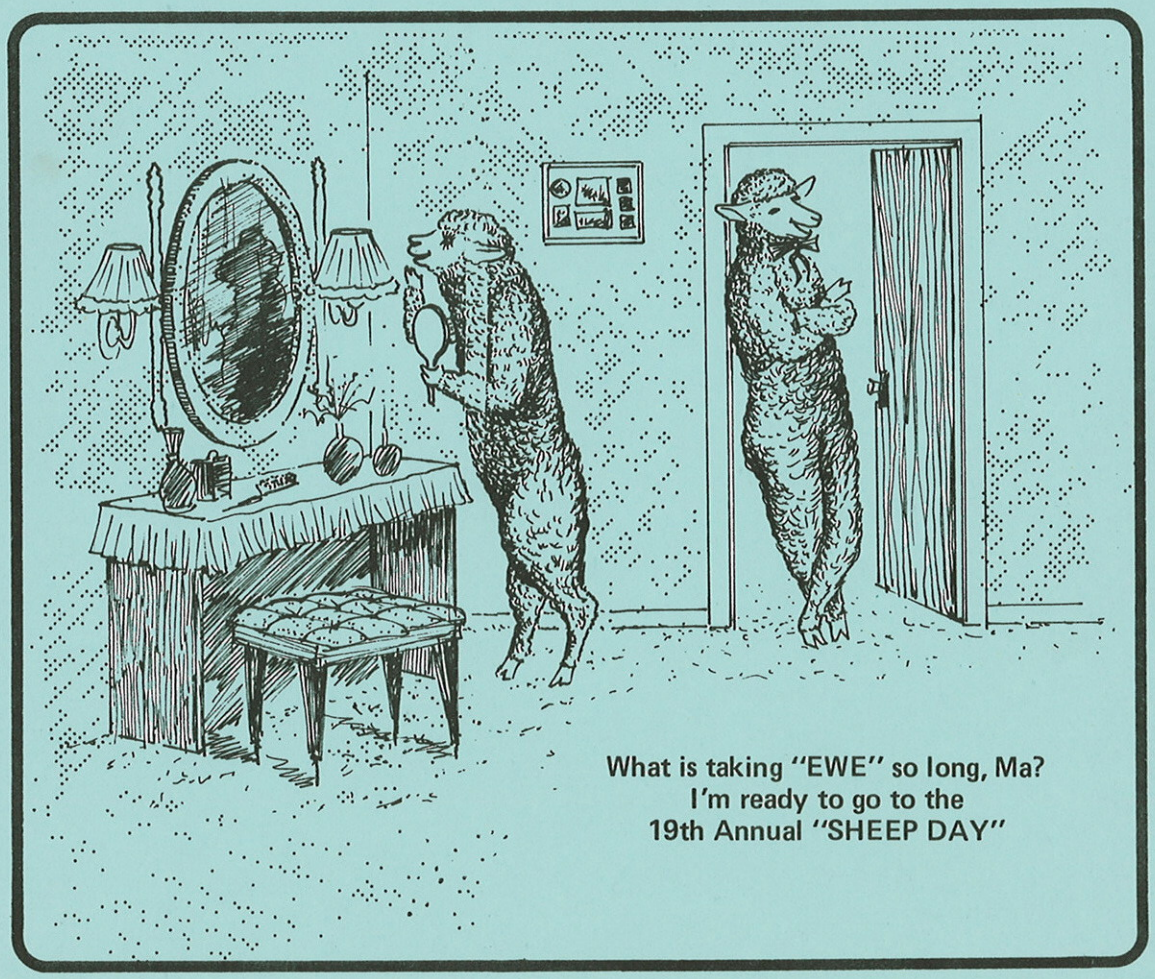
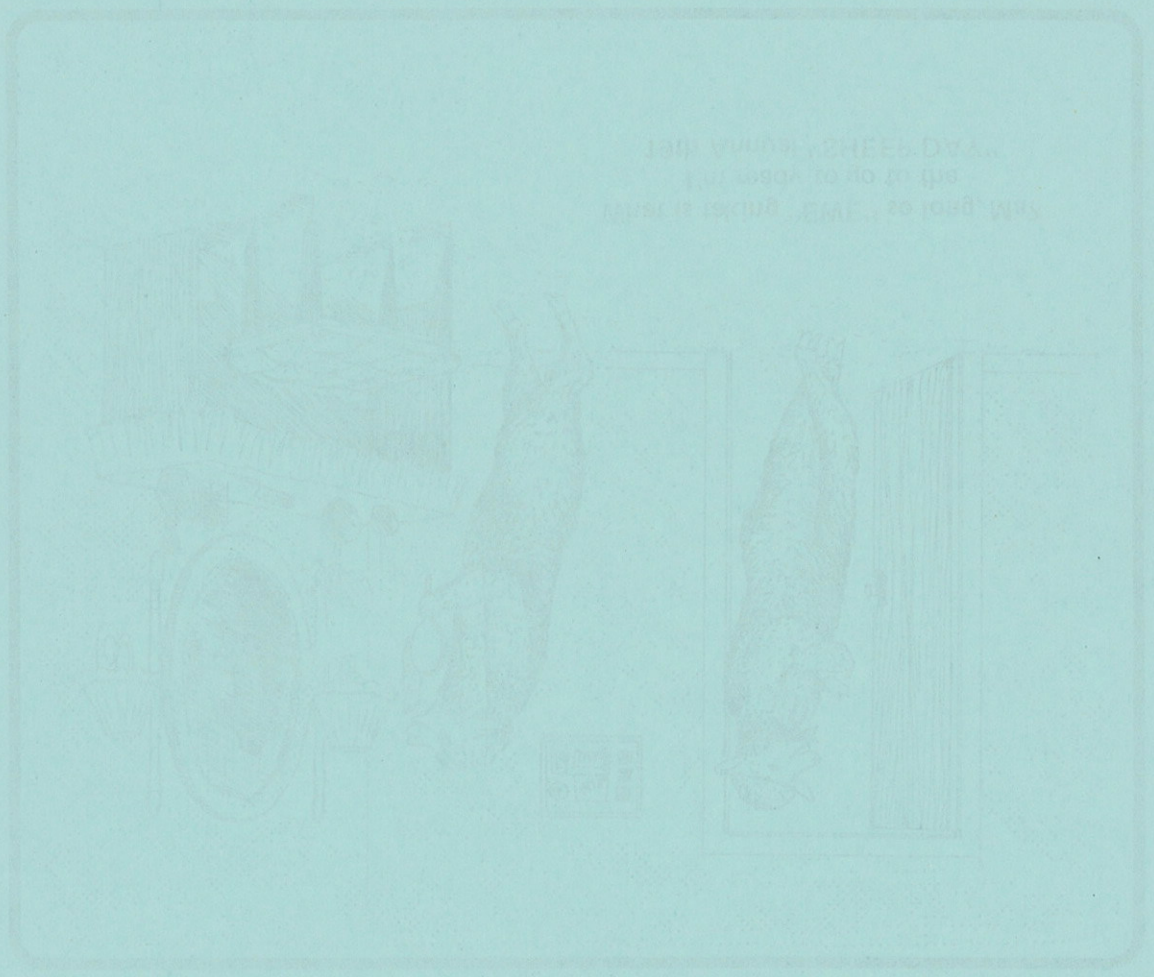
19th ANNUAL
WESTERN DAKOTA
SHEEP DAY

WEDNESDAY, FEBRUARY 8, 1978, HETTINGER ARMORY



TIMOTHY C. FALLER, SUPT.

HETTINGER BRANCH EXPERIMENT STATION
NORTH DAKOTA STATE UNIVERSITY



SHEEP DAYS

WESTERN DAKOTA

P R O G R A M

10:30 a.m. (MST)	PREGNANCY DIAGNOSIS Merle Light - Animal Science Dept. Roger Haugen - N.D. Extension Service
11:00 a.m.	PROGRESS REPORTS Hettinger Station Reports Timothy C. Faller Superintendent Hettinger Branch Station Fargo Station Reports Prof. Merle Light Animal Science Dept. North Dakota State University
12: noon	Roast American Lamb Dinner
1:15 p.m.	GREETINGS Dr. H. R. Lund, Assistant Director Agricultural Experiment Station North Dakota State University
1:30 p.m.	WHY I CHOSE LAMB FEEDING Dean Swenson Harwood, North Dakota
2:10 p.m.	MY SHEEP OPERATION Ron Jarrett Britton, South Dakota
2:45 p.m.	SHEEP HOUSING AND CONFINEMENT Dr. Harvey Windels University of Minnesota Crookston Branch Crookston, Minnesota
3:30 p.m.	Drawing and Coffee

* The "Ladies Program" begins at 1:30 p.m. at the Hettinger Armory.

SHEEP DAY DIGEST

by
Timothy C. Faller, Supt.
Hettinger Experiment Station

1. CROSSBREEDING
   Results from crossbreeding trial involving 7 breeds. and their crosses. Sect. I pp. 1-4

2. SELECTION
   A review of results of selecting replacement ewes for single heritability traits. Sect. I pp. 5-11

3. FEEDING STRAW IN RATIONS FOR GESTATING EWES
   A study of self-fed rations with different levels of wheat straw self to gestating ewes. Sect. I pp. 12-15

4. PRODUCTIVITY OF WESTERN EWES UNDER NORTH DAKOTA CONDITIONS
   An evaluation of profitability of aged Wyoming ewes for North Dakota Conditions. Sect. I pp. 16

5. BORDER LEICESTER AND FINN CROSS EWES
   Evaluation of two productive crossbred ewe types under two different environments. Sect. II pp. 17-19

6. PROGRESSIVE PNEUMONIA
   A study of the development of resistance to progressive pneumonia. Sect. II pp. 20-21

7. RUMENSIN FOR EARLY WEANED WINTER LAMBS
   A determination of the effectiveness of rumensin for; increased gains, increased feed efficiency, and coccidia control in early winter born lambs. Sect. II pp. 22-25

8. REPRODUCTIVE CHARACTERISTICS OF VARIOUS SHEEP BREEDS AND CROSSES
   A study involving all major American breeds of sheep. Sect. II pp. 26-30

9. NUTRITION FOR BREEDING EWE LAMBS
   A study involving various nutrition levels for breeding ewe lambs. Sect. III 31-35

10. FLOCK OUTLINE
    A calendar type outline for producer use in flock management. Sect. IV pp. 36-39

SECTION I

Reports of

Research in Progress

at the

Hettinger Experiment Station

Presented by
Timothy C. FAller
Superintendent

at the

19th Annual Sheep Day

Hettinger Experiment Station
Hettinger, North Dakota

February 9, 1977

ND 3707 PRODUCTIVITY OF SELECTED SHEEP BREEDS AND CROSSES UNDER NORTH DAKOTA CONDITIONS (1977 Report)

The most important factor to a profitable sheep enterprise is the number of lambs marketed per ewe exposed. Many factors influence the percent lamb crop marketed. Of these, selection of parental stock having the genetic capability of conceiving and bearing large numbers of offspring is of primary importance.

