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Exhibit 8b, publication #114
see especially appendix

POLYPAY SHEEP AND THEIR USEFULNESS IN FARM FLOCK OPERATIONS

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The shepherding of sheep is essentially as old as the existence of man. Man's very survival, especially in harsh environments, at times has been very dependent on the attributes of sheep. His wealth has been equated to the number of sheep he owned, and his comfort and well-being were greatly enhanced by his flock of sheep.

In modern times, life has become very sophisticated and specialized. We now not only are tempted by, but also are becoming frighteningly dependent on a complex industrial society for products made in distant locations, frequently foreign, using equipment and techniques which we do not understand and cannot control. Should there be a breakdown of transportation or industrial output our very lives and those of our neighbors could be in jeopardy.

The farm flock can provide not only a meaningful enterprise or avocation, but also a very real and readily available source of food, clothing, glue, soap, hand lotion, and even milk and cheese if desired.

If we maintain or elect to acquire and maintain a farm flock, efficiency and productivity are very important. If hand spinning, knitting, and weaving are to be a part of the enterprise, or wool for the textile industry, then wool quality and quantity become important factors to consider.

The new Polypay breed is becoming very popular as a farm flock breed because of its outstanding productivity, gentle temperament, and easy care nature.

The restriction placed on the use of pregnant mare serum (PMS) by the Food and Drug Administration, the difficulty in obtaining and maintaining a reliable source of this hormone, and the variable response of sheep to treatment with PMS made it appear inadvisable to develop an accelerated lambing program using PMS and a progestogen. Therefore, subsequent genetic selections, studies, and testing were without hormone therapy and were aimed at developing a composite breed emphasizing five primary goals:

1) High lifetime prolificacy
2) High percentage lamb crop at 1 year of age
3) Ability to lamb more frequently than once per year
4) Rapid growth rate of lambs
5) Good carcass quality

Polypay selection groups for conventional once-per-year lambing and accelerated lambing (two breeding and lambing opportunities per year) were established.

The conventional once-per-year lambing flock was maintained in a typical herded range environment, joined with the other U.S. Sheep Station range breeds, and managed the same way. The accelerated selection group, which was to be managed without hormone therapy, was maintained on fenced ranges except during lambing and until the lambs were early weaned following the winter lambing (avg. 31 days of age). They were shifted stepwise from a spring and fall lambing schedule to an early winter December-January, and summer June-July schedule which appeared feasible for natural breeding from a breeding season study conducted on Rambouillet ewes at Dubois (Table 2).

Because efficiency of production is greatly influenced by the cost burden of maintaining the breeding flock, only ewes which lambed first at about one year of age were kept in the selection groups. Subsequent ewe selections were based on total numbers and pounds of lamb produced per year within each

Table 2. Effect of time of breeding on estrus and ovulation in Rambouillet ewes in Idaho (U.S. Sheep Experiment Station, Dubois, Idaho).

Month	% ewes in estrus	% ewes ovulating	CL per ewe ovulating 1/
January	100	100	1.89
February	100	100	1.57
March	89	94	1.50
April	26	32	1.37
May	2	2	1.00
June	7	7	1.00
July	6	6	1.00
August	12	41	1.75
September	100	100	1.72
October	100	94	1.80
November	100	100	1.86
December	100	100	1.88

1/ CL = Corpora lutea

selection group. Rams were selected on the average lifetime lamb production of their dams plus the rate of growth of the rams. Undesirable defects such as horns, bad jaws, black color in the fleece or excessive brown on the feet and legs, extremely crooked legs, and extremely poor type were also selected against. For details of selection procedures see Hulet (1984).

Polypay ewe lambs in both selection groups quickly demonstrated their precocious breeding ability and superior lamb production at yearling age (Table 3).

Table 3. Comparative lamb production of various breeds and breed crosses bred as lambs (7 to 8 mo. of age) and managed under herded range conditions at the U.S. Sheep Experiment Station (April 1977 Lambing).

