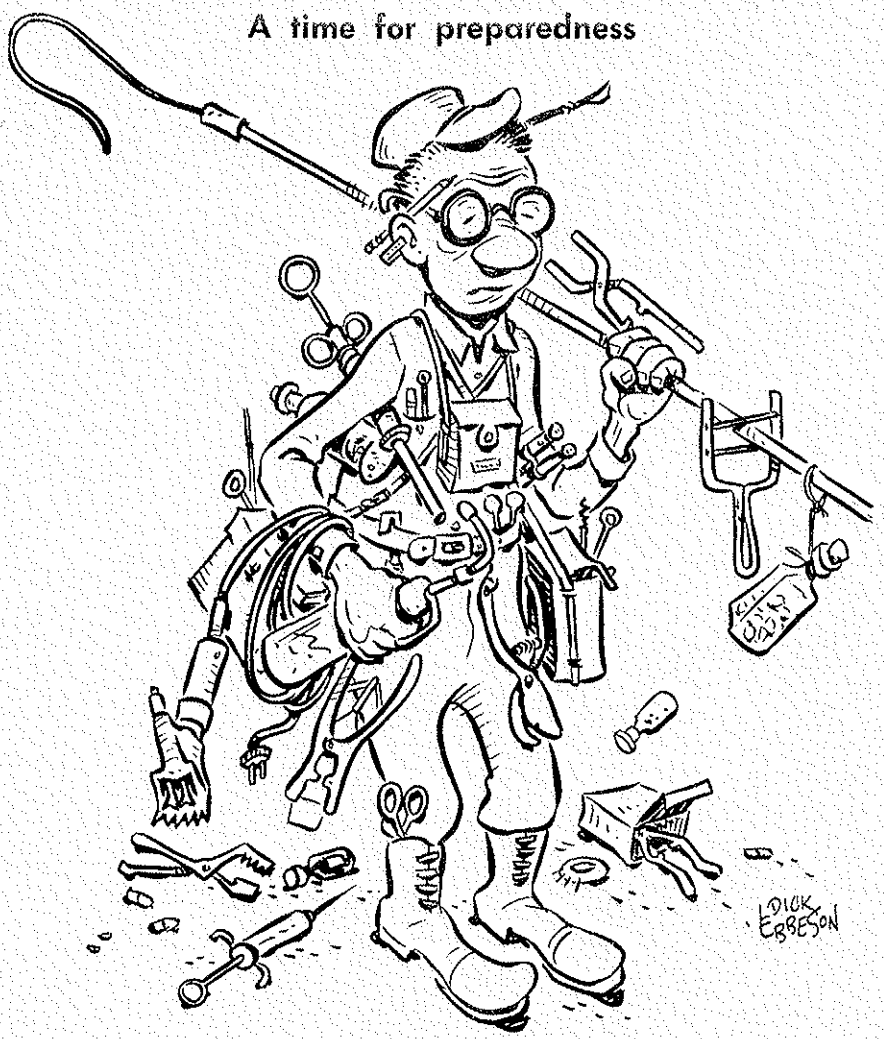
16th ANNUAL
WESTERN DAKOTA
SHEEP DAY

WEDNESDAY, FEBRUARY 12, 1975, HETTINGER ARMORY

A time for preparedness



"Must have forgot something . . ."

TIMOTHY C. FALLER, SUPT.

HETTINGER BRANCH EXPERIMENT STATION
NORTH DAKOTA STATE UNIVERSITY

P R O G R A M

10:00 a.m.	SCAN - O - GRAM Paul Berg Animal Science Department North Dakota State University
10:45 a.m.	GREETINGS Dr. H. R. Lund Assistant Director Agricultural Experiment Station North Dakota State University
11:00 a.m.	PROGRESS REPORTS Hettinger Station Projects Timothy C. Faller Superintendent Hettinger Branch Station Main Station Projects Mr. Merle R. Light Professor of Animal Science North Dakota State University
12:00 noon	ROAST AMERICAN LAMB DINNER
1:10 p.m.	DISEASE PREVENTION Dr. I. A. Schipper Veterinary Science Department North Dakota State University
1:50 p.m.	ECONOMICS OF SHEEP PRODUCTION Dr. Robert Carver Ag. Economics Department North Dakota State University
2:35 p.m.	FUTURE OF THE SHEEP INDUSTRY Mr. Laird Noh Rancher & President National Lamb Feeders Kimberly, Idaho
3:30 p.m.	Drawing and Coffee

* The "Ladies Program" begins at 1:20 p.m. at the Armory.

