54751  
 (715) 233-1128

HERD NUMBER - 429030

Wisconsin DHI Cooperative  
 5301 Tokay Blvd  
 Madison, WI 53711  
 (608) 273-2000

Polk-Burnett DHI  
 Ag. Center Bldg. Ro. 240  
 Balsam Lake, WI 54810  
 (715) 485-3000

WILLOWBROOK FARMS  
 RT 2 BOX 261  
 AMERY, WI 54001

Date Tested - 04-30-71

NAME	W MILK	% FAT	% PROTEIN	SCC (X 1000)
Herd Totals	3447			
Ave / Cow	39	5.84	5.55	920
1 0268	120	7.3	5.3	39
2 58	90	6.3	5.3	16
3 59	0	5.9	6.2	100
4 965	60	4.7	4.7	5858
5 147	75	4.6	5.1	1694
6 1095	60	6.2	5.5	158
7 N44	90	7.0	4.7	51
8 N9015	30	5.4	4.6	77
9 N0104	60	4.8	4.9	104
10 0064	60	7.2	5.9	66
11 0103	60	7.8	5.7	210
12 0054	94	6.2	5.5	4371
13 0098	75	6.2	5.2	9906
14 R39	60	6.9	5.9	409
15 0087	60	5.9	6.3	117
16 0054	100	6.4	5.3	30
17 0064	78	7.3	5.2	34
18 0055	96	4.7	5.4	75
19 0074	90	5.2	5.0	76
20 0053	60	6.3	5.4	45
21 0073	45	7.0	5.7	75
22 0069	48	7.7	5.4	107
23 1081	60	7.7	5.6	73
24 N990	100	8.4	6.9	1077
25 N0108Y	30	8.1	5.5	207

# PROFITEST

Northwest Field Division  
403 Cedar Ave West  
Menomonie, Wis 54751  
(715) 235-1128

HERD NUMBER - 492030

Wisconsin DHI Cooperative  
5301 Tokay Blvd  
Madison, WI 53711  
(408) 273-2820

Folk-Burnett DHI  
Ag. Center Bldg. Box 217  
Balsam Lake, WI 54810  
(715) 485-3108

WILLOWBROOK FARMS  
RT 2 BOX 251  
AMERY, WI 54001

Date Tested - 04-30-81

	NAME	W MILK	% FAT	% PROTEIN	SCC (X 1000)
26	N9338Y	30	4.4	4.9	9225
27	N1079	36	4.5	5.2	3864
28	NY2	34	4.9	5.3	700
29	N9323Y	75	2.8	4.5	168
30	N9048Y	105	3.2	4.5	183
31	N9058Y	30	6.2	5.2	795
32	N0107	04	5.3	5.5	96
33	N0106	30	4.2	5.2	65
34	0068	45	6.9	6.3	44
35	272	171	5.0	5.6	257
36	0071	36	5.4	7.4	1602
37	116	30	5.8	7.7	283
38	0084	76	8.2	6.5	1433
39	N54Y	45	4.5	5.3	304
40	7T22	60	5.3	6.2	250
41	0699	102	6.5	5.0	80
42	NF0126	54	5.0	4.7	70
43	NDERONDA	60	2.7	4.9	49
44	N9474	60	3.5	5.3	361
45	N0217R	45	4.9	5.6	513
46	N0691	40	6.5	6.4	261
47	ND9127	36	2.5	4.6	50
48	0102	75	6.0	5.2	77
49	0094	46	7.4	7.4	18
50	N146	60	4.1	5.3	49
	N988	30	sour sample		

Dairy Ration used currently at Willowbrook Farm:

<u>Description</u>	<u>Amount per 100 lbs feed</u>
cracked corn	60 lbs
sheep balancer 33% protein by Cenex/Land O'Lakes (see next page)	30 lbs
419W Liquid Fat	10 lbs
Salt/Minerals	trace

Note: The sheep balancer was formulated with no added Bovatec especially for Willowbrook Farms. A minimum of 2 tons order was required by our local mill.

50 Pounds Net Weight

# SHEEP BALANCER Bov MEDICATED

For the prevention of coccidiosis caused by *Eimeria ovina*, *E. crandallii*, *E. ovinoelae* (*E. ninexobryakimovae*), *E. parva*, and *E. intricata* in sheep maintained in confinement.

FEED AS DIRECTED ON BACK OF TAG

### ACTIVE DRUG INGREDIENT

Lasalocid ..... 133 grams per ton

### GUARANTEED ANALYSIS

Crude Protein, not less than .....	33.0%
Crude Fat, not less than .....	0.5%
Crude Fiber, not more than .....	6.0%
Calcium (Ca), not more than .....	5.5%
Calcium (Ca), not less than .....	4.5%
Phosphorus (P), not less than .....	1.0%
Salt (NaCl), not more than .....	3.0%
Salt (NaCl), not less than .....	2.0%
Iodine (I), not less than .....	0.0018%
Vitamin A, U.S.P. Units per lb. minimum .....	45,000
Vitamin D <sub>3</sub> , U.S.P. Units per lb. minimum .....	15,000
Vitamin E, i. Units per lb. minimum .....	100

### INGREDIENTS

Plant Protein Products, Processed Grain By-Products, Molasses Products, DiCalcium Phosphate, Calcium Carbonate, Salt, Manganous Oxide, Ferrous Sulfate, Cobalt Carbonate, Zinc Oxide, Calcium Iodate, Sodium Molybdate, Sodium Selenite, Vitamin A Acetate, D-Activated Animal Sterol (Source of Vitamin D<sub>3</sub>), Vitamin E Supplement and Ethoxyquin (A Preservative).