An experiment was initiated in 1965 to determine the potential of crossbred offspring of two breeds not commonly raised in North Dakota or other parts of the United States, the North Country Cheviot and the Border Leicester. These breeds are white faced, medium to large in size, clean faced and clean legged. They do not carry a reputation for being outstanding wool producers but are used extensively in the British Isles to sire crossbred commercial ewes. Rams of these two breeds were mated to Columbia and Rambouillet ewes and these crossbred offspring are being compared with each other and with straightbred Columbia and Rambouillet ewes and also with Columbia x Rambouillet crossbreds.

Experimental Procedure

The Hettinger Branch Experiment Station contracted with a commercial Columbia sheep producer and with a commercial Rambouillet producer to produce the experimental females for this experiment. Each producer randomly allotted his ewes into four groups of about 40 each. Each group was then mated to either a Columbia, Rambouillet, North Country Cheviot or Border Leicester ram considered to be of typical commercial quality. The initial matings were made in the fall of 1965 and the first delivery of eight breeds or breed combinations was made to the experiment station in the fall of 1966. All lambs were handled as a single unit during the winter and summer period that followed. Additibnal like matings were made in the fall of 1966.

These ewe lambs were delivered the fall of 1967 as the final ewes for evaluation.

The initial matings of the experimental ewes were made in the fall of 1967 to Hampshire and Suffolk rams. Ewe groups were randomly assigned to Hampshire and Suffolk ram groups and to February and April lambing groups.

In the fall of 1971 an additional 16 ewe lambs of each cross were contracted for, excluding the reciprocal crosses, and adding Finnish Landrace crosses. These ewes were added to check information already collected in the crossbreeding project, and to compare Finn crossbred ewes to the various crosses worked with. The new ewe lambs were to begin lambing the spring of 1973. 24 each of Border Leicester--Rambouillet and Finn-Rambouillet crosses were added to begin lambing in 1974 and 13 additional Border Leicester-Rambouillet crosses were added to begin lambing in 1975.

The following is a summary of the production of the ewes added since 1973.

TABLE I

EFFECT OF BREED OF SIRE ON EWE'S WOOL PRODUCTION

Breed of sire	Grease Fleece Wt.	Staple Length (MM)
Rambouillet	10.4	78.00
Columbia	9.9	89.7
Border Leicester	10.7	116.9
North Country Cheviot	8.3	91.2
Finnish Landrace	8.8	97.6

TABLE II

EFFECT OF BREED OF SIRE ON EWE'S BODY SIZE

Breed of Sire	Pre-Breeding Wt.	Pre-Lambing Wt.
Rambouillet	144.0	170.3
Columbia	139.3	166.3
Border Leicester	141.7	173.0
North Country Cheviot	142.5	162.3
Finnish Landrace	121.2	150.2

TABLE III
EFFECT OF BREED OF SIRE ON LAMBING PERFORMANCE

Breed of Sire	Lambs Born	Lambs Weaned	Loss Percentage
Rambouillet	136.9	114.6	16.0
Columbia	142.8	118.8	16.8
Border Leicester	141.9	122.0	14.0
N. C. Cheviot	121.5	101.3	16.5
Finnish Landrace	191.6	155.6	18.8

1 - Includes only those lambs raised on dam.

TABLE IV
EFFECT OF BREED OF DAM ON EWES WOOL PRODUCTION

Breed of Dam	Grease Fleece Wt.	Staple Length (MM)
Rambouillet	10.1	94.3
Columbia	9.0	101.7

TABLE V
EFFECT OF BREED OF DAM ON EWES BODY SIZE

Breed of Dam	Pre-Breeding Wt.	Pre-Lambing Wt.
Rambouillet	140.8	169.6
Columbia	134.7	158.4

TABLE VI
EFFECT OF BREED OF DAM ON LAMBING PERFORMANCE

Breed of Dam	Lambs Born	Lambs Weaned	Loss Percentage
Rambouillet	154.9	130.5	15.8
Columbia	129.7	106.9	17.6

TABLE VII
CROSSBRED EWE PRODUCTION (1973-76)

Cross	Grease Fleece Wt. Lbs.	Staple Length (MM)	Pre-Breeding (lbs)	Lamb wt. Lbs.	Lambs Born/ 100 ewes	Lambs Weaned/ 100 ewes
Ramb, x Ramb.	10.53	77.31	142.4	168.7	136.7	112.2
B. L. x Ramb.	11.26	112.25	145.5	179.8	149.7	133.1
N.C.C.x Ramb.	8.76	86.58	146.5	167.7	130.5	111.0
Finn x Ramb.	9.01	95.17	122.9	154.2	200.0	159.6
Col. x Col.	9.54	92.44	132.4	160.6	134.7	112.0
B. L. x Col.	9.40	126.57	134.3	159.1	127.5	98.6
NC.C. x Ramb.	7.69	96.86	137.5	155.0	110.5	89.6
Finn. x Col.	7.73	107.17	114.8	134.7	160.00	140.0

TABLE VII
LAMB PERFORMANCE

Cross	Birth Wt. Lbs.	Wean Wt. Lbs.	Wean Age Days	Mkt. Wt. Lbs.	Market Age Days
Ramb. x Ramb.	11.09	48.66	68.25	100.28	173.25
B. L. x Ramb.	10.56	49.62	75.55	102.21	177.33
N.C. x Ramb.	11.01	48.06	68.45	100.62	174.17
Finn x Ramb.	8.13	42.71	71.76	97.77	197.33
Col. x Col.	10.84	51.57	70.99	100.42	165.82
B.L. x Col.	9.56	46.47	69.75	99.20	177.93
N.C. x Ramb.	10.19	44.11	66.68	101.80	181.76
Finn x Col.	7.99	37.46	65.22	99.26	189.36

Results

It would appear at this time that reproductive performance of all ewes purchased after 1973 was lower than the original ewes purchased in 1966 and 67; however, the same trends are evident. The use of Border Leicester rams to produce white faced vrossbred ewes made significant improvements in productivity when used on Rambouillet ewes and decreased productivity when mated to Columbia ewes and the F, were retained for replacement. The use of Finnish Landrace rams to produce crossbred ewes appears to be a profitable practice primarily if your goal is to increase lamb production. In all cases F, finn cross ewes were more prolific than their dams. Lambs sired by blackfaced rams from F, Finn-cross ewes required 10 to 14 additional days to reach acceptable market weight. The use of Border Leicester rams did slightly increase the grease fleece wts. of resulting F, crossbred ewes, and crossbred ewes resulting from North Country Cheviot and Finnish Landrace crosses reduced wool production.

HES 6260

Title: Relative Responses of Selection Pressures Applied to Ewes

Objectives: To determine the rate of change in production of wool and the production of lamb @120 days when these factors are selected as single traits and pressure is applied to the ewe flock only.

Procedure: The Hettinger Station purebred flock of 90 Columbia ewes were allotted on the basis of weight and age into three groups of 30 ewes each. Three registered Columbia rams are to be used each year. Each ram to be exposed to ten ewes from each lot in order to distribute the influence of sires equally across groups.

Culling ewes will be conducted each fall on the following basis:

1. Age
2. Mechanical (Ill health, spoiled udder, etc.)
3. Flock A - low lamb production
   Flock B - low fleece production
   Flock C - general type (visual selection)

Each year, replacements will be selected on the following basis and held to approximately 25% (8 ewes) per group.

Flock A. - 1. Yearling ewes born as twins with preference to those from ewes with the greatest corrected lamb production at 120 days.
2. Replacement yearling ewes must be physically sound.

Flock B. - 1. Yearling ewes with heaviest fleeces at first shearing.
2. Replacement yearling ewes must be physically sound.

Flock C. - 1. Ewe lambs showing most desirable Columbia breed type as suggested by the Columbia Sheep Breeders Association of America.

Analysis: The following data will be collected. Body weight of ewes prior to breeding and lambing, fleece weight and grade, date and cause of elimination of ewes from flock, lamb birth date, birth weight, type of birth, sex, weaning weight and cause of death.

The Lamb Index Calculator suggested by the American Hampshire Sheep Association will be used to correct weaning weights of lambs for birth type and rearing, sex and age of ewe to a common basis at 120 days. If this method of correcting production to a common denominator indicates significant change due to selection, a more sophisticated analysis will be conducted with the use of a suitable computer progress.

Changes in both wool production and lamb production at 120 days as averages by years will be observed for each treatment. Patterned changes, if any, will be noted. If changes seem possible as a result of selection pressures, the data will be analyzed to determine significance of changes in average production as measured.

In the fall of 1977, culling of mature ewes and selection of eight replacement ewes for each lot was accomplished according to the design of this study.