SHEEPDAY DIGEST

by
Timothy C. Faller, Supt.
Hettinger Experiment Station

1. CROSSBREEDING
   Production results from six years data concerning six breeds and their combinations. Section I, pp. 1-20.

2. SELECTION
   A review of the results of selection of dams for single heritability traits. Section I, pp. 21-28

3. PREDATOR CONTROL
   A series of slides on a control investigation ran on five North Dakota Ranches. Section I, 29-31

4. PASTURE vs DRYLOT
   The effect of Vitamin E, selenium and pasture flushing on ewes maintained in drylot. Section II, pp. 32-34

5. BREEDING EWE LAMBS
   Results from breeding ewe lambs to lamb at one year of age under confinement and range conditions. Section II, pp. 35-36

6. FERTILITY AND CAUSES OF DEATH
   Review of factors affecting fertility in sheep and causes of death at birth. Section III, pp. 37-45

7. MANAGEMENT SECTION
   A compilation of various management ideas and producers tips taken from past years Sheepday Reports. pp. 46-49

SECTION I

Reports of

Research in Progress

at the

Hettinger Experiment Station

Presented by
Timothy C. Faller
Superintendent

at the

16th Annual Sheep Day

Hettinger Experiment Station
Hettinger, North Dakota

February 12, 1975

PRODUCTIVITY OF SELECTED SHEEP BREEDS AND CROSSES UNDER NORTH DAKOTA CONDITION

(1974 Progress 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. Additional like matings were made in the fall of 1966.

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

TABLE I

WOOL PRODUCTION

Breed Cross	Grease Fleece Production (lbs.)	Staple Length (MM)	Fleece Grade
Rambouillet x Rambouillet	11.2	75.6	63.1
Border Leicester x Rambouillet	11.6	113.5	54.4
North Country Cheviot x Rambouillet	9.6	90.8	57.8
Columbia x Rambouillet	11.5	82.1	59.7
Columbia x Columbia	9.8	96.5	56.9
Border Leicester x Columbia	10.0	137.8	51.0
North Country Cheviot x Columbia	8.4	98.9	55.7
Rambouillet x Columbia	10.4	80.1	60.3

TABLE III

LAMB PERFORMANCE

Breed Cross	Birth Wt[1] (lbs.)	Daily Gain Birth to Weaning (lbs.)	Weaning Weight[2] (lbs.)	Daily Gain Weaning to Market (lbs.)	Market Weight[2] (lbs.)	Daily Gain Birth to Marke (lbs.)
Rambouillet x Rambouillet	11.73	.575	64.27	.530	106.18	.560
Border Leicester x Rambouillet	12.47	.593	67.14	.519	108.31	.569
North Country Chev. x Rambouillet	11.34	.542	61.55	.531	106.39	.560
Columbia x Rambouillet	11.42	.565	63.49	.549	105.88	.558
Columbia x Columbia	11.15	.556	62.42	.556	105.88	.560
Border Leicester x Columbia	11.70	.562	63.22	.507	105.86	.557
North Country Chev. x Columbia	11.18	.553	63.34	.542	106.34	.558
Rambouillet x Columbia	11.73	.580	65.04	.518	106.34	.564

1. Adjusted for: Sex, birth type, and year
2. Adjusted for: Year, sex, birth type, rearing type, and weaning type
3. Adjusted for: Year, sex, birth type, rearing type and market age.