Made By

GENEX/LAND O'LAKES AG SERVICES  
C/O LAND O'LAKES, INC  
FORT DODGE, IOWA 50501

18646

108

# SHEEP BALANCER Bov MEDICATED

### FEEDING DIRECTIONS

#### LAMB HIGH ENERGY FEEDING

The below feeding program is designed for lambs weighing 50-60 lbs or over which have been on a full feed of Lamb Grower-Finisher Bov Med. or some other high energy ration. Vaccinate lambs to prevent enterotoxemia (overeating disease) with botm C and D toxoid prior to starting on this feeding schedule.

Day	Lamb Grower- Finisher Bov Med. (lbs./day)	Shelled Corn (lbs./day)	Sheep Balancer Bov Med. (lbs./day)	Gr. Lasalocid /ton
1-4	2.5	1.0	0	
5-7	2.0	1.4	0.2	
8-10	1.0	2.3	0.4	
11-Mkt (hand feed)	0	3.2	0.5	
- or -				
(self feed) Recommended Finishing Ration		1700 lbs. (85%)	300 lbs. (15%)	20 g/ton
- or -				
(self feed) High Protein Finishing Ration		1550 lbs. (77.5%)	450 lbs. (22.5%)	30 g/ton

Keep fresh feed before lambs at all times! Provide clean water at all times!

Minimum roughage needs can be met by bedding with straw or providing 0.5 pound of hay per lamb in feedlots once each week.

#### ewe HAND FEEDING

	Hay (lbs./day)	Shelled Corn (lbs./day)	Sheep Balancer Bov Med. (lbs./day)
Early Gestation	Free choice (4)	—	—
Late Gestation (35 days before lambing)	3	0.75	0.25
Lactation			
Single Lamb	3	1	0.25
Twin Lambs	3	2	0.50

Feed Sheep Mineral Se Block free choice to ewes at all times.

### CAUTION

Do not allow horses or other equines access to supplies containing lasalocid as ingestion may be fatal. The safety of lasalocid in unapproved species has not been established.

Feeding undiluted or mixing errors resulting in excessive concentrations of lasalocid could be fatal to sheep.

18.40



**LaPAYSANNE**<sup>TM</sup>  
Inc.

PRICES OFFERED FOR SHEEP MILK 1990 BY LA PAYSANNE, INC.

Payment per cwt of sheep's milk  
(butterfat will be calculated for each .1 % change, this table is  
indicative)

Percent Butterfat	Bacterial count /ml (in thousands)					501 - 1,000	Prices in dollars
	5	5-10	11-50	51-500			
9.0	85	80	75	70	65		
8.5	80	75	70	65	60		
8.0	75	70	65	60	55		
7.5	70	65	60	55	50		
7.0	65	60	55	50	45		
6.5	60	55	50	45			
6.0	55	50	45				
5.5	50	45					
5.0	45					45 GUARANTEE	

*Natural Sheep Milk Products*

Route 3 Box 4  
Hinckley, MN 55037  
612/384-6612

## LA PAYSANNE PRODUCT DESCRIPTIONS

### General Information:

- All products are made with a microbial rennet extract, making them suitable for a vegetarian diet.
- Our products are made from PURE sheep milk. Other cheese makers have tried to "extend" their milk by mixing in cow or goat milk. Don't settle for second best. Insist on pure products.
- All our milk comes from small herds. Thus the sheep are given the TLC to produce the best quality milk.

### ORIGINALS:

*Description:* The Original line of cheese is the first type La Paysanne produced. It falls into the Pyrenees, Mouncego, or Pecorino family of cheeses which are found around the northern coast of the Mediterranean. The wheels are dry salted, and aged. The various cures of the rinds add different flavors to the cheese. They are traditional methods used in southern Europe.

### Age and flavor of originals:

"Fresco" is unripened wheels of cheese. The wheels are dry salted, and shipped at about 7 days. Unripened cheese is firm and slicable but not spreadable. Some chefs buy these wheels and age them at the restaurant.

"Medium" originals are just entering their prime at 20 days. The cheese is still mild in flavor but has enough taste to be outstanding. At room temperature it is semi-soft and slicable. Shredded, it can be used in sauces or in baking. Chefs have made wonderful souffles with it.

"Aged" Original is a distinguished cheese with a developed, smooth flavor. The Natural rinds add almost a nutlike flavor to the cheese.

### Types of Cures used for Original Cheese:

**FRESCO:** Meaning "fresh", this is very young, unripened cheese. The cheese is taken from the cave after about 1 week, before it is treated by one of the traditional methods for preservation. It is shipped immediately in a vacuum pack to insure freshness.