TABLE I - PRODUCTION OF YEARLING EWE REPLACEMENTS

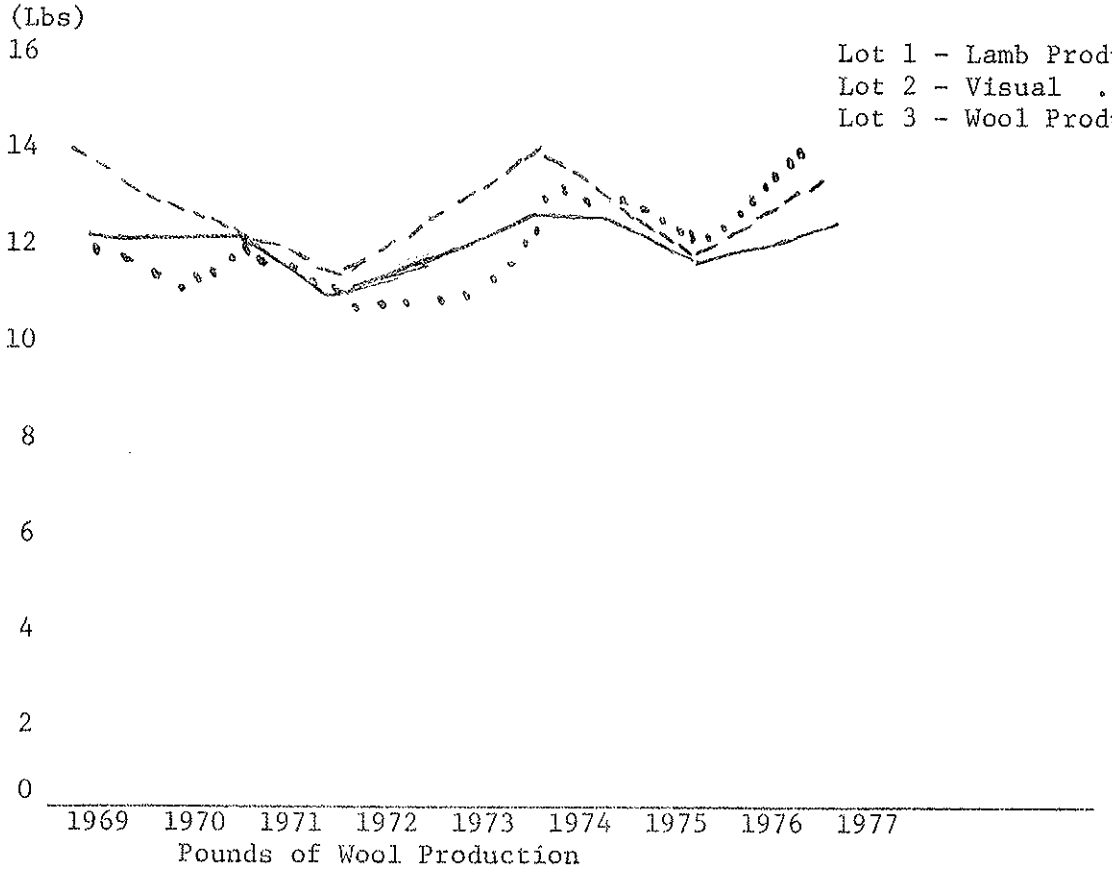
	7 year Average 1969 - 1975	1976	1977
Percent Lambs Dropped			
Lot 1	117.38	100.0	125.0
Lot 2	132.50	112.5	112.5
Lot 3	125.00	125.0	100.0
Percent Lambs Weaned			
Lot 1	94.88	100.0	112.5
Lot 2	118.30	100.0	88.0
Lot 3	116.07	112.5	100.0
Pounds of Lamb @120 Days			
Lot 1	82.64	98.7	83.7
Lot 2	99.07	96.1	65.7
Lot 3	95.13	100.8	72.6
Grease Fleece Wt.			
Lot 1	12.45	12.0	12.5
Lot 2	12.44	12.0	14.6
Lot 3	12.98	12.0	13.9

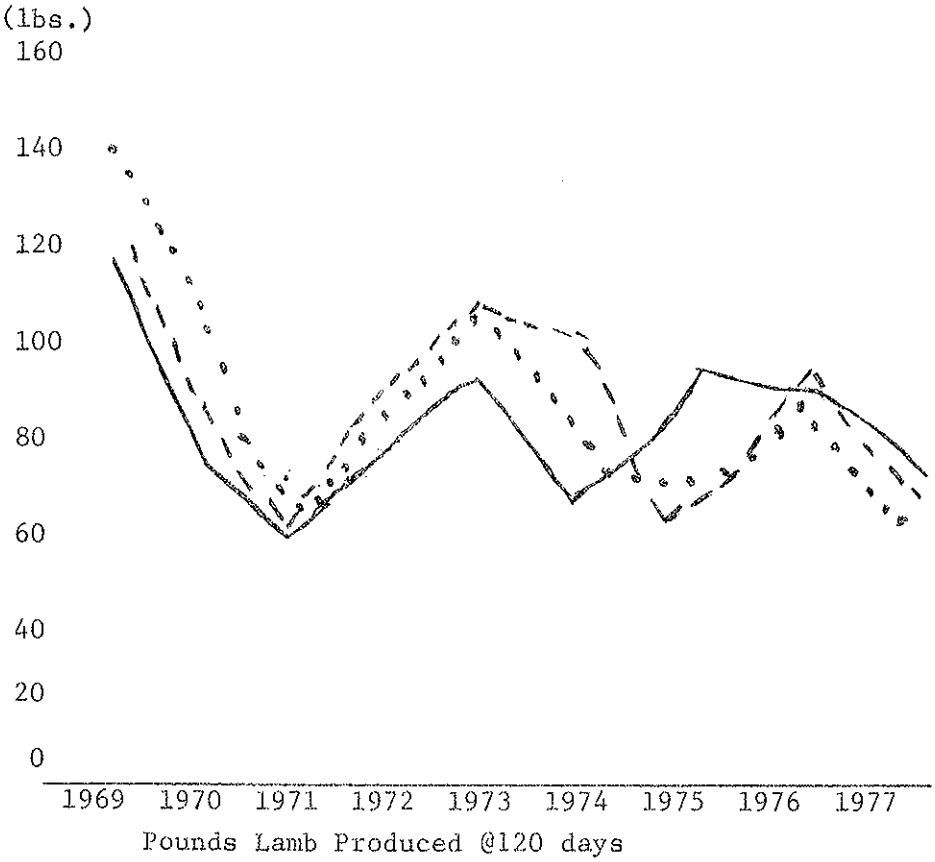
	Sire No. 1	Sire No 2.	Sire No. 3
Sire Records - 1967	Marshall	NDSU #1	Archibald
Ewes Exposed	29	30	30
% Lambs Dropped	151.7	166.7	166.7
% Lambs Weaned	134.5	143.3	140.0
Sire Records - 1968	Marshall	NDSU #1	E. Ehlers
Ewes Exposed	30	30	30
% Lambs Dropped	163.3	150.0	140.0
% Lambs Weaned	150.0	143.0	136.7
Sire Records - 1969	J. Ehlers	NDSU #2	E. Ehlers
Ewes Exposed	30	30	30
% Lambs Dropped	143.3	150.0	150.0
% Lambs Weaned	130.0	143.0	140.0
Sire Records - 1970	Osborne	NDSU #2	E. Ehlers
Ewes Exposed	30	30	30
% Lambs Dropped	163.3	76.7	166.7
% Lambs Weaned	140.0	66.7	153.3
Sire Records - 1971	Osborne	Shown #1	Shown #2
Ewes Exposed	30	30	30
% Lambs Dropped	160.0	153.3	173.3
% Lambs Weaned	140.0	123.3	150.0
Sire Records - 1972	Hall	Shown #1	Shown #2
Ewes Exposed	30	30	30
% Lambs Dropped	162.1	190.0	166.7
% Lambs Weaned	144.8	140.0	130.0
Sire Records - 1973	Hall	Shown #3	H E S #1
Ewes Exposed	30	30	30
% Lambs Dropped	166.7	163.3	182.8
% Lambs Weaned	140.0	156.7	165.5
Sire Records - 1974	H E S #2	Shown #3	H E S #1
Ewes Exposed	30	30	30
% Lambs Dropped	140.0	150.0	120.0
% Lambs Weaned	116.7	130.0	96.7
Sire Records - 1975	H E S #2	Burchill #1	Larsen
Ewes Exposed	30	30	30
% Lambs Dropped	140.0	140.0	140.0
% Lambs Weaned	116.7	130.0	116.7
Sire Records - 1976	Caras	Burchill #1	Larsen
Ewes Exposed	30	30	30
% Lambs Dropped	160.0	103.3	116.7
% Lambs Weaned	133.3	96.7	110.0
Sire Records - 1977	Caras	Shown #4	Burchill #2
Ewes Exposed	30	30	30
% Lambs Dropped	150.0	123.0	160.0
% Lambs Weaned	143.0	100.0	147.0

SUMMARY OF "MEANS OF DATA"

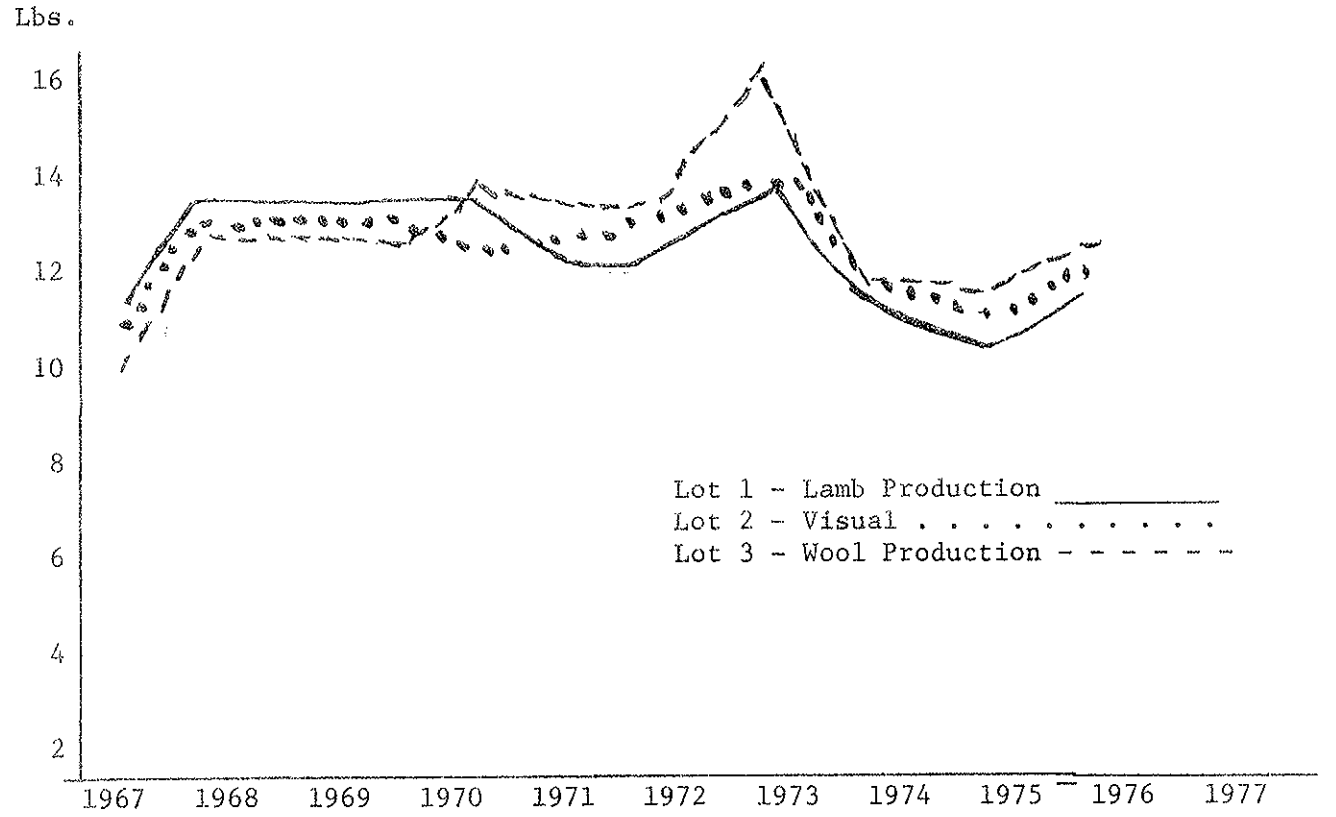
	Lot 1 Lamb. Prod.		Lot 2 Visual		Lot 3 Fleece Prod'n	
	1969-75 Ave. Prod.	1976 Ave. Prod.	1969-75 Ave. Prod.	1976 Ave. Prod.	1969-75 Ave. Prod'n	1976 Ave. Prod'n
Ewes Exposed	30	30	30	30	30	30
Age @ Breeding	2.70	2.63	2.70	2.5	2.64	2.53
Initial Wt. (lbs.)	155.6	142.4	158.4	146.4	155.0	141.7
Gain During Breeding (lbs.)	.9	7.4	1.9	10.2	1.5	7.5
Gain Breeding to Lambing (lbs.)	21.8	14.7	20.5	12.3	19.6	13.8
Ewes Lambing	28.3	29	27.8	29	27.6	29
% Lambs Dropped/ewe exposed	154.7	136.7	150.2	140.0	150.4	153.3
% Lambs Weaned/ewe exposed	131.2	126.7	127.0	123.3	128.9	130.0
Corrected Pounds of Lamb Per Ewe at 120 Days	110.9	98.6	108.1	93.9	109.0	98.9
Grease Fleece Wt.	12.4	11.97	12.3	12.7	12.6	12.75
Lamb Birth Wt.	11.0	11.3	10.9	11.3	10.7	10.5
Uncorrected Weaning Wt.	64.3	36.4	64.2	36.6	64.5	35.0
Corrected Weaning Wt.	85.6	77.8	85.1	76.1	83.8	76.1
Age in Days at Weaning	98.4	57.3	98.1	58.5	100.1	60.2
Birth Type of Dam's @ Letting						
% Singles	4.5	0	22.0	27.0	25.6	23.0
% Doubles	82.7	83.0	76.4	73.0	70.8	70.0
% Triplets	12.7	17.0	1.5	0	3.6	7.0