TABLE IV

THE AFFECT OF TIME OF LAMBING ON BIRTH AND WEANING RATES (1968-1973)

Breed Cross	Percent Lambs Born[1] Early	Late	Percent Lambs Weaned[1] Early	Late
Rambouillet x Rambouillet	151.22	155.42	132.93	133.74
Border Leicester x Rambouillet	185.71	191.43	167.14	181.43
North Country Cheviot x Rambouillet	141.89	186.42	127.03	169.14
Columbia x Rambouillet	151.39	161.11	140.28	122.22
Columbia x Columbia	141.33	156.14	129.33	138.60
Border Leicester x Columbia	144.29	135.44	130.00	122.78
North Country Cheviot x Columbia	153.25	146.67	137.66	129.33
Rambouillet x Columbia	137.5	140.54	120.83	137.83

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

CAUSE OF ELIMINATION OF EWES AND DEATH OF LAMBS

A primary objective of this study was to determine the effect of crossbreeding on longevity of the ewe. Throughout the eight year course of the project, 172 ewes of 242 available were eliminated because of one of 13 various causes. Elimination of ewes from the flock is presented in Tables VI and VII by breed group and cause of elimination for February and April lambing times.

Highly significant differences did exist between time of lambing and cause of elimination for some of the thirteen various causes. Elimination of ewes because of respiratory problems was found to be more severe when ewes were lambed in February than lambed during April, 34 for February lambing ewes and 13 for April lambing ewes. The same was true for ewes eliminated because of spoiled udders and those lost for unknown reasons on pasture. The information may or may not be biased for those lost on pasture of unknown reasons as these ewes were not checked as regularly as those that lambed in April and had lambs at side. Total losses were found to differe significantly (February - 107 and April - 65), this was attributed to the more severe climatic conditions occurring during February and after than those in April and after. Table VIII consists of total causes of elimination, February and April lambers combined and ranked from highest occurring to lowest.

Table IX presents information on the longevity of the eight crossbred ewe types involved. The information is reported as percentages of the initial ewes, a seven year average of the percentages is utilized to evaluate longevity. The two groups of ewes sired by Rambouillet rams had the highest percentages of the ewes living through the duration of the project. The lowest percentages was in groups sired by Columbia rams. Percentage figures were not submitted to statistical analysis, they were used for comparisons only.

Lamb losses of those born were categorized into 28 death causes. 235 of the total 1,875 lambs born died to one of the various causes, this amounted to a 12.5 percent loss. It was felt by this researcher that total losses were in an acceptable range as they were considerably below the national average. The most common

Table VI Cause of Elimination of February Lambing Ewes.

Breed Group / Cause of Elimination	Ramb x Ramb 1	B.L. x Ramb 2	N.C. x Ramb 3	Col. x Ramb 4	Col. x Col. 5	B.L. x Col. 6	N.C. x Col. 7	Ramb. x Col. 8	Total
1. Died on Back	0	1	1	2	0	0	0	0	4
2. Respiratory	3	5	3	3	5	7	6	2	34
3. Abdominal Rupture	1	1	0	2	1	1	0	1	7
4. Diaphram Rupture	0	1	0	0	0	1	0	0	2
5. Arthritis	0	0	0	0	1	0	1	0	2
6. Torn Uterus (Lambing)	0	0	1	0	0	0	0	0	1
7. Mastitis & Spoiled Udders	2	3	4	1	3	4	3	4	24
8. Unknown (Pasture)	2	3	1	3	1	2	2	4	18
9. Dry 2 Years	0	0	5	1	2	0	1	1	10
10. Toxicosis	0	0	1	0	1	1	0	1	4
11. Shearing	0	0	0	0	0	0	0	0	0
12. Dogs	0	0	0	0	0	0	0	0	0
13. Age	1	0	0	0	0	0	0	0	1
Total	9	14	16	12	14	16	13	13	107