Breed[1/]	No. ewes bred	% Ewes lambing per ewes bred	% Lambs born per ewe lambing	% Lambs weaned of ewes bred
Rambouillet	261	26	106	18
Targhee	265	19	102	13
Columbia	167	14	104	10
Polypay	82	80	135	90
1/4 F x 3/4 WF	69	61	121	43
1/2 F x 1/2 WF	67	91	146	99

[1/] F = Finnsheep, WF = Rambouillet, Targhee, and Columbia combined.

Two-year lamb production of the Dubois range-managed breeds showing yearlings and mature ewes (2 years old and older) production for 1979 and 1980 combined is given in table 4. It should be recognized that lamb production is reduced under range conditions beyond what would be expected on the farm due to straying, predation, poisonous plants, and accidents.

These data demonstrate that under the same management condition, even native Idaho range, Polypay sheep can be expected to outproduce Rambouillet, Targhee, and 1/4 Finn crossbreds, and can be expected to equal 1/2 Finn crossbreds in a once-a-year lambing program. Given the better meat conformation, more uniform appearance, greater availability of breeding stock, and a pure breed from which one can continue a selection program for improved performance,

Table 4. Average reproductive performance of once- and twice-a-year lambing groups, 1979-1980.

Breed	Age	% lambs born of ewes bred	% lambs weaned of ewes bred	Weight weaned of ewes bred, lbs.
		Once-a-year lambing groups		
Rambouillet	1	.69	.47	31.3
	2 & >	1.44	1.14	79.1
Targhee	1	.54	.36	23.1
	2 & >	1.32	1.01	73.2
1/4 Finn	1	.91	.53	34.8
	2 & >	1.61	1.25	88.8
1/2 Finn	1	1.23	.76	46.5
	2 & >	1.97	1.47	101.9
Polypay	1	1.11	.73	47.4
	2 & >	1.79	1.48	101.4
		Twice-a-year lambing Polypays		
Polypays	1	1.12	.85	56.0
(annual)[1/]	2 & >	2.03	1.69	122.8

[1/] Annual reproductive performance of Polypay ewes is based on the number of ewes exposed for the first (winter) lambing.

performance, most producers are likely to select the Polypay as the best alternative for a conventional and efficient farm flock production unit. If one is interested in a very intensive lamb production system with a protective environment and more labor input, the Finnsheep may be the breed of choice.

The Polypay is a gentle, easy care sheep that performs exceptionally well under typical ranch conditions. Most mature ewes give birth to twins and have a good supply of milk for rapid growth. Lambing difficulty is rare and lamb mortality is low. Polypays are smooth bodied, tend to have bare legs and open faces, and are exceptionally easy to shear. A typical Polypay farm flock fleece weighs 10 to 12 lbs, is long stapled, and will grade 58's to 62's spinning count. A very experienced Navajo hand spinner, Mrs. Morris, widow of the last Chapter President of the Navajo Nation at Indian Wells, Arizona, hand spun a fine Polypay fleece into yarn. She stated that it was the nicest fleece she had ever handled, and that because of the quality and staple, it made hand spinning much easier than when using reservation fleeces.

Most producers interested in accelerated lambing are not likely to find a widely adapted breed more suited to accelerated lamb production than the Polypay. In our tests at Dubois, the accelerated Polypay consistently outproduced other breeds subjected to accelerated lambing management. Reports of farm flock producers attest to the production of Polypays under accelerated lambing management. Brief reports from the following Polypay producers are given in the appendix: Russ and Rosemary Beattie of Rexburg, Idaho, have averaged 2.96 lambs raised per ewe per year (6 years); David and Leslie Chalmers of Chateau, Montana, have averaged 3.39 lambs reared per ewe per year over the last three years; Denis Lavellee of Quebec, Canada, has averaged 2.59 lambs born per year (3 years); Ed and Phyllis McLane of Othello, Washington, averaged 2.86 lambs weaned per ewe in 1984 (13.5 mo.); Richard and Leslie Sorensen of Fort Collins, Colorado, have averaged 2.51 lambs per ewe per year (1984 production year). These producers are willing to discuss their production management practices with any interested person. There are many other Polypay producers who may have equal or better production records. Like farm flock operator,