**BLACK WAX:** Waxing is mainly an American technique for inhibiting mold growth on the surface of the cheese. It also prevents rind formation, so basically the entire cheese can be utilized. It has an advantage over plastic in that it allows the cheese to breathe to a limited degree. Using black wax on our cheese is simply

Natural Sheep Milk Products



La Paysanne<sup>INC.</sup>

R 3 — Box 10  
Hinckley, MN 55037

Orders: Call 1-800-441-3191

For Information call 612-384-6612

# CHEESE GUIDE

a matter of aesthetics. In short, any waxed cheese is rind and mold free.

**SMOKED (waxed):** Before waxing, the cheese is smoked over real hardwood chips which gives it a golden color and buttery-smoked flavor. Absolutely no liquid smoke is added to the curd, as is the case in many "smoked" products.

#### NATURAL RINDS:

**Wine Cured:** The rind is cured by dipping the cheese in wine. The wine give a greyish purple color to the surface, and just a hint of taste to it.

**Tomato Cured:** Tomato is rubbed onto the surface of the cheese as it ages. It is a natural mold inhibitor, and adds a festive reddish color to the cheese surface. It adds little or no tomatoe taste to the cheese.

**Cinder Cured:** Another traditional means of preservation, the cheese is aged in hardwood cinders. This gives a beautiful greyish-black color to the cheese.

53 **Sizes:** The 1/2 and 1 lb. wheels are 4" in diameter, varying in thickness between 1 - 2". Cheese is sold on actual weights.

The 3-5 lb. wheels are 10" in diameter and vary between 1.5 to 4" in thickness.

**Uses:** All the originals can be sliced for hors d'oeuvres or featured on a cheese board. The NATURAL RIND CHEESES or particularly flavorful.

Grate them or put slices of cheese on your favorite plate. For example, shred it on a whole grain bread, broil it, and top with chutney. It also melts well over meats and fish, no lumps. The smoked cheese will add a hint of the open grill.

The originals hold up well on camping trips. Sheep cheese has excellent energy and nutritional values to sustain you on the most rigorous outings as well as providing a real taste treat during the day.

The rinds may be eaten. The resin coating is edible, although we would recommend pulling it off before eating.

**Care:** The two WAXED originals require little maintenance. They may be pre-cut and wrapped for sale. be careful to keep open faced covered to prevent dehydration.

The NATURAL RINDS require special care. First the entire cheese should NEVER be wrapped in plastic. This drives the rind flavor throughout the cheese. When cutting, cover only the exposed face.

If wedges are precut for sale, they should not remain more than 48 hours without being opened, although premium cheese may be left longer. The best is to "cut as you sell."

NATURAL RINDS may experience mold blooms on their surface. Simply wipe the mold away with a weak brine solution. Bacterial growth may be eliminated by wiping with Vodka or Everclear. Remember, mold growth on a natural rind is normal and in fact contributes to the flavor. In Europe, many a fine cheese is found in its "hairy" state and cleaned up just prior to sale.

The resin coating on the NATURAL RINDS allows the cheese to breathe during the aging process, allowing moisture to continually move outwards. It also helps control mold, and provide protection for the cheese when it is handled. It is edible but can be easily peeled off before eating. Wheels have a tendency to stick together. This is why they are shipped wrapped in paper. For marketing, this coating may be peeled off, or simply insert a bit of paper between the surfaces which contact each other when piling cheese for a display.

#### LA FRAICHE

**Description:** This is a fresh cheese. Soft curd is cut is drained and lightly brined. Culture has been added so it actually continues aging in the refrigerator. During the first week, the texture is firm, with a very mild taste. With each passing day, its flavor develops and the texture softens.

The littles wheels have an intricate, basket weave pattern from the molds used to drain them. They are a beautiful centerpiece for any cheese board or tray.

**Sizes:** La Fraiche is sold by the piece. We guarantee minimum weights of 1/3 or 3/4 pound. The small wheels are approximately 3" in diameter, and the large ones 5-6". They are packaged in nitrogen flushed, plastic containers to preserve freshness and extend shelf life.

**Uses:** Plain, coated with chives or hot pepper, this fresh cheese is soft and spreadable on toast or crackers.

When heated, it makes its own sauce. Its a wonderful substitute for sour cream or melted on to meats, pizza or pasta after cooking.

**Care:** La Fraiche is packaged in 8 oz., nitrogen flushed containers. This retards mold growth, and extends shelf life. Optimum storage temperature for La Fraiche is 28 - 30 F. However, a shelf life of 4-6 weeks can be expected at around 35F. Warmer temps hasten flavor development and consequently mold growth.

#### OCZYPEK (cocktail cheese)

**Description:** Oczypek is the Polish name for a pasta filata type of cheese made in the Tatra Mountains, near the Czech border. Hand pressed and fresh smoked, it is slightly dry. It has somewhat the texture of provolone. They come in two sizes, cocktail morsels, suitable for eating whole, or in sliceable loaves for larger parties.