Table VIII. Cause of Elimination of Ewes According to Rank

Cause of Elimination	Rank	No. of Occurrences
Respiratory Ailments	1	47
Mastitis and Spoiled Udders	2	43
Unknown Causes (Pasture)	3	25
Abdominal Rupture	4	15
Dry Two Years	5	14
Died on Back	6	9
Toxicosis	7	4
Arthritis	7	4
Diaphram Rupture	8	3
Torn Uterus (Lambing)	8	3
Shearing	9	2
Dogs	9	2
Age	10	1

Table X. Death Causes of Lambs

Death Cause	Ramb x Ramb	B.L. x Ramb	N.C. x Ramb	Col. x Ramb	Col. x Col.	B.L. x Col.	N.C. x Col.	Ramb. x Col.	Total
1. Laid On		1				1	3		5
2. Pneumonia	2	3	2	2	2	3	4		18
3. Starvation			2	2					4
4. Weak Died			1	1			3		5
5. Refused to Nurse									0
6. Tetanus						1			1
7. Vit. E Deficiency									0
8. Accidental	1		1	1	2			1	6
9. Coccidiosis			1						1
10. Entrotoxemia	2	3	3	2	1	1	3		15
11. Dogs									0
12. Urinary Calculi	2	2	1	1	1	4	4		15
13. Chilled									0
14. Attendant not Present	4	1	4	3	1	1	2	3	19
15. Unknown	2	1	2	4	2	3	4		18
16. Born Dead	4	4	4		5	4	4	5	30
17. Bummed (Trip. or Twin)	21	9	14	4	7	9	7	5	76
18. Navel Ill								1	1
19. Urenic									0
20. Ruptured Ewe (Lamb Dead)				2	1				3
21. Congenital Defect	2		2	3	2	1			10
22. Prolapse		1		1	1	1			4
23. Umbilical Hernia							2		2
24. Founder			1						1
25. Lost at Slaughter									0
26. Bloat							1		1
Total	40	25	38	26	25	29	37	15	235

Table XII. Death Cause of Lambs According to Rank

Death Cause	No. Lost	Percent of Total (%)	Rank
Bummed (Triplet or Twin)	76	32.3	1
Born Dead	30	12.8	2
Attendant Not Present	19	8.1	3
Pneumonia	18	7.7	4
Unknown Causes	18	7.7	4
Entrotoxemia	15	6.4	5
Urinary Calculi	15	6.4	5
Congenital Defects	10	4.3	6
Accidental	6	2.6	7
Laid On	5	2.1	8
Born Weak, Died	5	2.1	8
Starvation	4	1.7	9
Prolapse	4	1.7	9
Ruptured Ewe (Lambs Born Dead)	3	1.3	10
Umbilical Hernia	2	0.9	11
Tetanus	1	.4	12
Coccidiosis	1	.4	12
Navel Ill	1	.4	12
Founder	1	.4	12
Bloat	1	.4	12
Total	235	100.1%	

TABLE XIII

INFLUENCE OF BREED OF SIRE ON TERMINAL CROSS LAMBS

Variable	Hampshire	Suffolk
Ewe Exposed	580	581
Lambs Born	894	904
Lambs Weaned	809	800
Lambs Marketed	773	784
Lambs Born (%)	154.	156.
Lambs Weaned (%)	139.	138.
Lambs Marketed (%)	133.	135.
Birth Weight * (lbs.)	11.50	11.73
Weaning Weight (lbs.)	64.02	63.79
Market Weight (lbs.)	106.00	106.90
Shrunk Weight (lbs.)	99.30	100.2
Shrink (lbs.)	6.70	6.70
Gain Birth to Weaning (lbs.)	.568	.565
Gain Birth to Market (lbs.)	.561	.562
Gain Weaning to Market * (lbs.)	.524	.538

* ($P \ll .05$)

RELATIVE RESPONSE OF SELECTION PRESSURE APPLIED TO THE EWE FLOCK

(A Progress Report)

Important to every sheep operation is the selection of the replacement ewes. Many factors of importance should be considered such as: production, soundness, type,etc.