Charles Kimball of Hazelton, Idaho, who had 198% lamb crop in 1983 and a 199% crop in 1984 on once a year lambing, most Polypay producers get high lambing percentages. A range operator, Hal Schultheis, Elberta, Utah, who has a herd of 1200 Polypay sheep which he has operated on the forest for several years, averages a 150% lamb crop marketed at average weights of 96 to 98 lbs. off the ewes.

Polypay sheep were first released to the public in 1975. Since that time, they have been introduced into flocks in at least 35 States, 4 Canadian Provinces, and 1 Mexican State. Evidence which continues to accumulate points to an increasingly important role for the Polypay breed in the future of the sheep industry.

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APPENDIX

(Condensed from owner accounts)

ACCELERATED LAMBING

SEMI-CONFINEMENT

Russ & Rosemary Beattie

Rexburg, Idaho 83440 Phone: (208) 356-4715

Introduction:

Mr. Beattie was raised on a sheep ranch. He never knew a time when they did not have a mortgage, and never knew a season that they did not operate on borrowed money. He decided that there must be a better way to raise a family. At age 25, he left the ranch and took employment with a wholesale produce company in Salt Lake City. Four years later he purchased the business and in 2 years he tripled the volume and the business was very successful, but he missed the farm. Fifteen years later, quite by chance, he picked up a farm magazine and was attracted to an article "New Prolific Breed of Sheep Being Developed by U.S. Sheep Experiment Station by Dr. C. V. Hulet". He was impressed that the new breed "Polypay" had a potential to lamb twice a year and produce twins 85% of the time.

He thought about the potential all night and by 8:00 a.m. the next morning was half way to Idaho for a look at the new sheep. By the end of the day he was very excited. He returned to Salt Lake City and put his business up for sale.

He now owns his father's 100 acre farm and an exciting, profitable sheep business. He says, "I believe, in the near future, someone will be able to produce a 400% lamb crop. I am going to try to be that person." The following article attests to his progress toward his goal.

Procedure:

Start breeding in July. Lambs are given access to rolled barley and alfalfa pellet creep when 5 to 7 days old, and weaned at 30 to 45 days of age to diet composed of creep and alfalfa hay free choice for 30 days. This is changed first to a 35% barley and alfalfa pellet for 30 days, then to 25% barley and chopped alfalfa hay diet to market weight. Most lambs gain to 120 lbs. by 130 days of age. Ninety-five percent of replacement ewe lambs conceive from 6 1/2 to 7 months of age with average lambing rate of 165%.

Rams are put in with ewes and lambs 21 days after lambing and stay until the lambs are weaned. At weaning, ewes are fasted from 48 to 72 hours, put on very limited feed for 7 to 10 days to stop lactation, then are put on a rapid gaining diet. Rams are put back with the ewes after 10 days until ewes are marked by the ram.

The same procedure is followed after the next lambing. They have found that the ewes must be kept in top condition at all times for good response. Careful selection of high producing Polypay replacements is considered very important.

Careful attention is given to sanitation. Sick sheep are isolated and treated. Pens and equipment are cleaned and sterilized often. Vaccination and preventive care is given to reduce problems from disease.

Home-grown alfalfa hay from 85 acres and pastures from 15 acres provide all the roughage needed for 300 ewe flock. The Beatties use very little hired help except one assistant at lambing time. This is possible because of the efficient feeding and management system they have developed.

Performance:

Table 1. Summary of the Beattie accelerated lambing results during the first four years of their operation[1/].