FIRST YEAR PRODUCTION OF REPLACEMENT EWES

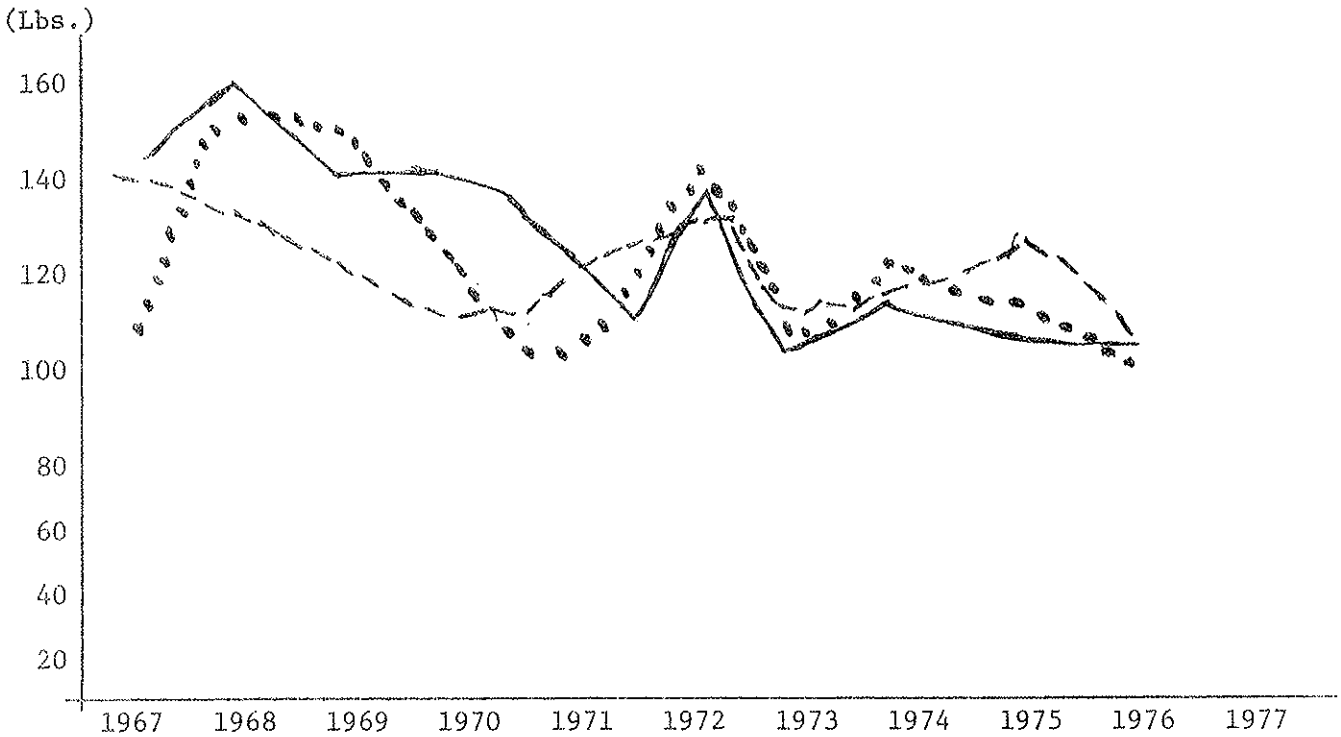




TOTAL EWE FLOCK PRODUCTION



Pounds of Wool Production



Pounds Lamb Produced @120 days.

SUMMARY

The selection project is a long duration project to evaluate the productive improvements that can be made through selection of dams based on single traits.

Severe yearly variations due to: climate, feed, management, etc., may indicate that no improvement is being accomplsihed, however, it will take 3-4 complete flock turnovers to accomplish significant improvement to establish heritability estimates.

At this time one complete turnover has been made and the three groups are just past the mid-point of the second turnover. It may be necessary to make more rapid replacement to speed up turnover rate.

It would appear that the hot dry fall of 1976 effected ewe prolificy in all three lots for the 1977 lambing season, as twinning was below average.

PROJECT:

TITLE: Self Feeding Straw in Rations for Gestating Ewes

OBJECTIVE:

To determine the effects of self feeding varying levels of ground wheat straw and alfalfa on subsequent ewe and lamb performance.

JUSTIFICATION AND PREVIOUS WORK:

North Dakota produces vast amounts of wheat straw that could be used to significantly reduce feed costs. North Dakota sheep producers and those contemplating the addition of a sheep enterprise are interested in methods whereby sheep could be maintained in semi-confinement. The addition of straw in self-feeding situations could materially reduce feed costs when high quality roughages are in short supply and would also permit the practice of self feeding to reduce daily labor requirements.

The National Research Council lists the TDN requirements of the pregnant ewe during the first 15 weeks of the gestation period as 1.81 pounds per day. These requirements can be met by lwo quality forages provided that intake can be maintained at high enough levels. Previous work at North Dakota, Dinusson et al,(1965), demonstrated that ewes fed low quality native grass hay during gestation performed very poorly as compared to those fed alfalfa hay. Ewes fed native hay weaned 0.536 lambs as compared to 1.25 lambs for ewes that were fed alfalfa hay. S. C. Thonney and J. K. Hillers investigated the use of straw at Pullman, Washington. They concluded that up to 75 per cent wheat straw, if adequately supplemented, could be utilized until two weeks prior to parturition. They suggested that a 50:50 ratio of straw and alfalfa was preferable. The experimental period was short (only 58 dayS) and no information was provided on health of lambs and ewes or productivity beyond numbers of lambs dropped and wool weights. Climatic conditions in North Dakota are harsh for January and February lambing ewes,therefore the effects of straw in rations upon subsequent performance should be investigated. Exploratory work at the Hettinger Experiment Station (unpublished) has indicated that ground oat straw with ground alfalfa permits self feeding thus reducing daily labor requirements. More detailed observations under North Dakota conditions need be made.

PROCEDURE:

Approximately 140 sufflok ewes will be allotted into eight groups according to age and weight. Lots one through four will be self-fed ground mixed straw-alfalfa rations in which the straw content will vary between 0 and 60 percent. Lots five through eight will serve as prelicates. All ewes will be scored for body condition at allotting time and at the completion of each winter trial.

The feeding of experimental rations will be initiated at the start of the wintering period and will cease four to five weeks prior to parturition. All experimental ewes will be self-fed ground alfalfa rations and grain supplements after experimental rations are withdrawn. All experimental lambs will be creep fed until weaned.

Production records to be kept will include health and survival records on individual ewes and lambs, birth weights, 28 day weights and weaning weights. Individual fleece weights will be available.

PERSONNEL: Timothy Faller and Merle R. Light

LOCATION: Hettinger Experiment Station, Hettinger, North DAkota

INSTITUTIONAL UNITS INVOLVED

North Dakota State University Branch Station, Hettinger, NOrth Dakota and Animal Science Department, North Dakota State University, Fargo, North Dakota. It shall be the duty of the Hettinger Experiment Station to maintain and care for the sheep flocks, to collect all data and any other duties necessary for the completion of the project. It shall be the duty of the Animal Science Department to provide assistance in project planning, ration analyses and will assist in data analyses and project reports.

PROBABLY DURATION: October 1, 1977 to July 1, 1980

REFERENCES:

Dinusson, W. E., M. R. Light, R. M. Richard and D. W. Bolin. 1956 Winter Rations for Pregnant Ewes. July-August Bi-Monthly Bulletin, North Dakota State University

Thonney, S. C. and J. K. Hillers. 1977. Wheat Straw Feeding as a Winter Maintenance Ration for Pregnant Ewes. Bulletin 855, Washington State University.

