In April 1995, the College of Agricultural and Life Sciences gave the green light to conduct sheep dairy research at its Spooner Agricultural Research Station. Soon after the authorization was given, construction of a milking parlor and milk room began. In April 1996, the new facilities were operational, and up to 130 ewes have been milked twice a day.

**Milking Parlor**

The milking parlor is a double twelve indexing stanchion with high-line pipeline and six milking units. The design of this parlor should permit the milking of 150 ewes per hour.

The indexing stanchions are equipped with a feed hopper, lock-in head gate, and a roll-back system. Feed delivery, headgate, and roll-back are controlled by a pneumatic system. Index stanchions are designed so that there is enough room between the headgate and the edge of the pit for the ewes to choose any stanchion they wish. As soon as the 12 ewes are locked in the headgate, the system is rolled back so that the rear end of each ewe is just at the edge of the pit. The stanchions were imported from Italy by Alfa-Laval Agri. The shallow pit (no more than 30" deep) is centrally located with a set of stanchions on each side. In order to accommodate such equipment, the minimum size of the parlor should be no less than 24 feet long and 22 feet wide. The pit is 16 feet long, 4 feet 6 inches wide, and 30 inches deep.

**Milking Equipment and Procedures**

All milking equipment has been purchased from Alfa-Laval Agri which has much experience in sheep dairying in Europe. However, there are several other firms which also manufacture quality sheep equipment. Except for the milking units and pulsators, the equipment is standard to the dairy cow industry including the automatic washing system.

The pulsation rate is set at 120 per minute with a ratio of 1:1 and a vacuum level of 11 in. of Hg or 37 KPA. The electronic pulsator control panel allows for a pulsation rate of 60, 90, 120, or 180 per minute and a ratio of 1:1 or 2:1.

The milking procedure is simple. Upon entrance to the parlor, each ewe takes its place and the stanchion is rolled back. The six milking units are put on alternate ewes on one side. When the milker puts the sixth milking unit on, she/he comes back to the first ewe, does a rapid massage of the udder, removes the milking unit, and places it on the ewe to the left. When the 12 ewes are milked, the milking units are swung to the other side of the pit and the same procedure is repeated. When the 12 ewes on one side are milked, they are released, and 12 more take their place while the 12 on the other side are being milked. Therefore, there is no interruption in the
milking procedure. There is no washing of the udder before milking, but a post-dipping after milking is recommended.

With two persons, the time required to milk 100 ewes with this system is 1 hour and 20 minutes.
This time includes:
- 20 minutes for getting ready (sanitizing the system) and clean up after milking.
- 10 minutes to feed hay to the ewes
- 40 minutes of actual milking.

**Milk Handling**

The milk is received in a bulk tank and immediately cooled down to 40°F. After milking, the milk is poured in five gallon FDA food approved pails and frozen in a chest freezer. Delivery of the milk is done when the freezing and storage capacity is full. There seems to be little or no effect of freezing on the quality of cheese, which is a major advantage as long as the milk marketing system is not better organized.

Individual milk production is recorded monthly using the DHIA Waikato milk meter jar. Regular bulk tank samples are sent to a certified laboratory for checks on bacteria, somatic cell count, drug residue, and sediment. So far the bacteria count is low (less than 25,000) but the somatic cell count is high (more than 800,000).

Since all the milk produced is sold to a cheese plant for the manufacture of cheese, the Spooner Agricultural Research Station is licensed as a Grade B dairy farm. Persons interested entering the sheep dairy business should contact their local dairy inspector before starting any construction to be sure that everything meets the required standard.

**Total cost of the milking parlor and milk room**

It is important to note that the cost shown below includes the construction of a totally new building and all new milking equipment. Cost could be drastically reduced by renovating an old building and buying used equipment (pipe line, pump...). Moreover, the Spooner Agricultural Research Station received an organizational discount on the purchase of the milking equipment which a producer may not be able to secure.

<table>
<thead>
<tr>
<th>Construction of parlor and milk room:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>- Foundation</td>
<td>$3,827.51</td>
</tr>
<tr>
<td>- Sewer</td>
<td>$236.22</td>
</tr>
<tr>
<td>- Plumbing</td>
<td>$294.46</td>
</tr>
<tr>
<td>- Electricity</td>
<td>$1,770.50</td>
</tr>
<tr>
<td>- Frame and trusses</td>
<td>$3,809.41</td>
</tr>
<tr>
<td>- Doors and windows</td>
<td>$1,267.24</td>
</tr>
<tr>
<td>- Roof and siding</td>
<td>$2,010.60</td>
</tr>
<tr>
<td>- Inside finishing</td>
<td>$1,193.11</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>$14,408.54</strong></td>
</tr>
</tbody>
</table>

**Milking equipment:**

- Parlor stanchions                   | $4,800.00 |
- Milking equipment                   | $10,200.00 |
- Wiring (labor and parts)            | $450.00  |
<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk tank and installation</td>
<td>$1,000.00</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>$16,450.00</strong></td>
</tr>
</tbody>
</table>
Other equipment:

- Heater $ 165.01
- Deep freezers (2) $ 1,040.00
- Water heater (80 gallons) $ 481.00
- Steps in pit $ 62.88
- Guillotine doors $ 27.44
- 4 HP air compressor $ 329.00

Subtotal $ 2,105.33

TOTAL $32,963.87

Names and addresses of sheep milking equipment manufacturers:

- Westfalia
  Attn: Jim Parker
  1862 Bummel Dr.
  Elk Grove Village, IL 60007
  Alfa-Laval Agri International AB
  Sheep Dairy Equipment Division
  S-147 00 Tumba
  Sweden

- J.R. Roberts, Export Representative
  Fullwood and Bland, Ltd.
  Ellesmere, Shropshire
  United Kingdom, SY12 9DF
  Alfa-Laval Agri, Inc.
  713 Woodhaven Ct., NE
  Rochester, MN 55906

- Bob Borchert
  Schluter Co.
  3075 Streb Way
  Cottage Grove, WI 53527
  Major Farms
  RFD #3 Box 265
  Putney, VT 05346
  (802) 387-4473

- Gascoigne Milking Equipment, Ltd.
  Attn: Mr. L.J. Harland
  Edson Road Roundmills
  Blasingstoke, Hampshire RG21 2YJ
  England
  Roger Steinkamp
  La Paysanne, Inc.
  Gascoigne Equipment Dealer
  Route 3 Box 10
  Hinkley, MN 55037

- The Coburn Company, Inc.
  PO Box 147
  Whitewater, WI 53190