



Dairy Sheep Production in North America

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Major Countries for Sheep Milk Cheese Production (average for 2008-2012)

Country	Production, million lb.
Greece	271
China	238
Italy	139
Spain	135
Syria	134
France	123
Turkey	64
Romania	53
Iran	41
Portugal	29

faostat.fao.org

Major Countries for Sheep Milk Cheese Exports (average for 2007-2011)

Country	Exports, million lb.
Italy	40.6
France	17.2
Bulgaria	11.4
Greece	4.1
Spain	1.2
Romania	1.1

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Long-Standing Commercial Sheep Dairy Industries

Portugal, Spain, France, Italy, Greece, Romania, Bulgaria, Turkey, Lebanon, Syria, Israel, Iran



Dairy Ewes in Southern Spain



Familiar Imported Sheep Milk Cheeses



France
Roquefort cheese
Lacaune sheep



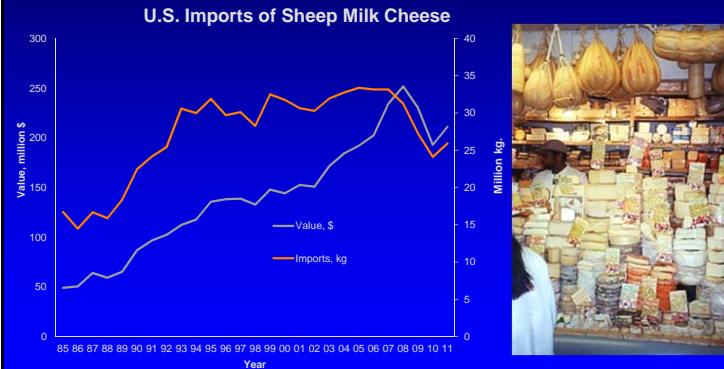
Italy (Sardinia)
Pecorino-Romano cheese
Sarda sheep



Spain
Manchego cheese
Manchega sheep



In recent years, 53 - 73 million lb. (24 - 33 million kg) of sheep milk cheese is imported into the U.S. each year; 40 - 60% of world exports come to the U.S.



North American Dairy Sheep Industry

No extended history of dairy sheep production in North America

First commercial dairy sheep farms established in mid- to late-1980's with meat-wool sheep

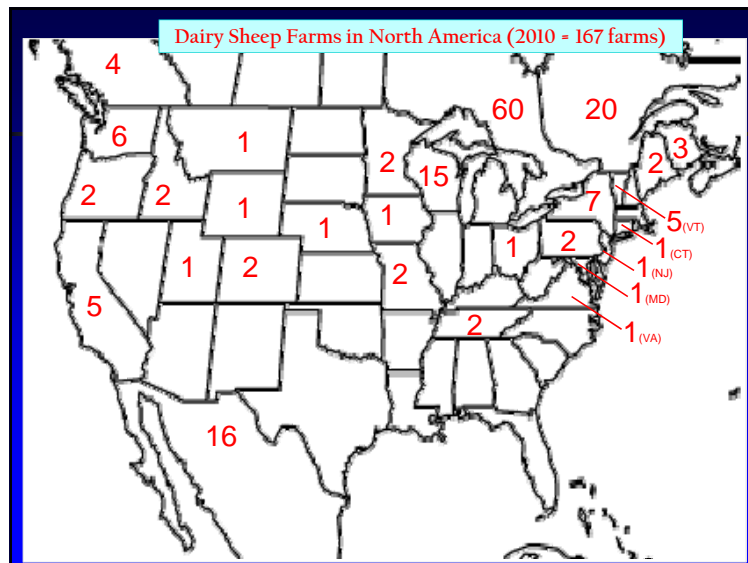
Early pioneers:

Dr. Bill Boylan - First dairy sheep research program, University of Minnesota (1984)

Joan R. Snyder - First licensed dairy sheep farm in U.S., Hollow Road Farm, Stuyvesant, NY (1985)

Roger and Lucy Steinkamp - North American Dairy Sheep Assoc., Hinckley, MN (1987)





2005 Dairy Goat and Sheep Survey – New York Department of Agriculture & Markets

Table 6. Dairy Sheep Operations by Region

	Western New York	Eastern New York
Operations reporting dairy sheep	25	24
Dairy sheep on these operations	1,096	1,489
Average number of dairy sheep per operation	44	62
Average number of acres for operations having dairy sheep	81	114
Average number of years that dairy sheep operations have been functioning	10	13
Number of sheep milk processing facilities *	2	3