Experimental Objectives

In 1966 an experiment was initiated to determine the rate of change in production of wool and the production of lamb at 120 days when these factors are selected as single traits and the pressure is applied to the ewe flock only.

Experimental Procedure

The Hettinger Station purebred flock of 90 Columbia ewes were lotted on the basis of weight and age into three groups of 30 ewes each. Three registered 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 of ewes will be conducted each fall on the following basis:

1. Age
2. Mechancial (ill health, spoiled udder, etc.)
3. Flock A. Low lamb production
   Flock B. General type (visual selection)
   Flock C. Low Wool production

Each year, 8 ewes will be selected and replaced into the group on the following basis:

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 yearlings must be physically sound.

Flock B - 1. Ewe lambs showing most desirable Columbia breed type as suggested by the Columbia Sheep Breeders

SUMMARY OF "MEANS OF DATA"

	Lot 1. Lamb Prod'n		Lot 2. Visual		Lot 3. Wool Prod'n	
	1969-72 Average Prod'n	1974 Prod'n	1969-72 Average Prod'n	1974 Prod'n	1969-72 Average Prod'n	1974 Prod'n
Ewes Exposed	30	30	30	30	30	30
Age @ Breeding	2.75	2.6	2.80	2.6	2.70	2.53
Initial Wt. (lbs.)	158.6	152.5	159.4	156.4	156.9	
Gain During Breeding	1.33	-.5	1.14	+4.0	+1.44	+1.8
Gain Breeding to Lambing	+21.8	+26.1	+20.4	+25.5	+20.1	+24.7
Ewes Lambing	28.6	26	27.1	27	27.7	25
% Lambs Dropped Per Ewe Exposed	166.8	136.7	160.4	130.0	153.3	146.7
% Lambs Weaned Per Ewe Exposed	143.2	106.7	133.2	103.3	133.0	118.9
Corrected pound of lamb/ewe @120 da.	116.8	91.8	108.9	91.7	109.14	96.1
Grease Fleece Wt.	12.54	14.2	12.3	14.08	12.41	15.9
Lamb Birth Wt.	11.14	9.1	10.52	11.1	10.62	11.2
Uncorrected Weaning Wt.	75.82	46.7	74.96	48.4	76.24	46.3
Corrected Weaning Wt.	82.31	86.0	81.5	85.9	82.02	77.9
Age in days @weaning	121.3	64.1	121.16	62.5	121.84	69.6
Birth type of Dams @ Lotting						
% Singles	7.1	0	24.1	23.3	27.0	30
% Twins	85.0	76.7	73.8	76.7	70.5	63.3
% Triplets	7.6	23.3	2.4	0	2.5	6.7

PRODUCTION OF YEARLING EWE REPLACEMENTS

	1969	1970	1971	1972	1973	1974
Percent Lambs Dropped						
Lot 1	146.7	75.0	112.5	150.	150.0	87.5
Lot 2	140.0	100.0	125.0	162.5	162.5	137.5
Lot 3	125.0	112.5	87.5	150.0	150.0	150.0
Percent Lambs Weaned						
Lot 1	126.7	75.0	75.0	112.5	112.5	62.5
Lot 2	140.0	100.0	75.0	150.0	150.0	112.5
Lot 3	125.0	87.5	75.0	137.5	150.0	150
Pounds of Lamb @120 Days						
Lot 1	114.5	60.7	56.1	82.5	105.1	65.9
Lot 2	124.6	83.9	62.9	110.8	119.1	100.3
Lot 3	113.9	64.5	60.5	105.8	120.1	119.0
Grease Fleece Wt.						
Lot 1	13.4	12.6	12.8	10.8	12.3	12.9
Lot 2	12.7	11.7	13.0	11.2	11.5	13.4
Lot 3	13.8	11.3	13.0	11.6	12.8	15.1

	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[1]	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	29	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[2]	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

1 Ram went sterile during breeding season.

2 Lower percentages due to Mycotic Abortion.

Project: N D 3719

TITLE: Field Evaluation of a Repellant to Reduce Coyote Predation in Sheep.