SCORE CARD BASIS

Description	Estimated Fat Cover	Score
Emaciated	less than .1"	1
Thin	.1"	2
Medium	.2"	3
Good	.3"	4
Fat	.4"	5
Very Fat	more than .4"	

Pen	Ration (%straw)	Initial Score	Final Score	%Change
1	0	3.17	3.44	+ 8.5
2	20	3.22	3.06	- 5.0
3	40	3.28	2.78	-15.2
4	60	3.35	2.76	-17.6
5	0	3.47	3.88	+11.8
6	20	3.41	3.47	+ 1.8
7	40	3.59	3.24	- 9.5
8	60	3.53	2.88	-18.4

EWE PERFORMANCE

Pen	Ration (% straw)	Initial weight(lbs.)	Final weight (lbs.)	Days	Change (lbs.)
1	0	149.8	172.2	59	+22.4
2	20	149.1	167.0	59	+17.9
3	40	147.8	151.7	59	+ 3.9
4	60	148.7	143.9	59	- 4.8
5	0	150.3	183.7	59	+33.4
6	20	150.8	173.2	59	+22.4
7	40	152.7	165.3	59	+12.8
8	60	151.9	159.4	59	+ 7.6
1 + 5	0	150.3	178.0	59	+27.9
2 + 6	20	149.9	170.0	59	+20.1
3 + 7	40	150.2	158.4	59	+ 8.2
4 + 8	60	150.3	151.4	59	+ .9

FEED CONSUMPTION

Pen	Ration (%straw)	Straw /head/da.	Alfalfa /head/day	Feed /head/da.	Cost* /head/day
1	0	0	6.58	6.58	.164
2	20	1.27	5.07	6.34	.146
3	40	2.20	3.29	5.49	.125
4	60	2.72	1.81	4.53	.086
5	0	0	7.13	7.13	.178
6	20	1.26	5.02	6.28	.144
7	40	2.43	3.65	6.08	.129
8	60	3.03	2.01	5.04	.096
1 + 5	0	0	6.85	6.85	.171
2 + 6	20	1.26	5.05	6.31	.145
3 + 7	40	2.31	3.47	5.78	.121
4 + 8	60	2.87	1.91	4.79	.098

*Costs are computed on the basis of paying $50/T for alfalfa and $30/T for wheat straw.

FEED ANALYSIS*

Ration Description	Dry Matter %	Fiber %	Protein %
0% straw	84.4	27.9	17.09
20% straw	84.6	28.1	15.81
40% straw	83.2	32.9	12.58
60% straw	85.9	35.7	10.69

*Based on first sampling only.

POINTS TO CONSIDER

1. Costs will vary considerably due to the price of alfalfa hay and the value you put on your straw.

2. North Dakota straws will vary considerably in nutrient content according to: species, maturity, moisture, presence of weeds.

3. The ewes on the trial were under confinement and feeding in larger areas where more exercise is evident may cause variation in results.

4. Ewes with heavy internal parasite loads may perform much differently when feed high levels of straw.

5. Availability of fresh clean water may assist in prevention from compaction due to the high fiber rations.

6. This trial will be continued to more closely delineate recommendations for self-fed rations including wheat straw.

PROJECT: 6261

TITLE: Productivity of Western Whitefaced ewes under North Dakota Conditions

PERSONNEL: Timothy C. Faller

SPECIFIC PROBLEM AREA 310

OBJECTIVE:

Evaluate the profitability of aged western ewes under North Dakota conditions.

PROCEDURE:

100 western ewes were purchased in August and bred to lamb during March. Records will be kept concerning expenses and income originalism from these ewes. The ewes will be used until they are deemed unproductive and will then be sold to slaughter. Complete records will be kept concerning all problems associated with lamb production from aged ewes: including health, milk production, weights, etc.

SUMMARY:

First reports will be available prior to time to purchase ewes in 1978.

SECTION II

Reports of

Sheep Research in Progress

At The

Main Station, Fargo, N. D.

Presented by
Merle R. Light

at the

19th Annual Sheep Day

Hettinger Experiment Station
Hettinger, North Dakota

February 8, 1978

PROJECT: H-7-056

TITLE: Border Leicester and Finn Crossbred Ewe Evaluation Under Two Environments

PERSONNEL: Mr. M. R. Light, D. O. Erickson, J. E. Tilton, M. J. Marchello and Tim Faller

SPECIFIC PROBLEM AREA: 310

OBJECTIVES:

To evaluate crossbred ewe productivity under western North DAkota conditions and under conditions in eastern North Dakota.

PROCEDURE:

Fifty-six Border Leicester and fifty-six Finn sired ewe lambs were purchased in July of 1973. All ewe lambs originated from the same South Dakota flock. One half of each cross was randomly assigned to the Hettinger Experiment Station at Hettinger and to the Main Station at Fargo. Ewe lambs assigned to Hettinger were grown on grass pastures following purchase. Ewe lambs assigned to Fargo were grown through their yearling year on alfalfa hay and two pounds of oats daily from July 1 through February.

ABSTRACT OF PAST YEARS EXPERIMENTATION: (MAIN STATION) (1976)

All experimental ewes were handled as one unit and were pastured on brome and June grass pastures during the summer months. "Flushing" was accomplished by turning the ewes into a breeding pasture containing fall regrowth of brome and June grass. Suffolk and Hampshire rams were mated to the ewes commencing September 1.

Lambs were weaned from their days at approximately 45 days of age and were then finished to market weights in dry lot. Feed records show that lambs from Border Leicester ewes consumed an average of 361 pounds of total feed from birth to market while lambs from Finn crossbred ewes consumed and averaged 325 pounds.

Death losses in crossbred lambs were greater than normal in 1976 mainly because of a outbreak of Colibacillosis causing diarreha, dehydration and enterotoxemia in lambs 6-12 hours of age.

ABSTRACT OF PAST YEARS EXPERIMENTATION (MAIN STATION) (1977)

The fertility level of crossbred ewes remains excellent. Border Leicester crossbred ewes appear to be more susceptable to disease than Finn crossbred ewes. One Border Leicester crossbred ewe died of listeriosis, three were culled prior to lambing because of chronic progressive pneumonia and one failed to lamb. Only one finn crossbred ewe failed to lamb of the group that was mated and she was culled because of C.P.P.

Lambs from Finn crossbred ewes had a higher liveability than those from Border Leicester crossbred ewes. This was due in part to the fact that one Border Leicester crossbred ewe prolapsed and lost triplet lambs, two Border Leicester crossbred lambs were chilled and died. The loss of only 5.4 per cent Finn cross lambs is remarkably low and is a goal that every commercial man should aim for.

Although Finn crossbred lambs were lighter in weight at birth, 28 days and at weaning there was no significant difference in gains from weaning to market.

ABSTRACT OF PAST YEARS EXPERIMENTATION: (HETTINGER) (1976)

All experimental ewes were handled as one unit and were flushed on alfalfa-brome grass pastures. Suffolk and Hampshire rams were mated to the ewes beginning October 1.

Lambs and ewes were grazed on tame grass pastures until weaning at approximately 90 days of age. Post weaning lambs were grazed on tame grass pastures until 200 days of age when they were implanted with (zeranol) and pastured on alfalfa stumpage. All lambs were sent to market at approximately 250 days of age and a weight of 99.1 lbs. Lambs from Border Leicester cross ewes averaged 105.2 pounds and those from Finn cross ewes averaged 94.5

ABSTRACT OF PAST YEARS EXPERIMENTATION: (HETTINGER) (1977)

Prolificy dropped among the Finn x Rambouillet crossbred ewes and remained similar to past years for the Border Leicester x Rambouillet crossbred ewes. One Border Leicester and two Finn crossbred ewes failed to lamb. The extremely warm dry fall may have influenced reproductive performance of the ewes involved.

Lamb death losses were quite similar and included lambs that were removed from the ewe and raised artifically. Lambs weaned represents only those lambs raised on dam.

Finn crossbred lambs were lighter at birth, weaning, 90 days and market, however, growth rates were quite similar for lambs from both crossbred ewe types.

TABLE I
EWE PERFORMANCE
Main Station

	Border Leicester Cross		Finn	
	1976	1977	1976	1977
No ewes mated	25	24	25	25
No. ewes lambed	24	19	25	24
No. lambs born	48	39	57	56
No. lambs weaned	36	29	46	53
% Lambs Born	192.0	162.5	228.0	224.0
% Lambs weaned	144.0	120.8	184.0	212.0
% Death Loss	25.0	25.6	19.3	5.4
Ave. Birth Wt.	10.2	10.2	8.6	9.1
Ave. 28 day wt.	29.7	28.0	26.9	25.1
Ave. 90 day wt.	73.8	65.6	61.9	62.0
Ave. Mkt. wt.	96.0	-----	90.3	-------
Ave. Wool Wt.	11.1	-----	8.7	-------

TABLE II
EWE PERFORMANCE
Hettinger Station

	Border Leicester Cross			Finn	
	1976	1977	P	1976	1977
No. ewes mated	23	20		24	22
No. ewes lambed	19	19		24	20
No. lambs born	37	32		52	37
No. lambs weaned[1]	33	27		43	32
% lambs born [1]	160.8	160.0		216.7	168.0
% Lambs weaned[1]	143.5	135.0		179.2	145.0
% Death loss	10.8	15.6		17.3	13.5
Ave. Birth Wt.	11.2	10.4		8.4	8.4
Ave. 28 day wt.	-----	-----		-----	-----
Ave. 90 day wt.	58.0	58.4		54.1	54.1
Ave. Market wt.[2]	105.2	99.5		94.5	93.2
Ave. Wool wt.	10.4	9.7		8.2	8.6

1 - represents only those lambs raised on dam.

2 - marketed on common dat at approximately 190 days of age in 1977 and 250 days in 1976.

PROGRESSIVE PNEUMONIA

Chronic progressive pneumonia, a contagious virus disease of adult sheep was first reported by H. Marsh of Montana in 1923. "Lungers disease" has been identified since that time in almost every major sheep producing country. Geographically chronic progressive pneumonia has been reported in South Africa, Iceland, Britain, France, Germany, India and in America. This desease is characterized as a slowly developing but continuous pneumonia with physical weakness, labored and rapid breathing accompanied by emaciation. Some authors state that 100% of affected sheep die. Reduced productivity is noted in affected flocks.

Progressive pneumonia, in the United States, has been thought of mainly as a disease of range ewes in which 1 to 2 percent of ewes in affected flocks contract the disease. In Iceland it has been estimated that as many as 20 to 30 percent of ewes in infected flocks contract the disease.

The extent to which chronic progressive pneumonia affects ewe flocks in North Dakota has not been documented. Private communication from purebred breeders in particular indicate that losses due to "lungers disease" are increasing. It is known that chronic progressive pneumonia has existed in flocks at the main station in Fargo for at least twenty years.

Experimental

This study was initiated to determine (1) the genetic basis of resistance to progressive pneumonia or the existence of resistance to infection and (2) epidemology and prophylactic aspects of progressive pneumonia.

Lambs were selected in 1974 and 1975 in an attempt to establish flocks of Border Leicester, Suffolk, Columbia and Hampshire sheep that were free of the virus causing progressive pneumonia. Lambs were from flocks in which progressive pneumonia was known to exist. Methods used to create these flocks were (1) Remove lambs from ewes immediately following parturition. Licking of lambs by ewes or suckling by lambs was not permitted. (2) Lambs were raised on lamb milk replacer

and natural grains and roughage. (3) Lambs were raised in buildings that had been free of sheep for 5 to 6 months and were thoroughly cleaned, limed and disinfected.