Composition of Milk from Cows, Goats, and Sheep

Species	Milk Composition, %				Total Solids
	Protein	Lactose	Fat	Ash	
Cow	3.3	5.0	4.0	0.7	13.0
Goat	3.7	4.2	4.1	0.8	12.8
Ewe	5.9	4.8	7.4	0.9	19.0

Crude Estimate of U.S. Sheep Milk and Sheep Milk Cheese Production

125 farms x 150 milking ewes/farm x 500 lb. milk/ewe = **9.4 million lb. of sheep milk**

9.4 million pounds of sheep milk / 5 lb. milk/lb. cheese = **1.9 million lb. of domestic cheese**

53 - 73 million lb. of imported cheese – 28 to 38 times our domestic production

OPPORTUNITY FOR EXPANSION OF DOMESTIC PRODUCTION!!

Estimate of U.S. Goat Milk Production:
232,000 milking does x 1,200 lb. milk / doe =
278 million lb. goat milk

Estimate of U.S. Cow Milk Production:
9.2 million milk cows x 21,807 lb. milk/cow = 200.62
billion lb. of cow milk

Total U.S. Annual Milk Production:
200.62 billion lb. cow milk + 278 million lb. goat milk +
9.4 million lb. sheep milk =
200.91 billion lb. milk

**Only 0.14% of U.S. annual milk production
comes from goats and sheep!!!**

First Dairy Sheep Breeds in the U.S.



East Friesian – Two F1
crossbred rams from
Canada in 1993



Lacaune – Frozen semen
from three rams from the
U.K. in 1998

Dairy Sheep Breeds in North American

A few purebred East Friesian and Lacaune sheep and a greater number of East Friesian-Lacaune crossbred sheep are now found in Canada, the U.S., and Mexico.

A dairy breed found in Canada is the British Milk Sheep - a breed developed in the U.K. for lamb production by crossing East Friesian, Blue-Faced Leicester, Polled Dorset and Lleyn sheep.



Artificially Reared Lambs

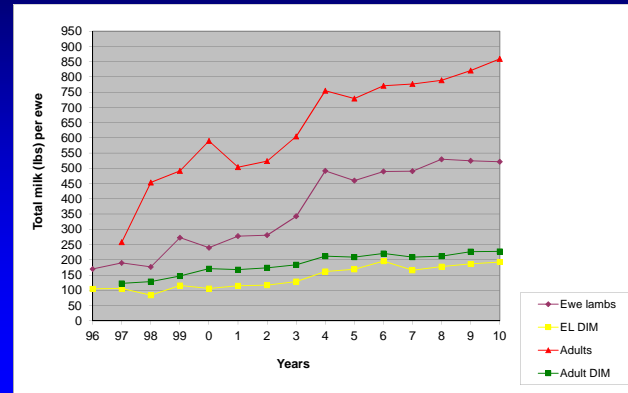


18 lb. of milk replacer powder/lamb - weaned at
30 days of age onto dry diets.

Automatic Milk Replacer Machines (Approx. \$1,100/unit)



Change in Milk Yield/Ewe at the Spoooner Ag Research Station by Year



Milking Systems



Elevated platform,
cascading yokes, milking
into buckets



Double-12, pit parlor,
Casse stanchions, high-
line pipeline

Milking Systems



Double-24 pit parlor, Casse stanchions, low-line pipeline

Milking Systems



Double-24 pit parlor, rapid exit, high-line pipeline

Milking Systems



36 head rotary parlor

Milking Systems



Small home-made rotary parlor for hand-milking

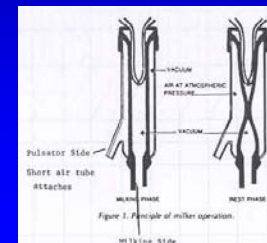
Milking Machine Settings

Sheep

- 180 pulsations per minute
- 50:50 ratio (milk phase:rest phase)
- vacuum level at the teat end of 36 kPa (kiloPascal) = 11 in. Hg (mercury) = 5.22 psi (lb. per square inch)