**Sizes:** Oczypek is sold by the piece since each cheese is hand pressed. The smaller cheese fits in the palm of the hand, and comes in 2 packs which weigh about 1/4 lb.

The larger Oczypek looks like a small loaf of country bread and weighs about 3/4 lb.

Both are vacuum packed.

**Uses:** Serve at room temperature with cocktails. It has a light, buttery-smoked flavor.

Melt it on your favorite meats, poultry of fish to add a creamy-smoked flavor.

Take it long for biking, hiking or camping for a quick energy snack.

**Care:** Oczypek is vacuum packed and has excellent keeping qualities. Handle packages with care to avoid rupturing them with the consequent loss of vacuum and exposure to airborne mold. Kept refrigerated near freezing, it will keep for months. Warmer temps will cause flavor to develop over a period of 2 months.

#### LABNEH:

**Description:** Our Labneh is based on Middle East receipés which drain and dry yogurts to varying degrees. We drain ours until it has about the consistency of sour cream.

Labneh combines the delightful taste of a tart yogurt and double cream cheese. Sheep milk yogurt contains more than twice the total solids of cow milk yogurt, and when drained becomes very thick.

**Sizes:** All flavors come in 8 oz. tubs.

Bulk packs of plain are available in 4 lb. plastic tubs.

**Uses:** Plain, chefs use it in sauces. It has a tart, rich flavor which also makes an extraordinary spread underlying caviar.

The berry flavors are most popular on bagels or toast in the morning.

A frozen desert can be made by simply putting in the freezer. It is best served when in a semi-solid state. Simply take deserts out of the freezer and allow to warm up a bit before serving.

When spiced with basil or curry, Labneh makes a wonderful condiment or dip with vegetables, meats, fish or poultry. Equally, it can be used in many Indian dishes.

**Care:** Labneh, unlike most cheeses, can be frozen and thawed with no affect on quality or texture. If some whey is noted when thawed, it can be reincorporated before serving. At normal refrigerator temps (35-40 F.), 4-6 weeks can be expected of shelf life. If held at 28 F., longer shelf life can be expected.

**FETA**

**Description:** Originally made from sheep milk in Greece, feta is now commonly found made from cow and goat milk. Sheep milk feta is a new experience. The creamy qualities of sheep milk make it stand out from the others.

Our feta is packed in brine, in its own pouch. Each wheel weighs between 3 and 5 pounds. In the store it may be cut into pieces and wrapped for immediate sale. Or, it may be sold in a more European fashion by floating the pieces in a 14% brine (2.5 cups fine salt per gallon of water) in a bowl.

**Sizes:** Wheels, varying in wt from 3-5 lbs., are individually sealed in pouches with brine.

**Uses:** Use sheep milk feta anywhere you would use other fetas. Crumble it in a salad or use it in dressings.

It comes packed in brine, and it should be soaked in water or milk several hours before eating to take out some of the saltiness.

**Care:** Uncut portions of wheel should be stored in 14% brine and turned daily. 14% brine can be made by mixing 2.5 cups fine salt in 1 gallon of water.

Wheels can also be cut and wrapped for immediate sale.

Store at close to freezing temperature (28-35 F.) for best life. Unopened pouches of feta may be stored for months.

BE SURE to explain to customer that it needs to be soaked in water or milk before eating in order to remove saltiness.

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**RECUILTE (Ricotta by any other name)**

**Description:** Requite is the French name for ricotta. We'd call our cheese ricotta, but it seems to be protected by Uncle Sam, and he thinks ricotta can only be made from cow's milk. Until the FDA changes its mind, which may be some time, we'll just call our's Requite.

Requite is made by recocking whey and readding just a bit of milk. This makes it an almost no fat cheese. It is shipped ASAP after it is made, usually the next day.

It has an almost custard texture.

**Sizes:** Requite is sold by the piece and comes in two sizes. The small piece is approximately 3.5" in diameter and 3" thick. The larger one is approximately 5.5" in diameter and 3-4" thick.

Each piece has a delicate basket weave pattern on it from the molds. Weights may vary slightly, but we guarantee minimum wt.

**Uses:** Eat it plain topped with any condiment or flavoring you can imagine. A real treat is Requite with Martini (Sweet Vermouth) poured over it with a couple spoon fulls of sugar sprinkled over it.

In cooking it is typically used in lasagna and other pasta dishes.

**Care:** Store between 28 to 35 F. Shelf life at these temperatures is about 15 days. This is why we ship so it arrives the next day.

## CHEESE IN OLIVE OIL

### BOULETTES

**Description:** Boulettes are from an old French recipe. Basically it is a drained curd without culture. The soft curd is hand formed into balls (boulette means a small ball in french) and rolled in herbs. It is then stored in olive oil.

**Sizes:** Boulettes come in four sizes to meet your needs. 2 and 4 oz. boulettes are only sold in bulk. In the store you may wish to have a large glass jar or one of our unique "sheep head crocks" for display and storage.

A 3 oz. boulette is also available in its own glass container.