Year	Season	No. of ewes in flock	No. ewes lambing	Lambs raised to market age	
				No.	%
1979		64			
	Winter		64	112	175
	Fall		43	70	109
	Annual			182	284
1980		103			
	Winter		101	207	205
	Fall		47	131	127
	Annual			349	339
1981		176			
	Winter		173	339	196
	Fall		104	189	107
	Annual			528	300
1982		285			
	Winter		279	566	199
			138	221	78
				787	276
1983		306			
	Winter		302	667	218
	Fall		122	212	69
				879	287
1984		352			
	Winter		342	738	210
	Fall		162	288	82
				1026	291

[1/] Yearling and mature records combined. For more detail, see: Russ Beattie. July 1984. Intensive management for profits. The Lamb Producers Journal Vol. 1(1):10, 11, 18, 19, and 23.

David and Leslie Chalmers
Crumpled Horn
Choteau, Montana 59422 Phone: (406) 466-2139

Introduction:

The Crumpled Horn Ranch (Leslie and David Chalmers) emphasizes environmental control in a total confinement, accelerated management system. Their goal is to produce a lamb crop every 8 months with an average production of 400% lamb crop per year raised to market size. They are also developing a completely vertically-integrated system through which they will market their lamb and wool products directly to the consumer.

Procedure:

The production cycle begins 40 days before breeding in environmental control barns. The light is then regulated to 16 hours dark and 8 hours light per day. The barn temperature is also controlled at 60°F. After 40 days of treatment, the ewes are exposed to light treated, semen tested rams for 51 days. The treatment is then continued for an additional 20 days postbreeding. The ewes are given an 8 way vaccine containing clostridium perfringens type C & D toxoid, tetanus, and 6 other vaccines twenty-two days before lambing is scheduled to start. The ewes are also treated with sulfamethazine in the water to protect the lambs against pneumonia. Vitamins A, D_3, and E are also added to the water as a supplement the year around. All lambs are given cows' colostrum shortly after birth in addition to the ewe's own colostrum. Any orphan lambs are also given injections of selenium and vitamins A, D, and E.

All alfalfa hay and barley is tested for protein, fiber, and 18 minerals. The hay must contain a minimum of 18% crude protein and less than 30% fiber or

it is not used. Mineral supplement is fed as required to bring the total dietary minerals up to the nutritional requirements of the sheep.

The ewes are fed to maximize milk production until the lambs are weaned at 30 days of age on the high energy, high protein creep diet (82% concentrate) which started when they came out of the lambing jugs at 24 to 48 hours of age. The lambs are continued on this to 60 days of age. At 60 days of age, the diet is modified to include a by-pass protein with only slightly higher roughage. They remain on his diet to market weight.

Replacement ewes and rams are very rigidly selected on the basis of 1) pounds of lamb raised per year, 2) rate of gain, 3) adaptability to confinement, 4) conformation, and 5) wool quality. The emphasis is in the order that the selection criteria are listed. The sheep are sheared every eight months.

Performance:

The following table summarizes the production. Percent born is very close to percent raised to market weight as death loss to market weight, including lambs dead at birth, averaged only 2.2% over all lambing and years. This clearly demonstrates the effect of management on lamb survival. Average daily gain from birth to average market weight of 105 lbs. over the entire year for all lambs has been 0.74 lbs. per day.

Average weight of the 8-month fleeces has been 7.32 lbs. with an average 60's spinning count and a clean yield of 59% to 63%. Thus, the average annual grease fleece weight is 11 lbs.

Table 1. Summary of the Crumpled Horn Ranch total confinement accelerated lambing results for 1982, 1983, and 1984 over all ages (1-6 years old).

Year[1]	Lambing month	No. ewes in flock (Mar. inventory)	No. ewes exposed	No. ewes lambing	No. lambs born	Lamb death loss %	Lambs raised[1] No.	Lambs raised[1] %
1982								
	May	503	248	233	490	2.1	480	95.4
	Sep.	503	415	321	563	2.1	551	109.5
	Jan. (83)	503	355	334	726	2.6	707	140.6
	Annual	503	1018	888	1779	2.3	1738	345.5
1983								
	May	712	484	409	786	2.4	767	107.7
	Sep.	712	492	372	708	2.3	692	97.2
	Jan. (84)	712	567	545	1235	2.5	1204	169.1
	Annual	712	1543	1326	2729	2.4	2664	374.2
1984								
	May	875	485	421	849	2.1	831	95.0
	Sep.	550[3]	73	73	136	1.8	134	24.4
	Jan. (85)	550[3]	459	445	1010	2.2	988	179.6
	Annual	658[4]	1017	939	1995	2.0	1955	297.1
Total all years		1873	3578	3153	6503	2.2	6358	339.4