Objectives:

1. To test the effect of cynamic aldehyde on coyote predation of sheep
2. To test the effect of a collared repellant on lamb growth.
3. To test the lifespan of collars - when applied to sheep.

Methods:

Collars containing cynamic aldehyde were put on 610 lambs and 609 lambs without collars were utilized on control animals at five ranches. The five ranches involved were in distinctly different topographical locations. Twenty-five each of the treatment and control lambs were randomly selected, weighed, an marked for identification at each ranch. Information concerning the numbers of lambs born and death causes prior beginning the project was obtained from each ranch site. Regular weekly visits were made to each ranch for observation. When losses occured at any site trained personnel went to that site and determined the cause of death. Information concerning and pictures were obtained as each loss occured.

TABLE I

Effect of Collars on Weight Test Lambs (5 Ranches)

	Collared Lambs	Non-Collared
Initial Number	125	125
Lambs Lost to Coyotes	2	8
Lambs Lost to Coyotes %	1.6	61.4
Lambs Lost to Other Causes	13	16
Lambs Lost to Other Causes %	10.4	12.8
Total Lambs Lost	15	24
Lotal Lambs Lost %	12.0	19.2
Average Daily Gain (lbs.)	.3260	.3269

TABLE V

Effect of Collaring Lambs with Cynamic Aldehyde on Coyote Predation

Death Cause	Collared	Non-Collared
Poisonous Plants	0	1
Coyote Predation	27	50
Entrotoxemia	11	12
Unknown Causes	36	41
Total	74	104

SUMMARY:

The following information is offered concerning comparisons from field tests of a collared repellant. The use of collars on lambs had no effect on gains of lambs. Of the lambs selected for the weight test 1.6% of the collared lambs were lost to coyote predations as opposed to 6.4% of the non-collared lambs. 8.2% of the total non-collared lambs were lost to coyote predation as compared to 4.4% of the collared lambs. 43.3% of the lambs lost during the test period were lost to coyote predation. 25.8% of all losses including those prior to the test period were lost to verified coyote predation. Five percent of the total lambs born on the five ranches involved were lost to coyote predation. The losses of lambs to coyote predation may or may not have been greater, as some of the lambs lost for unknown causes could have been the result of coyote predation.

CONCLUSION:

It was found that a significant number of all lambs born were lost to coyotes and collared cynamic aldehyde did decrease the loss. It should be noted that more lambs were lost to other causes than were lost to coyote predation.

SECTION II

Reports of

Sheep Research in Progress

At the

Main Station, Fargo, N. D.

Presented by
Merle R. Light

at the

16th Annual Sheep Day

Hettinger Experiment Station
Hettinger, North Dakota

February 12, 1975

Project: H-7-36

Title: Nutrient Requirements for confined ewes

Personnel: Merle R. Light, James Tiltin, Duane O. Erickson and William Dinusson

Objectives: To determine the effect of type of mineral mixtures, vitamin E, selenium, pasture and dry lot on ewe productivity.

Methods:

Purebred Columbia, Suffolk and Hampshire ewes were assigned to this experiment in 1971 and 1973. The ewes utilized in 1972 were mature F_1 Suffolk x Columbia cross-bred originating from the NC 50 project. All ewes were sorted according to age and then randomly assigned to treatment groups. The design was as follows

EXPERIMENTAL DESIGNS

Group:	Pasture			Dry Lot		
	Treatment			Treatment		
Mineral I;	T_1	T_2	T_3	T_1	T_2	T_3
Mineral II:	T_1	T_2	T_3	T_1	T_2	T_3

Treatment groups were as follows:

1. Pasture: Ewes grazed on bromus with some alfalfa from June 15 to August 1.

2. Dry Lot: Ewes in dry lot were fed coopped alfalfa hay or haylage according to appetite.

3. Mineral supplement I consisted of 2 parts granular white iodized salt mixed with one part dicalcium phosphate. Mineral supplement II was Morton's 8.4 mixture. Mineral supplements were fed to respective groups until lambing was completed.