And finally a 5 oz. boulette comes in its own ceramic crock, a Texas bean pot. It makes a great gift which has been featured on VIP trays in the Twin Cities finest hotel.

**Uses:** Most often it is served on a plate or bowl as a hors d'oeuvre spread. Its delicate, herbal flavor is a delight with smoked trout.

It can also be whisked with a bit of its olive oil and poured over hot pasta.

Use the cheese and oil on salads for a real treat.

**Care:** The most important thing to remember is to keep the cheese ball COMPLETELY covered in olive oil during storage. Any exposed cheese will start to ferment, causing gas bubbles to form.

Although the cheese may be put out in display jars at room temperature for several days, storage temps of near freezing (28-35 F.) are recommended for long term storage. Simply warm up cheese in the oil to restore aesthetic aspect and clarity. DO NOT microwave as the ball may break apart.

### CROTTIN:

**Description:** Crottins are tiny wheels of cheese (about 1.5 oz.) stored in spiced olive oil.

**Size:** Each wheel is about 1-1.5" in diameter and 1/2" thick.

**Uses:** Just pop them in your mouth... or crumble into a salad. Save the oil for salads.

**Care:** Crottins are very stable in oil. We recommend shelf display at temperatures high enough to keep the oil clear. Long term storage should be at near freezing temperature.



## — SHEEP DAIRY PRODUCTS —

THE SHEEP DAIRYING ASSOCIATION was formed in 1983 to promote the production, marketing and consumption of high quality sheep milk products in the U.K. and for export.

Among its aims, the Association seeks to help and promote anyone wishing to milk sheep and make any of the wide variety of products that can be obtained from this very versatile milk. Young Farmers are of particular interest to the Association which provides wide ranging information on all aspects of the industry and also provides publicity at local and national levels.

The Association's journal, SHEEP DAIRY NEWS, is unique in the English language and provides up to date information on all subjects connected with sheep dairying.

THE DAIRY EWE is a multi-useful animal providing not only the more traditional meat and wool, but milk as well. A variety of breeds and crossbreeds of ewes are being milked in Great Britain at present from the Friesland, a special dairy bred with a lactation of 7-8 months and yielding up to 650 litres to the so-called "third profit" ewes that have reared their lambs for market and can still be milked for a further 2 to 3 months and provide from 100 to 200 litres of extra milk. Although ewes mainly lamb in the Spring, Autumn lambing flocks do exist to provide milk throughout the five winter months.



THE MILK is both nutritious and delicious. Sheep milk has a rich, bland, slightly sweet taste. It is much higher in total solids than either cow or goat milk and contains up to twice as many of the minerals like calcium, phosphorus and zinc and the all important B group vitamins. It is sold frozen in pint packs and keeps well for at least 4 months in a deep freeze. The composition of the milk does vary through the lactation, but an average is as follows:-

MILK FACTS			
	Sheep	Cow	Goat
Total solids %	18.2	12.1	11.2
Protein %	5.98	3.4	2.9
Fat %	5.79	3.5	3.9
Caloric value/100g	102	73	77

(Goldrup Channel Island cow milk has a fat content of 5.1%)

The milk has proved a great boon to those with cow and goat milk allergies and is ideal for old people on restricted diets.

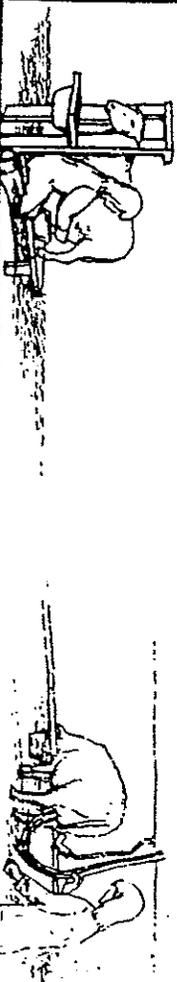
SHEEP MILK YOGURT is naturally thick and completely free of all additives. It is very popular as a substitute for cream on fruit or in soups.

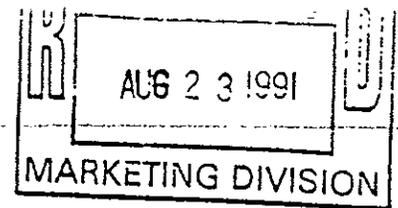
SHEEP CHEESE can be as varied as cow cheese. The high total solids in the milk makes it an ideal milk to make cheese with requiring only 4 litres to make a kilo, whilst it takes up to 10 litres of cow or goat milk to make the same amount of cheese. The cheese can be either hard or soft. The soft cheeses are usually flavoured with herbs, garlic, fruit or nuts as they are very bland. The hard cheeses can be blued like the famous French sheep cheese Roquefort, or they can be more cheddar-like either plain or with peppers, curraway seeds, herbs or pickled in brine like Feta. Some specialty cheeses are wrapped in chestnut leaves as well. Ricotta is made from the whey after cheese making, so popular in the Mediterranean countries.

SHEEP DAIRYING, a naturally organic enterprise as sheep are able to live entirely off grass and grass products like hay. They also manure their own pasture so there is no need to use artificial fertilizers. Their thick fleeces enable them to live out all the year round in many places.