[1] Twelve-month period starting in May each year

[2] Raised to market weight of total ewes in flock

[3] An additional 325 ewes culled in August

[4] Average flock inventory for 1984

Denis Lavallee
Bas du 4e Rang
STE-SOPHIE
DE MAGANTIC
GOP ILO Quebec
CANADA Phone: (819) 362-6462

Introduction:

Mr. Lavallee has developed from extensive study, international travel, and experience, a system of 5 lambings in 3 years called the "ECOVAL" system. This system, using the Polypay breed imported into Canada in 1980 and a Dorset flock, is being researched in cooperation with "Agriculture Canada".

Objectives: Evaluate 4 lambings in 2 years or 5 lambings in 3 years for maximizing lamb production by ewes and the production of fresh lamb throughout the year on a commercially, profitable basis.

Advantages: Provides possibility, independent of season, for 4 lambings in 2 years and breeding ewe lambs by 7-9 months of age. Ewes which fail to breed at the first exposure still have the opportunity for 3 lambings in 2 years. Permits early detection of poor producers for culling. Barn can be used all year long for light control and lambing and ewes can be on pasture for four of the five lactations under Quebec conditions. Provides the opportunity to produce about 30% more lambs than on a 3 lambings in two years system at no increase in cost per ewe, because lambing in November and June is more economical than lambing in January and September, if ewes go to pasture. About a third of the ewes are lambing at each lambing time, making it easier to care for the ewes.

Procedure:

Weaning: All lambs are weaned at an average of 45 days of age.

Breeding schedule: During breedings number 3 and 5, some ewes are bred while lactating.

Nutrition: For spring breeding give vitamins A & D to ewes and ram to help fertility.

All ewes are on pasture mid-May to end of October.

Light-treatment: Light-tight barn, open barn windows 8:00 a.m., close windows 1:00 p.m.

Performance:

Table 1. ECOVAL management schedule[1/].

Breeding	Lambing	Light treatment (5 hrs. daylight/day)	Shearing
#1---			
10 Aug. to 25 Sept. ----	1 Jan. to 15 Feb.	15 Feb. to 10 May[2/]	
(Re-exposed[3/] 20 Oct. to 5 Dec.)			
#2---			
5 Apr. to 20 May -------	25 Aug. to 10 Oct.	NONE	
(Re-exposed 5 June to 20 July)			
#3---			
20 Oct. to 5 Dec. ------	10 Mar. to 25 Apr.	15 Apr. to 10 July (on pasture only 5 hrs./day)	Shear this breeding group only, early May
(Re-exposed 20 Dec. to 5 Feb.			
#4---			
5 June to 20 July ------	25 Oct. to 10 Dec.	NONE	Shear all sheep in Nov.
(Re-exposed 10 Aug. to 25 Sept.			
#5---			
20 Dec. to 5 Feb. ------	10 May to 25 June	NONE	
(Re-exposed 5 Apr. to 20 May)			
#1---			
10 Aug. to 25 Sept. (Repeat above schedule)			

[1/] Breeding ewe lambs:
Lambs born in #1 lambing are bred in next #1 breeding
Lambs born in #2 lambing are bred in next #4 breeding
Lambs born in #3 lambing are bred in next #3 breeding
Lambs born in #4 lambing are bred in next #1 breeding
Lambs born in #4 lambing are bred in next #5 breeding

[2/] Rams receive some light treatment as ewes.

[3/] Ewes re-exposed to rams at next breeding schedule to catch any ewes which failed to conceive at first breeding opportunity.