Results and Discussion

Losses of new born lambs was greater than desired initially. Subsequent use of cows milk colostrum plus the use of injectable Vitamins A, D and E and selenium along with the use of anti-toxin injections to prevent enterotoxemia was effective in preventing losses of new born orphan lambs.

The general health of ewes in experimental flocks has been excellent. There have been no observation of respiratory disease, coughing, crusted eyes or nasal exudate in the isolation flock.

Blood was drawn from all ewes in the isolation flocks and parental flocks during September of 1975. Analyses of blood sera samples were made at the USDA National Disease Laboratory at Ames, Iowa to determine the extent of infection. The technique employed was an agar gel immunodiffision test to determine the presence or absence of antibodies against progressive pneumonia virus. Sera analyses of ewes from all flocks have not been completed. The results of partial analyses are presented in Table I.

TABLE I. RESULTS OF IMMUNODIFFUSION TEST

	Parental Flocks			Isolation Flocks		
Breed	Columbia	Rambouillet	Hampshire	Suffolk	Border Leicester	Columbia
NO. Ewes	26	38	15	17	14	19
No. Positive	12	24	0	0	0	0
% Positive	46.2	63.2	0.0	0.0	0.0	0.0

The results indicate that sheep in isolation flocks have not contracted progressive pneumonia to date. In contrast, rather large percentage of ewes in parental flocks have contracted progressive pneumonia. In parental flocks 20 per cent of ewes 1 to 2 years of age reacted positively and 50 precent of ewes 2 to 3 years of age reacted positively. These results indicate that it may be possible to establish sheep flocks that are free from virus pneumonia. Further research is indicated to determine if breed or individual differences exist in resistance to progressive pneumonia. Methods to control or eliminate progressive pneumonia in infected flocks need to be established.

RUMENSIN FOR EARLY WEANED WINTER LAMBS

Lambs that are raised in confinement during winter months are frequently infected with coccidia organisms and are diagnosed as having coccidiosis. Symptoms include thin, water or dark colored feces and a resulting weight loss. Lambs born and raised on pastures rarely contract coccidiosis until brought into close quarters for finishing or pen feeding. Sheep flocks at the North Dakota State University have had a history of coccidia outbreaks in their February and March born cree-fed lambs.

This experiment was initiated to test the efficacy of Rumensin for controlling coccidiosis and to determine its effect on weight gains and feed efficiency. Previous work at the Hettinger Experiment Station (1976) had shown Rumensin to be effective in reducing numbers of coddidia oocysts in feeder lambs. It also increased feed efficiency.

PROCEDURE:

Seventy-three weaned Hampshire sired crossbred lambs from Finn x Rambouillet or Border Leicester x Rambouillet dams were allotted into two groups. The control lot consisted of 32 ewe and wether lambs that averaged 35.5 pounds. Rumensin fed lambs were similar in sex and breeding and averaged 38 pounds. All lambs had been creep fed rations that were identical prior to the initiation of this experiment. The ration formulation was as follows:

Ingredient	Percent
Corn	74.11
Oats	14.82
SBOM	9.89
Dicalcium phosphate	.49
Amonium chloride	.49
ADE Pre Mix	.20

The grain mixture was hand fed twice daily adlibitum. Alfalfa hay (long) was provided in hay feeders and the amount was restricted to allow maximum grain consumption. Mineral boxes containing two parts of iodized salt and one part of dicalcium phosphate were provided for each lot.

Rumensin was added at the level of 15 grams per ton of grain ration for five weeks and was then increased to 20 grams per ton until the completion of the trial. The Rumensin was batch-mixed with the entire grain ration in a twin spiral mixer.

Fecal samples were collected from four randomly selected lambs when the project was initiated and at varying intervals thereafter. Fecal examinations for Eimeria oocysts were made by the North Dakota State University department of Veterinary Science.

All wether lambs assigned to this experiment were slaughtered under federal inspection when they attained a weight of at least 100 pounds. All ewe lambs that were assigned to this experiment have been retained in the North Dakota State University breeding flocks.

RESULTS AND DISCUSSION

Weight gains for experimental lambs are shown in table 1.

TABLE I

No.	Treatment	Initial Wt.	Daily Weight Gains by Periods (Pounds) Per 1	Per 2	Per 3	Per 4	Total
32	Control	35.53	.553	.644	.672	.900	.649
41	Rumensin	38.02	.535	.651	.623	.722	.614

Gains for both groups were excellent considering the low initial weights. Data analyses reveal no significant differences in gains between groups due to ration, sex of lambs or breed of dams' sire except in period four when control lambs gained significantly faster.

Feed consumption and conversion ratios are given in table 2.

TABLE 2. FEED CONSUMPTION AND CONVERSION

Lot	Control	Rumensin
Grain/day lbs.	1.90	1.81
Hay/day lbs.	.375	.293
Lbs. grain/lb. gain	2.93	2.96
Lbs. hay/lb. gain	.58	.48
	3.51	3.46

There were no significant differences found in consumption or conversion ratios. The level of feed consumption and also feed conversion was excellent in this trial. The amount of hay fed and consumed was low, varying from 14 to 16.5 percent of the ration. The low roughage to concentrate ratios did not seemingly detract from lamb performance although it is possible that faster gains might have been obtained had a somewhat higher proportion of alfalfa hay been fed.

The effect of adding Rumensin to rations on coccidia oocysts levels are given in table 3. Values are for lambs samples at random.

TABLE 3 EIMERIA OOCYST FECAL COUNTS

Treatment - Rumensin

Date	4-7	4-14	4-22	4-29	5-6	5-25	6-3
OOcysts No's	3300	600	0	0	9850	0	0
	600	1200	650	50	200	0	50
	2800	0	300	200	0	50	0
	550	5450	1300	400	0	0	0
Total	7250	7250	2250	650	10050	50	50
Average	1812.5	1812.5	562.5	162.5	251.3	12.5	12.5

Treatment - Control

Date	4-7	4-14	4-22	4-29	5-6	5-25	6-3
Oocysts No's	1200	900	14500	700	33600	0	1100
	55800	650	56000	1800	19400	0	5950
	450	550	250	6650	2850	50	300
	700	400	1400	5350	12950	2600	20050
Total	55150	2500	59100	14500	68800	2650	27400
Average	13787.5	625	14775	3625	17200	662.5	6850

Rumensin markedly reduced average oocyst numbers per gram of wet feces within the first two weeks. For all practical purposes coccidiosis was eliminated within the first month. The most surprising finding in this experiment was that control lambs gained as rapidly and efficiently as those fed Rumensin even though more heavily parasitized.

Experiments should be designed to test whether feeding Rumensin to the pregnant ewes would reduce or eliminate coccidia infection in the lambs from birth through market weights.

CONCLUSIONS:

Rumensin was effective in reducing coccidia oocysts within 28 days. No differences were found between control lambs or those fed Rumensin in rate of gain or feed conversion.

REPRODUCTIVE CHARACTERISTICS OF VARIOUS SHEEP BREEDS AND CROSSES

Merle Light, Professor

The profitability of the sheep enterprise is dependant upon a large number of factors not the least of which is reproductive performance. A 1973 survey of 59 North Dakota sheep producers, Brignone (1976) indicates a lambing rate of 131% for North Dakota ewes of which one lamb was marketed per ewe bred. This level of productivity is not acceptable in this age of modern technology.

If sheepmen are to become more efficient they must be aware of the inherent capabilities of the various breeds and crosses that are available for their use and should be prepared to utilize them for maximum productivity.

The productivity of commonly used purebred and their crosses has been reported by Dickerson (1977). Selected data from experiments at the United States Meat Animal Research Center, Clay Center Nebraska are presented in tables 1 and 2. These data indicate the superiority of the Suffolk.

TABLE 1. PUREBRED EWE PERFORMANCE OF SOME DOMESTIC BREEDS[a]

Trait	Total numbers	Breeds						
		Suffolk	Hampshire	Dorset	Rambouillet	Targhee	Corriedale	Significance[a]
Lambed/exposed(%)	6136	82	82	83	77	83	82	.05
Litter size (%)	4989							
At birth		161	146	155	144	152	148	.01
At 4 weeks		121	108	113	114	124	115	.10
At 10 weeks		103	99	102	104	108	94	.20

[a] Ewes exposed to rams for 1969 to 1972 spring lambing at USMARC (Dickerson and Glimp, 1975). Underlined means are extremes for statistically significant breed differences.

TABLE 2. PUREBRED LAMB PERFORMANCE OF SOME DOMESTIC BREEDS

Trait	Total numbers	Breeds						
		Suffolk	Hampshire	Dorset	Rambouillet	Targhee	Corriedale	Significance[a]
Alive at 10 weeks(%)[b]	4989	64	69	66	72	71	64	.01
Male weight (lb)	713[c]							
At birth		11.2	10.4	9.0	10.4	10.6	10.8	.01
At 10 weeks		51.8	45.6	39.7	47.6	48.7	44.3	.01
At 22 weeks		118	105	89	104	105	98	.01

[a] Underlined means are extremes for statistically significant breed differences.
[b] Percent weaned of total born for ewes lambing in spring of 1969-1972, inclusive, at USMARC (Dickerson and Glimp, 1975).
[c] Ram lambs reared in spring of 1969 and 1970 at USMARC (Dickerson et al., 1972).

breed in terms of lambing rate and in the growth of their offspring. All possible crosses were made between seven purebreds at Clay Center (table 3) crossbred ewes whose dams were Suffolks or Dorset excelled those whose dams were Hampshire, Rambouillet, Targhee or Corriedale in lambing rate. Ewes from Suffolk and Hampshire dams reached sexual maturity younger than other crosses but the survival rate of lambs from crossbred yearling ewes from Suffolk and Hampshire dams was poorest according to their studies.

TABLE 3. CROSSBRED EWE PERFORMANCE, BY BREED OF DAM

Trait	Total numbers	Dam of ewe: Suffolk	Hampshire	Dorset	Rambouillet	Targhee	Corriedale	Significance[a]
Weight at 230 days (lb)	552[b]	101	86	79	88	90	85	.01
Weight at 1st estrus (lb)		111	92	85	92	91	96	.01
Age at 1st estrus (days)		234	225	230	235	231	240	.05
1st estrus by Nov. 10 (%)		57	53	48	44	33	27	.02
Lambed/exposed (%)[c],								
All ages	2663	83	78	84	78	79	79	.001
1 year	822	72	66	75	58	60	61	.001
2 years	798	90	89	88	90	86	85	
3 years	774	86	80	84	89	90	87	
4 years	269	85	77	92	70	81	87	
Litter size born (%)[c]								
All ages[d]	2032	166	144	158	150	150	143	.001
1 year	505	135	120	122	106	120	113	
2 years	633	155	141	156	157	156	139	
3 years	669	189	160	175	169	167	166	
4 years	225	205	166	199	187	167	162	
Litter size weaned (%)[c]								
All ages[d]	2032	97	78	104	101	103	87	.01
1 year	505	39	39	61	66	64	61	.05
2 years	633	95	82	91	89	105	83	
3 years	669	132	101	127	123	126	101	
4 years	225	105	99	167	154	129	117	

[a]Underlined means are extremes for statistically significant breed differences.
[b]For lambs born in 1971 spring at USMARC (Dickerson and Laster, 1975).
[c]Ewes born in 1970 and 1971 and lambing in spring 1971-1974, inclusive at USMARC (Dickerson, 1974). Litter size = lambs/100 ewes lambing.
[d]Weighting equally each ewe-age and lambing year.