4. Sub treatment groups were as follows:

   T_1 = control
   T_2 = 300 I.U. vitamin E injected intra-ruminally once monthly until lambing was completed.
   T_3 = 300 I.U. vitamin E plus 5 mg. sodium selenate injected intra-ruminally once monthly until lambing was completed.

The results obtained when comparing ewe performance on pasture vs. dry lot show that dry lot ewes were able to maintain productivity and in fact excelled those that were grazed on good quality pastures.

The effects of Vitamin E are Vitamin E plus selenium supplementation are shown in tables 2 and 3. The differences in performance are small but trends were the same in each year. The 1973 experiment was designed to observe the independent effects of vitamin E and selenium supplementation.

The effect of two types of mineral supplementation is shown in table 4. The magnitude of differences in lamb drop has been in the same direction each year. Lamb drops for ewes supplemented with plain iodized salt plus dicalcium phosphate exceeded the drop for ewes on Morton's 8.4 mineral mixture by 14.8%, 20.3% and 23.6% for the years of 1972, 1973 and 1974 respectively. We are unable to explain these differences at the present time.

Plans for next year:

We plan to assign 200 ewes to this same basic scheme for the 1975 breeding season.

SECTION III

Reports of

Fertility and Death Causes

From

Veterinary Science Department

Presented by
Dr. I. A. Schipper

at the

16th Annual Sheep Day

Hettinger Experiment Station
Hettinger, North Dakota

February 12, 1975

I. Infertility

A. Ram

1. Orchitis - epidymitis

a. Testicles frequently subjected to bruising - minor wounds.
b. Bacterial infection
(1) Cornyebacterium
(2) Streptococci
(3) Staphylococci
(4) Brucella
c. Marked enlargement of one or both testicles
d. Reduced fertility

2. Abnormal sperm

a. High temperature
b. Inadequate nutrition
c. Overfat
d. Disease
(1) Footrot
(2) Infections

3. Frozen penis

4. Ulcerative dermatitis - viral

5. Estrogenic feeds - mycotoxicosis

B. Female

1. Vibriosis
a. Cause
(1) Vibrio fetus infection
(2) May be spread by ram
(3) Female reservoir
(4) Digestive tract primary route of infection
b. Signs
(1) Abortion - last six months of pregnancy
(2) Few or no pre-abortion signs observed
(3) Post-abortion - brown vaginal discharge
(4) Diagnosis
(a) History
(b) Isolation of organism from aborted fetus, placental membranes or vaginal discharge.
c. Prevention
(1) Isolation of aborted ewe
(2) Destroy aborted feti, placental membranes unless used for laboratory diagnosis
(3) Avoid feed and water contamination
(4) Antibiotics - if diagnosis made early in outbreak
(5) Immunization
(a) Bacterin
(b) Two strains of organism
(c) Vaccinate before breeding, all replacements
(d) Annual vaccination

e. If signs appear in some, start feeding molasses
f. Excerise?

4. Treatment

a. Dextrose IV
b. Molasses orally - drench
c. Propylene glycol 1/4 pint 2 x per day
d. Cesarean
e. Cortisones

B. Listeriosis - circling disease, listerellosis, silage sickness

1. Cause

a. Bacterium Listeria monocytogenes
(1) Ubiquitous organism
(2) Survive in soil for up to 200 days

b. Disinfection
(1) Easily killed by most common disinfectants
(2) Killed by pasteurization

2. Influencing factors

a. Hosts
(1) Cattle
(2) Sheep
(3) Swine
(4) Horses
(5) Poultry
b. Means of transmission
(1) Soil may be primary reservoir
(2) Organism expelled in urine, milk, semen, nasal and eye secretions.
(3) Possibly gains entrance through ingestion or nasal route - becomes septicemic
(4) Silage has been associated with transmission, however, infection frequently occurs where there is no contact with silage.
c. More prevalent in cooler climates