Note:
Breeding intervals vary with season of year to maximize breeding response.

Performance:

Table 2. Summary of the Ecoval accelerated lambing results during the first three years of their operation.

Year	No. of ewes	Age	Lambings per ewe	Lambs born No.	Lambs born %
1982					
	20	Yearling		54	2.70
	6	Mature		22	3.67
Total	26		1.81	76	2.92
1983					
	36	Yearling		77	2.14
	25	Mature		72	2.88
Total	61		1.54	149	2.44
1984					
	35	Yearling		65	1.86
	49	Mature		137	2.80
Total	84		1.48	202	2.40

Performance notes:

Prolificacy-mature Polypay ewes: January to June, 200%

September to November, 170 - 180%

Good feeding during last 6 weeks of pregnancy, during lactation, and before and during breeding (flushing) are very important when lambing at 7-month intervals.

Replacement lambs average 77 to 88 lbs. at 100 days of age.

Total lamb loss to market weight including loss at birth is about 15%.

Over 85% of the ewes (Polypay and Dorset) have lambed at each of the 5 lambings since the ECOVAL System was started. Polypays out-produce Dorsets because of greater prolificacy.

Polypay ewes shear an average of about 9 lbs. of grease wool per year.

1984: The first complete year of the ECOVAL System (earlier records on 3 lambings in 2 year and 4 lambings in 3 year schedules).

Performance was disappointing because only 50 percent of ewe lambs lambed to the first breeding in 1984. This was because they tried growing them out on grass only and they were too small at breeding time.

"I love them (Polypays) as the best breed under semi-confinement system I have."

Ed and Phyllis McLane
565 McLane Road
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Introduction:

The McLanes are striving for economical, profitable production so they emphasize the use of pasture with a short lamb-finishing period of 6-8 weeks using high protein home-grown alfalfa hay and home-grown wheat. Careful, complete records are emphasized for a progressive, efficient breeding program.

Procedure:

The ewes were exposed to rams starting on September 28, 1983. The resulting spring lambs were weaned at 30 days of age at an average weight of 30 lbs. so that the ewes could be rebred for fall lambing. Thirty days after the lambs were weaned (about 60 days postpartum, in early May), the ewes were exposed to rams for 17 days. The fall-born lambs were weaned at 60 days of age. Ewe lamb breeding started two weeks after the start of breeding in the mature ewes.

Any spring-born ewe lambs must lamb at 1 year of age or they are sold for slaughter. A fall-born ewe must lamb by 17 months of age. Good growth rate, straight feet and legs, good mothering instinct, and lactating ability are emphasized in addition to primary emphasis on lambing rate. Ewe lambs are not culled on the basis of giving birth to single lambs. However, if they also have a single at two years of age they are culled.

Rams are selected primarily on the production of their dams. They must be born as twins or better and also be good gainers. Dams must have 200% or better average lambing percentage. Tall, long bodied sheep with smooth backs are preferred. Only about 5% of the male lamb crop is saved ultimately for breeding purposes either in the flock or for sale to other breeders or commercial producers.

At lambing time, ewes with new lambs are put in individual pens in the barn. They are given shots, tails docked, castrated, and eartagged before leaving the lambing pens. If all goes well, they are turned out of the pens at about 3 days to an area inside the barn where they are observed for 7 days. The sheep are carefully watched during lambing time. These procedures minimize losses.

The ewes are fed high-protein hay until two weeks before weaning. This is because high-protein hay appears to promote mastitis at weaning. Water is withheld from the ewes for 24 hours after weaning. Creep feed is always available from 3 to 60 days after birth.

Table 1. Summary of the McLane accelerated lambing results for 1984 (13.5 months).