Efforts to improve the inherent reproductive rates of crossbred ewes have involved the use of breeds noted for their ability to sire highly productive ewes.

The use of the Finnsheep has been widely researched and reported. Dickerson (Ibid) summarized research throughout the North Central Region with Finn crossbred ewes and states that first cross ewes (1/2 Finn) will produce 50 more live lambs per 100 ewes than crossbred ewes of our more common breeds. The use of 1/4 Finn ewes will result in 20 more live lambs than crossbreds of common domestic breeds. Talles 4 and 5 present the results of crossbreeding experiments with Finn sheep at Clay Center, Nebraska and at Dubois, Idaho. The fertility level of first cross Finn ewes is particularly marked for ewes bred to lamb at one year of age. Levels of reproduction for older ewes may in fact be higher than many sheepmen are prepared to cope with.

TABLE 4. EWE PERFORMANCE OF FINN (Fx) AND RAMBOUILLET (Rx) CROSSES AND PUREBREDS (P) FROM SEVEN BREEDS OF DAM

Trait	Total numbers	Type of Ewe			Significance[a]
		Fx	Rx	P	
Surviving to 3 to 4 years (%)					
Litter size born (%)					
All ages[c]	2032	190	139	137	.001
At 1 year	505	155	106	108	
At 2 years	633	194	138	132	
At 3 years	669	203	168	152	
At 4 years	225	225	151	173	
Litter size weaned (%)[b]					
All ages[c]	2032	118	94	84	.001
At 1 year	505	73	58	49	
At 2 years	633	113	94	76	
At 3 years	669	142	120	103	
At 4 years	225	170	117	134	

[a] Underlined means are extremes for statistically significant breed differences.
[b] Ewes born at USMARC in spring 1970 and 1971, lambing in spring, 1971, 1972, 1973 and 1974 and weaning at 10 weeks, including 1/2 Coarse Wool ewes (Dickerson, 1974), Litter size = lambs/100 ewes lambing.
[c] Weighing equally each ewe - age and lambing year.

TABLE 5. EWE PERFORMANCE OF 1/2 AND 1/4 FINN CROSSES VS THREE WHITEFACE BREEDS BRED TO SUFFOLK RAMS (U.S. SHEEP EXPERIMENT STATION, USDA, DUBOIS; PRICE AND ERCANBRACK, 1976).

Breed of ewe[a]	Fertility (Lambing/100 ewes alive) at			Litter size (lambs/100 lambings)[B] Born at			Weaned at		
	1 year	2 years	3 years	1 year	2 years	3 years	1 year	2 years	3 years
Rambouillet (R)	30	89	94	100	120	143	43	80	92
Targhee (T)	19	92	87	109	115	137	83	81	98
Columbia (C)	19	93	88	108	122	132	72	65	109
All Whitefaced	23	91	90	106	119	138	66	76	100
F x R	93	90	98	155	202	219	106	120	129
F x T	91	95	96	155	192	219	97	122	145
F xC	85	92	91	155	194	205	95	110	146
All 1/2 Finn	90	92	95	155	196	214	99	117	140
(F x R) x R	86	97	98	122	156	168	82	106	127
(F x T) x T	85	96	98	118	161	184	80	116	154
(F x C) x C	73	90	94	124	154	168	80	100	113
All 1/4 Finn	81	95	97	122	157	173	81	108	131

[a] Breed of sire of ewe listed first for crosses.
[b] One-year-old ewes in 1974, 1975, 1976; 2-year-old ewes in 1975, 1976; 3-year old ewes in 1976 only. All females placed in matings were counted as exposed. Lambs were weaned at 125 days of age.

The use of the Border Leicester, North Country Cheviot and Finn breeds to produce crossbred has been compared at Hettinger and at Fargo in North Dakota. Results of these experiments are summarized in tables 6 and 7. Border Leicester and North Country Cheviot crossbred ewes from Rambouillet dams have been superior to either Rambouillet or Columbia dams. Border Leicester and Rambouillet crossbreds will produce approximately 30 more lambs per hundred ewes than grade Columbia or Rambouillet ewes.

Finn crossbreds were compared to the same crosses that were originally tested at Hettinger Experiment Station. The results from 1973-76 are presented in table 7.

TABLE 6. THE AFFECT OF TIME OF LAMBING ON BIRTH AND WEANING RATES (1968-1973). NDSU EXPERIMENT STATION - HETTINGER.

Breed Crosses	Percent Lambs Born[1]		Percent Lambs Weaned[1]	
	Early	Late	Early	Late
R x R	151.22	155.42	132.93	133.74
BL x R	185.71	191.43	167.14	181.43
NCC x R	141.89	186.42	127.03	169.14
Col x	151.39	161.11	140.28	122.22
Col x Col	141.33	156.14	129.33	138.60
BL x Col	144.29	135.44	130.00	122.78
NCC x Col	153.25	146.67	137.66	129.33
R x Col	137.50	140.54	120.83	137.83

[1] Based on total ewes exposed to the ram.

TABLE 7. CROSSBRED EWE PRODUCTIVITY, HETTINGER 1973-76

Ewe Type	Lambs born/ewe bred	Lambs weaned/ewe bred
R x R	1.57	1.29
BL x R	1.86	1.57
NCC x R	1.58	1.25
Finn x R	1.90	1.71
Col x Col	1.63	1.30
BL x Col	1.57	1.36
NCC x Col	1.44	1.07
R x Col	1.92	1.21
Finn x Col	2.18	1.74

The results of this experiment are quite similar to those obtained in the earlier crossbreeding experiments. Border Leicester rams when mated to Rambouillet ewes produce daughters superior to other crosses. On the other hand daughters of Border Leicesters from Columbias would not be recommended. The productivity of Finn crossbred ewes at Hettinger closely follows those results obtained at other locations in the United States.

In summary, there are genetic stocks available to enable the sheepman to increase the fertility of the crossbred commercial ewe. Each sheepman need only to decide upon the level of management that he wishes to employ to raise the size lambe crops commensurate with his ability.

References:

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Faller, Timothy C. 1973. Selected breeds and crosses sheep. M.S. Thesis. North Dakota State University.

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ORPHAN LAMBS - MANAGEMENT IDEAS

1. Buy a good milk replacer, shoud be 30% fat. Good replacers avaiable from:
   A. K & K Mfg., Rogers, Minnesota
   B. Land O'Lakes
   It will cost approximately 30¢ per pound and each lamb will require from 12 to 15 pounds.

2. Use good equipment. NDSU has had good success with the LAMB bar, K & K Mfg. sells a self priming nipple and tube assemble that we have found to be excellent for starting orphans.

3. Start on nurser quickly. Young lambs start easier. Check ewes udder right after she lambs and make decision. Lambs from ewes thatare questionable in any manner should be put on artificial milk. Lambs will take to nurser best at young age.

4. Self feed cold milk replacer after lambs are started. Milk replacers should be mixed with warm water for best results and then cooled down. Lambs fed cold milk grow well with less problems from scours and other digestive disturbance. Cold milk keeps better too.

5. Vaccinate lambs to protect against overeating. For immediate protection use antitoxin. For long term protection use bacteria (cl. per fringens type D)

6. Vaccinate to protect against "white muscle" disease. Use 1 Se or Bo Se.

7. Best results have been obtained when lambs are fed in groups of 3 or 4. This would be advisable when lambs are just being started. After lambs are successfully trained, they can be handled in groups of 25.

8. Orphan lamb pens should be heated. A plastic tent can easily be devised and heated. Extra heal will save extra lambs.

9. Provide colostrum milk for all orphans. Colostrum should be provided as quickly as possible. Colostrum milk is rich in fats, vitamins and antibody globulins to protect against disease organisms. Cow colostrum milk can be substituted for ewe colostrum milk.

10. Provide supplemented feed at 7 days. Use high energy, highly palatable feed. Where few lambs are being fed it may be advisable to purchase a good commercial lamb creep feed.

11. Provide clean fresh water.

12. Wean lambs abruptly at 21-30 days of age. When to wean depends upon whether lambs are eating creep feed. Newly weaned lambs will go backwards for several days. Don't worry - lambs will make compensating gains later on.

8. Tri-sulfa pills for treatment of early pneumonia symptoms.

9. Mastitis ointment.

10. Branding paint and irons.

11. Heat lamps for severe weather.

12. Docking and castrating tools.

13. Surgical scissors.

14. Needle and thread in case a suture is needed.

15. Crate for mothering-up lambs and adopting.

END OF LAMBING TO WEANING

1. Feeding practices will vary depending on the time that lambs were born.

   A. Dec. 15 - March 1 - Lambs are usually creep fed and not allowed to go on pasture before market.

   B. Lambs born after March 1 are usually not creep fed and allowed to go on pasture during summer.

2. Drench ewes before turning them on pasture. (Phenathiazine).

   * try and drench according to a program that works for you, (don't wait until signs of worminess appear, it is too late then).

3. Rotate pastures if possible, this also is helpful in internal parasite control.

WEANING TO PRE-BREEDING

1. Time of rest for ewes.

2. Time for shepherd to adjust ewes conditions so they can be effectively flushed, for next breeding season.

LAST SIX WEEKS BEFORE LAMBING

1. Drench Ewes (Thiabendazole).
2. Six - four weeks before feed 1/4 - 1/3# oats per ewe per day.
3. Shear ewes, trim hoofs, and vaccinate ewes for example: Enterotoxemia, Vibriosis, Soremouth.
4. Four weeks before lambing increase grain by 1/2 - 3/4# per head per day. (Usually done immediately after shearing).
5. Check facilities and equipment to be sure everything is in order.
6. Two weeks before lambing increase grain to 1# per head per day.