FOR FURTHER READING see "Practical Sheep Dairying" by Olivia Mills, published by Thorsons.

INFORMATION. Please send s.a.e. to the Hon. Secretary, B.S.D.A., Wild Wood, Nr. Alresford, Hants. SO24 9RU and state your interest in the following: The Association, the milk, the yogurt, or the cheeses.





## SHEEP MILK PRODUCER GUIDELINES

### SHEEP

#### 1. Abnormal Milk:

- (a) It is milk which is ropy, stringy, clotted, thick or abnormal in any way. It includes milk containing pesticides, insecticides or medicinal agents. Regular equipment may be used but not until all other animals are milked.
- (b) Abnormal milk must not be squirted on the floor, on the platform or in the producer's hand.
- (c) Milker equipment used for handling abnormal milk must be washed and sanitized after such use. Producer should also wash his hands after handling such equipment and handling the teats and udders of animals producing abnormal milk.

### MILKING PARLOR/AREA

#### 2. CONSTRUCTION:

- (a) Floors shall be constructed of concrete or equally impervious material.
- (b) Ramps and platforms used to elevate the sheep for milking must be constructed of an impervious material such as steel (wooden platforms and ramps are not allowed). Rubber cow mats may be used as long as they are not placed over a wooden platform.
- (c) At least 10 foot candles of artificial light is required in a sheep milking parlor. Lighting should be similar to lighting in a dairy cow milking parlor.
- (d) Walls and ceilings must be reasonably smooth and be painted or whitewashed or other acceptable finish; shall be kept in good repair and surfaces shall be refinished whenever wear or discoloration is evident. Ceilings must be dust-tight. Hay or straw chutes must have dust-tight doors which must be kept closed during milking.
- (e) Feed shall not be stored in the sheep milking area or parlor.

### 3. Cleanliness:

- (a) Cleanliness of the sheep milking parlor should be similar to that of a dairy cow milking parlor. Due to the size and nature of sheep, it should be easier for a producer to keep the parlor clean.
- (b) Swine and fowl are not permitted in to milking parlor.

### 4. Sheep Housing Areas:

- (a) Sheep are generally housed in a "loose housing" building near the milking parlor. This area should be kept reasonably clean. No excessive accumulation of manure is allowed.
- (b) Complete separation between the sheep housing area and the sheep milking parlor is required.
- (c) Hogs and fowl shall not be housed with sheep.

## MILKHOUSE

### 5. Construction And Facilities

A milkhouse must be provided for storage and cooling of milk and proper cleaning and storage of equipment. The milkhouse area is the area that needs to be modified to meet the peculiar needs of sheep milking operations. The following requirements apply to a milk house whether or not a bulk tank is used. Some sheep milk producers place the milk directly in a freezer which eliminates the need for the cooling vessel.

Sheep are milked by means of a modified Surge bucket. the milk is then placed in a single service plastic bag which is cooled by a variety of means. The most effective cooling occurs by floating the bags of milk in a water filled vessel (bulk tanks are used) until the milk is cooled to below 40°. The bags are then placed in a freezer where they remain frozen at 0° farenheit or colder. The frozen milk is then transported to the plant.

#### Floors

- (a) Floors must be reasonably smooth concrete, tile, brick or other impervious material maintained free of breaks or depressions.
- (b) Floor must be sloped to drain properly. Joints between floor and wall shall be watertight.
- (c) Liquid wastes are to be disposed of in a sanitary manner, preferably underground. If this is impossible, waste may come to the surface far enough away to not constitute a fly or odor hazard, contaminate the water supply or be accessible to the milking herd. Drains must be accessible and must be properly trapped if connected to a sanitary sewer. This means drains must not be located under equipment.

Cast iron or approved plastic soil pipe drains must be located at least eight feet from the well. Glazed tile drains must be not less than 25 feet from the well.

## Walls and Ceilings

- (a) Must have reasonably smooth surfaces and joints must be tight and smooth.
- (b) Windows and doors must fit properly. All panels must be in good repair. Walls and ceilings must be in good repair and finished with a light color.

## Lighting and Ventilation

The outside door of the milk house is required to be self-closing unless an outward opening screen door is used which is self-closing.

- (a) Lighting must be evenly distributed to include a 100 watt bulb located near the double compartment wash sink.
- (b) Sufficient ventilation is required to minimize odors and condensation on walls, ceilings and equipment.
- (c) Windows and doors must be kept closed during dusty and windy weather.
- (d) Vents and lighting fixtures shall not be located directly above bulk tank or utensil areas.

## Miscellaneous Requirements

- (a) The milk house is to be used for no other purpose than milk house operations.
- (b) There must be no direct opening from the milk house into a stable used for the housing of nonmilking animals or any room used for domestic purposes. Any direct opening between a milk house or milk room and a milking barn, stable or parlor shall be equipped with tight-fitting, self-closing solid doors.
- (c) If the milk house drain is discharged to a septic system, it must be trapped. Milk house waste may not come to surface in the cow yard or any place where the waste will pool and create a fly breeding area or odor problem near the milking barn or milk house.
- (d) The freezer used for freezing sheep milk shall be kept in the milk house and used exclusively for the storage of sheep milk.