Cows

- 45 - 60 pulsations per minute
- 50:50 - 60:40 ratio (milk phase:rest phase)
- vacuum level at the teat end of 11 - 12 in. Hg (mercury)



Milk Quality Standards

Grade A: fluid milk or processing, interstate shipment

- < 100,000 bacteria / ml
- < 750,000 somatic cells (SCC) / ml
- no drug residue

Grade B: milk for processing

- < 300,000 bacteria / ml
- < 750,000 somatic cells (SCC) / ml
- no drug residue

Storage of Milk

If sheep milk is frozen quickly in a commercial walk-in freezer and kept at a temperature of -25 to -27 degrees C (-13 to -17 degrees F) or colder, it can be stored for up to 1 year and retain good processing properties.



Storage of Milk

Fluid milk is preferred by both the producer and the processor. Most states will allow milk to remain cooled in the bulk tank for up to 4 days between pick-ups.



Farm Price of Milk

\$0.65 - \$1.05 / lb.

Processor often pays shipping costs

Some marketing of milk with premiums or deductions for milk composition or quality, but much of the milk is sold strictly on weight as long as legal hygiene standards are met.

Milk Marketing Cooperatives

Ewenity
Dairy Co-operative



Ontario, Canada

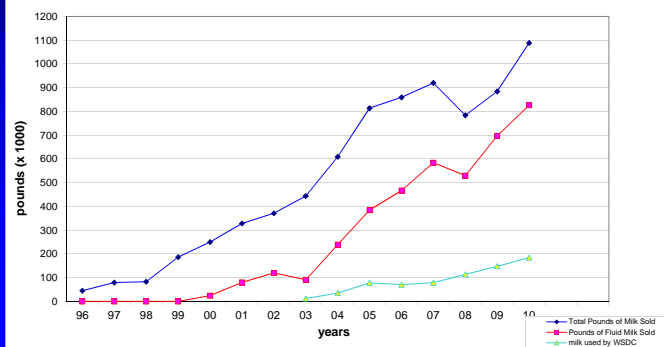


Wisconsin, U.S.



Wisconsin Sheep Dairy Cooperative Milk Sales

Sales of milk by WSDC



Farmstead Cheesemakers



Hidden Springs
Creamery
Brenda & Dean Jensen
Westby, WI



Farmstead Cheesemakers

Shepherds Manor Creamery
Colleen & Michael Histon
New Windsor, MD



Farmstead Cheesemakers

Bellwether Farms
Liam & Cynthia Callahan
Petaluma, CA



Sheep Milk Processors

Carr Valley Cheese Company
Sid Cook
LaValle, WI



Sheep Milk Processors

Old Chatham Shepherding Company
Tom & Nancy Clark
Old Chatham, NY



Milk Recording and Genetic Improvement Program

No program in North America for organized milk recording or genetic improvement

A few producers collect individual ewe milk production, % fat, % protein, and SCC each month for within flock selection.

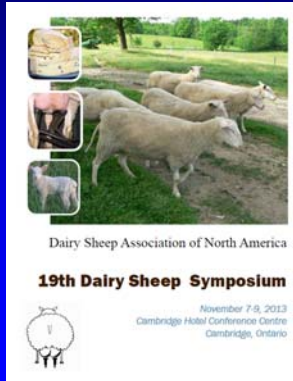
Dairy Sheep Association of North America



Established in 2002 to foster the industry in North America

Publish a newsletter – Journal of the DSANA (J-DSANA)

Sponsors the annual DSANA Symposium with a proceedings
(20th DSANA Symposium; Chehalis, WA; Nov. 5-7, 2014; www.dsana.org)



Sheep Research Unit, Spooner Ag Research Station, UW-Madison



The only dairy sheep research farm in North America.
Started milking in 1996.



Milking procedure at Spooner



Dairy ewes coming from pasture to the milking parlor



Sheep barn with milking parlor in the foreground



Ewes waiting to enter the milking parlor



Ewes entering the milking parlor



Ewes entering the milking parlor – taking any one of 12 stanchions



When all ewes are stanchioned, the entire stanchion system moves the ewes back to the edge of the milking pit. Ewes are fed grain in the parlor.



The milker's view from the pit.



Milking and the milkers. Data collection on the right side.



Milk in collection jar prior to going into bulk tank



Milk is cooled in a bulk tank.