LAMBING

1. Watch ewes closely as extra effort will be repaid with more lambs at weaning time.
2. Put ewe and lambs in lambing pen (jug) after lambing (not before).
3. Be available to provide assistance if ewe has troubles.
4. Disinfect lambs navel with iodine as soon after birth as possible.
5. Use heat lamps in cold weather.
6. Be sure both teats are functioning and lambs nurse as soon as possible.
7. Brand ewes and lambs with identical numbers on same sides.
8. Turn ewes and lambs out of pen as soon as all are doing well. (24 hrs. - 6 days).
9. Bunch up ewes and lambs in small groups 4-8 ewes and then combine groups until they are in a workable size unit.
10. Castrate and dock lambs 1-2 weeks after birth.

SUPPLIES THAT MAY BE NEEDED DURING SEASON

1. Good disinfectant.
2. Forceps or Balling gun.
3. Syringe and needles
4. Hoof trimmer
5. Sulfa urea Boluses for ewes that were assisted in lambing.
6. Iodine for disinfecting navels.
7. Soap and mineral oil.

HETTINGER BRANCH EXPERIMENT STATION

FLOCK CALENDAR - OUTLINE

PRIOR TO BREEDING

1. Bag and mouth ewes and cull those that don't meet requirements.

2. Replace culled ewes with top-end yearlings saved for replacement.

3. Drench ewes (Phenothiazine).

4. Evaluate Sires:

    a. Be sure they are vigorous, healthy and in good breeding conditions (possibly production tested).

    b. Allow 3 rams to 100 ewes under range conditions and 2 when pen breeding, as in small lots or pastures.

5. Crutch ewes.

6. Flush ewes (if in thin condition)

    a. 1# grain 2 weeks to 5 weeks (usually 17 days)

    b. Moving ewes to a better quality pasture prior to breeding will serve as an effective flush.

    *if ewes are overconditioned the effect of flushing will be lessened.

BREEDING

1. Test rams with marking harness or water color paint on brisket to see if they are getting the job done (change colors at the end of first 17 days).

2. Leave rams in NO LONGER than 57 days (38-40 days more desirable)

3. Remove rams (don't winter rams with ewes).

PRIOR TO LAMBING (First 15 weeks)
Early Pregnancy

1. Watch general health of ewes, if possible sort off thin ewes and give extra feed so they can catch up.

2. Feed the poor quality roughage you have on hand during this period saving the better for lambing.

MANAGEMENT SECTION

TAken From

Previous Sheep Day Reports

Table 3. Effect of Level of Nutrition of Bred Ewe Lambs on Offspring Performance

Breed and Nutrition Level	30-Day Wt, Lb.	Weaning 63-Day Wt, Lb.	Final Wt. lb.	Feedlot ADG
High Nutr. x 1/2 Finn	24.7	48.4	107	0.66
Low Nutr. x 1/2 Finn	23.8	46.2	105	0.67
High Nutr. x 1/4 Finn	25.4	48.6	108	0.68
Low Nutr. x 1/4 Finn	24.2	47.3	105	0.65
SUMMARY				
High Nutr.	25.1	48.5	107.5	0.67
Low Nutr.	24.0	46.8	105	0.66
1/2 Finn	24.3	47.3	106	0.67
1/4 Finn	24.8	48.0	106.5	0.67

Table 2. Effect of Level of Nutrition on Lambing Performance of Finn Cross Ewe Lambs

Breed and Nutr. Level	No. Ewes Lbd	No. Lambs Born	% Born Per Ewe Lbd	Birth Wt Lb	No.[1] Lambs Wnd	% Wnd[1] Per Ewe Lbd	No. to Nurs-ette	No.[2] Lambs Died	No.[3] Ewes Died	Lambing Diffi-culties
High Nutr. (1/2 Finn)	42/42	81	193	8.3	63	150	13	5	0	0
Low Nutr. (1/2 Finn)	41/42	82	200	7.8	66	161	12	4	0	0
High Nutr. (1/4 Finn)	36/38	65	181	8.9	47	131	9	9	1	5
Low Nutr. (1/4)Finn)	38/38	64	168	8.7	46	121	7	11	1	3
SUMMARY										
High Nutr.	78/80	146	187	8.6	110	140.5	22	14	1	5
Low Nutr.	79/80	146	184	8.3	112	141	19	15	1	3
1/2 Finn	83/84	163	196	8.1	129	155.5	25	9	0	0
1/4 Finn	74/76	129	175	8.8	93	126	16	20	2	8

1. Raised on the ewe
2. Includes lambs born dead
3. Died due to lambing

Table 1. Effect of Level of Nutrition on Weight Gains and Wool Weights of Finn Cross Bred Ewe Lambs

Breed and Nutrition Level	Winter Performance 12/6 1976 wt,lb	3/31 1977 wt,lt	ADG[1] lb	Body[2] Condition Score at Lambing	Wool Wt	Wool Grade	Post-Lambing Ewe Wts. 30-Day wt,lb	Weaning 63 Day wt,lb	7/11 1977 wt, lb
High Nutr. (1/2 Finn)	115	152	0.32	8.1	6.9	3/8	142	138	132
Low Nutr. (1/2 Finn)	114	137	0.21	6.8	6.1	3/8	133	131	127
High Nutr. (1/4 Finn)	119	158	0.34	8.4	7.8	3/8	148	145	140
Low Nutr. (1/4 Finn)	121	142	0.19	7.4	7.1	3/8	138	139	134
SUMMARY									
High Nutr.	117	155	0.33	8.3	7.4	3.8	145	142	136
Low Nutr.	117	140	0.20	7.1	6.6	3/8	135	135	131
1/2 Finn	114	145	0.27	7.5	6.5	3/8	137	135	130
1/4 Finn	120	150	0.27	7.9	7.5	3/8	143	142	137

1. Gestation period gain

2. Body condition scores: 1,2,3 very thin; 4,5,6 thin; 7,8,9 average; 10,11,12 fat (i.e. 5=thin average, 4=thin minus; 6=thin plus)

Table 2 reveals that both 1/2 Finn and 1/4FFinn cross ewes had excellent reproductive and lambing performance for 13 month old ewes. Only 3 ewes out of 160 did not conceive in two heat periods. Ewes with 1/2 Finn breeding dropped more lambs per ewe (1.96 vs 1.75) and raised considerably more lambers per ewe (1.55 vs 1/26) than 1/4 Finn ewes. About the same percentage of both breed groups could not raise twins. Lamb mortality was lower for the 1/2 Finn ewes which was partly due to the absence of lambing difficulty. The latter could be due to the somewhat smaller lambs (8.1 vs 8.8 lb.) and/or to greater pelvic capacity of the 1/2 Finn ewe. It must be pointed out that number of problem births on the 1/4 Finn ewes was not abnormal for ewe lambs.

The two levels of energy used in this trial during first gestation had relatively little effect on first lambing performance (Table 2) as evidenced by very similar number of lambs dropped per ewe (1.87 vs. 1.84), lambs weaned per ewe (1.41), similar birth weights (8.6 vs 8.3 lb.), lambing difficulties (5 vs 3), lamb mortality (14 vs 15), lambs to nursette (22 vs 19) and lamb 30-day and weaning weights (Table 3). Contrary to what was expected, ewes on the lower energy raised as many lambs per ewe as those on higher energy. Also contrary to what was somewhat expected, ewes on the relatively high nutrient intake did not have more difficulty lambing or more udder associated problems.

Weaning weights and feed lot rate of gain of offspring from Finn cross ewe lambs (Table #) were excellent and were not significantly influenced by nutrition level or type of Finn cross ewe.

SUMMARY AND CONCLUSIONS

1. Under the conditions of this experiment using well grown out, early dropped lambs that were bred in November, the performance was excellent and there was little difference in the first lambing and lactation performance of Finn cross ewes receiving low and high energy during gestation.

2. Ewe lambs of 1/2 Finn breeding weaned 23% more lambs than 1/4 Finn ewes.

3. There was essentially no difference in the feedlot average daily gain of offspring due to the percentage of Finn or gestation energy level of dams.

Effect of Two Levels of Nutrition for Gestating 1/2 Blood and 1/4 Blood Finn Cross Ewe Lambs on Their Subsequent Productivity.

Harvey F. Windels and Robert M. Jordan.

INTRODUCTION

It is not precisely known what level of energy is necessary during the first gestation of a high performance Finn crossbred ewe lamb. Is it necessary to feed her a pound of grain plus a full feed of good forage during first gestation to get satisfactory or optimum productivity the first lambing season and subsequent years and do 1/2 and 1/4 Finn crosses respond similarly?

PROCEDURES

A trial is in progress comparing (84) 1/2 Finn and (76) 1/4 Finn 1976 ewe lambs in a factorial arrangement of treatments to determine the effect of low and high nutrition during their first gestation and during their first post-weaning dry period on subsequent productivity. Ewe lambs were born from Mid-February to early March 1976 to Targhee dams, sired by Finn or Finn x Rambouillet rams, weaned at 63 days, fed a feedlot finishing ration to 100 lb. and bred to Suffolk ram lambs beginning November 10. During flushing and breeding, all lambs were fed alike at 1 lb. of barley and a full feed of alfalfa haylage. Beginning the 28th day of breeding, the low and high nutrition treatments were as follows:

Gestation State	Low	High
28 to 120 days	2.4 lb. haylage DM 0.2 lb. barley	2.1 lb. haylage DM 1.0 lb. barley
121 to 148 days	2.0 lb. haylage DM 1.1 lb. barley	1.0 lb. haylage DM 1.9 lb. barley

Ewes in the high and low nutrition groups were fed the same during lactation; 2.5 lb. of barley and 4.0 lb. of haylage dry matter per day for ewes with twins and 80% as much for those with singles. Extra lambs were raised on a nursette. Offspring were weaned at 63 days and fed in dry lot to a slaughter weight of about 110 lb. on a ration containing 2/3 grain and 1/3 alfalfa haylage on a dry matter basis.

RESULTS

As shown in Table 1, ewes that received the higher level of energy gained 15 lb. more per head (38 vs 23 lb.), scored higher in body condition at lambing and sheared 0.8 lb. more wool than those on the lower energy level during gestation. From lambing to weaning during which the low and high groups were fed alike, the difference in average body weight between the high and low groups had decreased to 7 pounds.

Table 1 also shows that ewes with 1/2 Finn breeding weighed about 6.0 lb. less than the 1/4 Finn ewes throughout the trial which indicated a similar ability to utilize feed and ability to ingest feed according to need during lactation. 1/2 Finn ewes sheared 1.0 lb. less grease wool and scored lower in body condition. The lower body condition score was partly due to the greater number of 1/2 Finn ewes carrying triplets (9 vs 3).

SECTION III

GUEST SPEAKER REPORT

Presented by

DR. HARVEY WINDELLS

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