## Cleaning Facilities

- (a) A double compartment wash sink with hot and cold running water plumbed to the sink is required. Each compartment must be large enough to accommodate the largest piece of equipment.
- (b) Hot water heaters or hot water supply systems for use in the milkhouse or milk room shall have a capacity of at least 30 gallons for the manual washing of equipment. If future operations include the use of bulk tanks or milk pipelines, water heating systems with larger storage capacities may be required.

- (c) Water under pressure must be piped into the milk house to perform cleaning of the equipment.

6. Cleanliness:

- (a) The milk house must be free of dust, cobwebs, dead insects, peeling paint, debris, trash or articles not directly involved in the production of milk. The milk room structure, equipment and other milk room facilities used in its operation or maintenance must be kept clean.
- (b) No poultry or animals are permitted in the milk house.

TOILET AND WATER SUPPLY

7. Toilet:

- (a) Each farm must have at least one toilet constructed and operated according to the State code. Toilet must be convenient to the milking barn and milk house. There must be no evidence of defecation or urination about the premises.
- (b) No privy may open directly into the milk house. Toilet room and fixtures must be kept clean and free of flies and odor. All toilet room doors are to fit tightly and be self-closing. All outer openings of toilet rooms are to be screened.
- (c) No evidence of human wastes around the premises.
- (d) Privy covers are to be kept closed. Privy vents are to be screened. Privy pits must be fly and rodent tight.

8. Water Supply:

- (a) The water supply must be in compliance with the state well code. Reservoirs or storage tanks shall be constructed of impervious material in good repair with approved screened overflow, shoe box type cover, inlet to be above ground level. New reservoirs or reservoirs which have been cleaned are to be disinfected before being placed in service. Wells no longer in use should be properly abandoned following DNR guidelines.
- (b) The supply must be approved as safe by a certified laboratory. It must be safe when the farm is licensed and must be resampled at intervals of not over two years or after any repair or alteration has been made to the water system. Water reports must be on file at the dairy plant and in the regional office.
- (c) There must be no cross connection between a safe and questionable supply. There must be no submersed inlet. This includes siphon type drinking cups, siphon type hog or poultry waterage, stock tank floats.

## UTENSILS AND EQUIPMENT

### 9. Construction:

- (a) Milk contact surfaces shall be made of stainless steel of the 300 series, equally corrosion resistant nontoxic metals or heat resistant glass. Plastic or rubber-like material must be relatively inert, resistant to scoring, chipping or decomposition and must be nontoxic and does not impair flavor or odor to the product. All milk contact material must be easily cleaned.
- (b) All containers and utensils must be free from breaks, corrosion, and joints must be free from pits or cracks. Bulk tank and freezer thermometers should be accurate within +/- 2°F.
- (c) Single service articles shall be stored and handled in a sanitary manner; must be stored in their original container in a closed storage cabinet; must be stored above detergents or other contaminants. Single service articles such as strainer material or single service plastic bags are not to be reused. Plastic bags must be food grade.
- (d) Strainers are required to be of perforated metal design or so constructed to utilize single service media.

### 10. Cleaning:

- (a) The product contact surface of all milk handling equipment must be cleaned after each use.

### 11. Sanitation:

- (a) All product contact surfaces of all milk handling equipment must be effectively sanitized before use. Sanitizer must be an approved type with full label directions.

### 12. Storage:

- (a) All milk containers and equipment, including milking machine vacuum hoses, must be stored in the milk house.
- (b) Milking equipment must be stored to assure complete drainage.
- (c) Filters and single service plastic bags shall be stored in the original container inside a protective box.

### 13. Handling:

- (a) Any sanitized product contact surface which has been exposed to contamination is required to be resanitized before use.

## MILKING

### 14. Udders and Teats:

- (a) Milking must be done in a milking barn or parlor.
- (b) Teats of all milking sheep are to be cleaned and treated with a sanitizing solution and dried just prior to milking.

- (c) Wet hand milking is prohibited.

#### TRANSFER AND PROTECTION OF MILK

#### 16. Protection from Contamination:

- (a) Overflowed, leaked, spilled or improperly handled milk shall be discarded.
- (b) Equipment containing milk must be properly covered during transfer and storage.
- (c) Medicines stored in the milk house must be in an enclosed cabinet separate from all other items. Lactating and non-lactating drugs must be stored on separate shelves. Labels must be complete with name, prescribed use and directions, warnings and precautions, withholding times, names and address of prescribing vet. Medicinals stored in milking barn and the rest of the premise shall meet the same requirements except for an enclosed cabinet.

#### PERSONNEL

#### 17. Hand-Washing Facilities:

- (a) This item is being satisfied when hand washing facilities are located in the milk house and convenient to the milking barn or parlor.
- (b) Hand washing facilities including soap or detergent, hot and cold running water plumbed to the hand sink, individual sanitary towels and a lavatory fixture or basin are required. A utensil wash tank may be used as hand washing facilities providing this tank is not required for equipment washing. This tank must be identified as a hand wash vat.