Year	Season	Ewe Age	No. of ewes in flock	No. ewes lambing	Lambs born No.	Lambs weaned No.	Lambs weaned %
1984	Spring						
		Yearling	34	33	57	55	162
		Mature	53	53	116	113	213
	Total		87	86	173	168	193
Fall —— >							
		Yearling	33[1/]	18	23	23	70
		Mature	53	33	55	55	104
	Total		86	51	78	78	91
	Annual						
		Yearling	33	51	80	78	236
		Mature	53	86	171	168	317
	Total		86	137	251	246	286

[1/] Yearlings that do not lamb in spring are culled.

Performance notes:

Percentage of multiple births is always lower for fall lambing.

Wool grade ranges from 58's to 64's with average fleece weight of 11 lbs. The 1984 clip of 1009 lbs. sold on 62's spinning count basis for 96.5¢ per lb. directly to the mill. Fleeces are lighter when the ewes raise two lamb crops in a year. Birth weights average 8-10 lbs.

The average weight for yearling rams is 150 lbs. The average weight of two-year-old ewes is 150 lbs.

Richard and Leslie Sorensen
R Lazy S Sheep Co.
9330 N. Co. Road 15
Ft. Collins, Colorado 80524 Phone: (303) 568-3806

Introduction:

The Sorensens are very enthusiatic sheep raisers with lots of ideas for improving mangement and production. They are very proud of the gain of their rams on the Colorado Ram Test Association Rate of Gain Test. Their National Record Setter gained an average of 1.328 lbs. per day while on test. Their goals are to maintain a flock of 50-75 ewes and lamb consistently twice yearly with a 400% lamb crop. "We are completely committed to this great breed."

Procedures: (1984 record)

Breeding was started early in September. The second breeding started in early May. The sheep are sheared twice a year, September 1 and April 1. Lambs get

get chopped alfalfa hay and a 21% grain and pellet "grower creep" until weaning at 60 days of age (98 days of age in fall with slightly different creep diet). The lambs are weaned later in the fall because fall-lambing ewes breed while lactating. At weaning, lambs get whole corn and chopped alfalfa until 120 days of age.

Vasectomized teaser ram is used 3 weeks before each breeding season September-October and May-June, with grain in the fall and green grass in the spring for flushing.

A preventive health program is emphasized. Lambs get C & D antitoxin at birth and receive 3 shots of C & D toxoid and tetanus by weaning age. The lambs are wormed also and vaccinated for sore mouth and the ewes are vaccinated for ovine vibrio before breeding and during gestation once a year and also are given C & D toxoid and tetanus boosters during mid-gestation. Rams are checked for epididymitis and testicular soundness. Sheep are treated annually with Tiguvon for lice and keds immediately after shearing in April. Hooves are trimmed twice a year. Ewes are treated with a variety of recommended stomach worm medicines 3-4 times a year.

Sheep are on pasture most of the spring, summer, and fall. Protein blocks are used when the grass matures up and hay and corn supplement is given in early spring.

Intensive selection for high production is practiced. Ewe lambs are pregnancy tested with an ultasound scanner. Open ewes go to market as fat lambs.

Performance: 1984: 10% death loss in spring

Weight for age at:
60 days of age
Rams 61 lbs.
Ewes 57 lbs.

120 days of age

Rams 121 lbs.

Ewes 105 lbs.

Fall-born lambs have smaller birth weight (11.5 vs. 10.7 lbs.) and average daily gain than spring-born lambs (.86 vs. .84 lbs per day).

Average annual fleece production is about 12.5 lbs. grading 58's to 64's.

Table 1. Summary of the Sorensen 1984 accelerated lambing results.

Year	Age	Season	No. of ewes	No. of ewes lambing	Lambs born No.	Lambs born %
1984	Yearling	Spring				
		(2/23-4/25)[1/]	14	14	18	1.29
		Fall				
		(10/29-11/19)	14	6	9	.64
		Annual	14	20	27	1.93
	Mature[2/]					
		Spring				
		(2/2-5/12)	37	37	69	1.86
		Fall				
		(9/28-11/26)	37	19	32	.86
		Annual	37	56	101	2.73

[1/] Figures in parentheses are lambing periods.

[2/] Fifty-seven percent of the ewe flock are two-year-olds or younger.