#### 18. Personnel Cleanliness:

- (a) Hands must be washed, cleaned and dried with an individual towel immediately before milking or performing any milk house function and immediately after any interruption of any milking or milk house function.
- (b) Milkers and milk handlers must wear clean outer garments while milking or handling milk or milker equipment.

#### 19. Cooling:

- (a) Milk shall be cooled to 45°F or less within two hours of milking.
- (b) Water used for milk house and milking operations must be potable. Cooling water used in bulk tanks in which bags of milk are cooled shall be chlorinated.
- (c) If milk is cooled by pouring into plastic bags and then floating the bags of milk in cooling water, the process must preclude contamination of the milk by the coolant.

20. vehicles.

- (a) Vehicles must be kept clean inside and out.
- (b) Vehicles must be constructed and operated to protect their contents from the elements and contamination.
- (c) No substance capable of contaminating milk shall be transported with milk.

INSECTS AND RODENTS

21. Insect and Rodent Control:

- (a) Effective measures shall be taken to prevent the contamination of milk equipment and utensils by insects, rodents and chemicals used to control such vermin. Fly baiting shall be minimized by approved manure disposal methods.
- (b) Manure packs shall be properly maintained.
- (c) All milk house openings shall be effectively screened or otherwise protected; doors shall be tight fitting and self closing. Screen doors shall open outward.
- (d) The milk house shall be free from insects and rodents.
- (e) Only insecticides and rodenticides approved for use by and registered with the Department or the U.S. Environmental Protection Agency shall be used for insect and rodent control. Insecticides and rodenticides shall be used only in accordance with the manufacturer's labeling directions and in a manner which will prevent the contamination of milk, milk containers, equipment, utensils, feed and water.
- (f) Pesticides must be stored in an enclosed cabinet if stored in the milk house, separate from other articles.
- (g) Surroundings shall be kept neat, clean, and free of conditions which might harbor or be conducive to the breeding of insects and rodents or any other health nuisance.

\* \* \* \* \*

For further information, please contact:

WDATCP - Food Division  
PO Box 8911  
Madison, WI 53708-8911  
608-266-2227

WDATCP Food Division  
Altoona Regional Office  
927 Loring Avenue  
Altoona, WI 54720  
715-839-3844

WDATCP Food Division  
Green Bay Regional Office  
200 N. Jefferson Street  
Suite 146-A  
Green Bay, WI 54301  
414-448-5120

Graduated Projected Gross Income From Milk Sales

100 Dairy Ewes / 60 Days of Milking      Calculated at \$60.00/cwt

1 lb/ewe/day      = 6000 lbs      = \$3600  
 1.4 lb/ewe/day      = 8400 lbs      = \$5040  
 2 lb/ewe/day      = 12,000 lbs      = \$7200  
 3 lb/ewe/day      = 18,000 lbs      = \$10,800  
 4 lb/ewe/day      = 24,000 lbs      = \$14,400

Conventional vs. Dairy Operation : Feed Costs and Returns

Conventional      COSTS (feed)      (Based on a 200% lamb crop and  
 totally purchased feed.)

Ewe: d1 to d70 @ 22¢/day = \$15.40  
 d70 to d365 @ 8¢/day = \$23.60      Total = \$39.00

Lambs: d1 to d70 @ 40¢/day = \$28.00  
 50#(day 70) to 110# @ 30¢/# = \$18.00      Total = \$46.00

Total = \$85.00

RETURNS (not including wool)

Ewe : \$0.00      Total = \$ 0.00

Lambs: 1 lamb : 50# @ \$1.00/# = \$50.00      Total = \$50.00

1 lamb : 110# @ 60 ¢/# = \$66.00      Total = \$66.00

Total = \$116.00

Conventional Returns over Costs = \$31.00\*

Dairy      COSTS (feed)

Ewe: d1 to d160 @ 22¢/day = \$35.20  
 d160 to d365 @ 8¢/day = \$16.40      Total = \$51.60

Lambs: d1 to d70 @ 50¢/day = \$35.00  
 50#(day 70) to 110# @ 30¢/# = \$18.00      Total = \$53.00

Total = \$104.60

RETURNS (not including wool)

Ewe: 100 lbs milk @ 60¢/lb = \$60.00      Total = \$60.00

Lambs: Same as conventional = \$116.00      Total = \$116.00

Total = \$176.00

Dairy Returns over Costs = \$71.40\*

### SELECTED REFERENCES

1. Practical Sheep Dairying - The Care and Milking of the Dairy Ewe. by Olivia Mills, Thorsons Publisher Limited available through North America Dairy Sheep Association, Hinckley, MN.
2. System Solutions for Dairy Sheep by Alfa-Laval, Alfa-Laval AB, Tumba, Sweden available through NADSA.
3. North American Dairy Sheep Association (N.A.D.S.A.) Route #3, Box 4, Hinckley, MN 55037
4. "The Potential for Sheep Dairying in the Midwest" by Dr. William Boylou.