3. Symptomatology

a. Encephalitic form

(1) Most frequently observ ed
(2) Primary signs of both cattle and sheep
(3) Dull - sluggish - depression
(4) Trail rest of herd or flock
(5) Eat listlessly
(6) One ear may droop
(7) Conjunctivitis, opacity of eye - sheep
(8) Incoordination
(9) Slimy nasal discharge - sheep
(10) Circling - use hind legs as pivot - may go either right or left but usually same direction

C. Lamb Aid

1. Hold up by hindlegs - drain fluids from lungs and upper respiratory tract
2. Dip navel - tincture of iodine
   a. Joint abscesses
   b. Arthritis
   c. Tetanus
   d. Erysipelas
   e. Scours
   f. Respiratory problems

3. Be sure they nurse within 1/2 hour.
   a. Mastitis - oxytocin - sulfamethazine - aureomycin
   b. Be sure milk is present and available
      (1) Pregnancy plug removed
      (2) Milk let down - oxytocin
   c. Jaw injury or abnormality

D. Weak Lamb - force feed warm colostrum - stomach tube milk into mouth

1. Warm dextrose solution - SC, IP, armpit, 50-100 ml.
2. Brandy
3. Infra red lamps - prevent chilling
4. May be brain injury, hereditary - dummy lambs
5. May be leg abnormalities - can't get to nipple

E. Supplement Milk

1. Bovine colostrum
2. Condensed milk
3. Dextrose

IV. Post-Lambing Problems

A. Enterotoxemia

1. Cause

   a. Presence of Colstridium perfringens organisms in intestine
      (1) Absorption of B, C, or D toxins
      (2) Due to stress of full feed

2. Signs

   a. Nursing lambs
      (1) Largest - best single lamb
      (2) Nursing ewe with excellent milk supply
      (3) One day to 12 weeks of age

   b. Feeder lambs
      (1) On high concentrate - full feed
      (2) Range (Western) lambs placed on lush pasture

   c. Acute case
      (1) Sudden death
      (2) No other signs

(2) Tissue necrosis aids growth of organism and toxin production
(3) Rubber elastrators, umbilical infection
(4) Castrations, docking, mouth wounds, parturition, shearing, ear tags, dehorning, umbilical

c. Susceptible animals

(1) Horses and mules most susceptible
(2) Sheep
(3) Swine
(4) Cattle
(5) Young animals most susceptible
(6) Seldom in dogs or cats

3. Symptomatology

a. Depression
b. Difficult mastication, salivation (lockjaw)
c. Rigidity of facial muscles - dilation of nostrils
d. Stiffness - "sawhorse" stance
e. Muscle spasms - touch; noise; ribs show
f. Head drawn back - opisthotonus; back arched
g. Recumbency
h. Death - asphyxia

4. Prophylaxis

a. Avoid sharp objects in barnyards and pastures - abuse with sharp objects
b. Employ strict asepsis when castrating, docking, or any surgical procedures
c. Treat navel with iodine immediately following birth
d. Avoid rubber elastrators for docking and castration
e. Treatment
(1) Quiet, clean quarters - avoid light
(2) Food and water conveniently available
(3) Sedation
(4) Antitoxin - emergency
(5) Clean wound
f. Vaccination - tetanus toxoid in herds or farms having history of tetanus

5. Public Health Aspects

a. Man very susceptible to tetanus toxin
b. Cases very few during WW2 because of extensive vaccination
c. Vaccination advisable, especially children and farmers

C. Scours

1. Coccidiosis

a. Cause

(1) Several species common in sheep's intestines
(2) Two or three cause problem

(3) Depression - unwilling to nurse
(4) Arched back
(5) Feces - semisolid yellow early; becomes profuse, thin, gray; blood specked later
(6) Death 24-36 hours

b. Cause

(1) Usually E. coli
(2) Clostridium perfringens

c. Prevention

(1) Good sanitation
(2) Dry litter
(3) Crotched ewes

3. Salmonellosis - paratyphoid dysentery

a. Cause

(1) Salmonella Typhimurium
(2) Spread orally

b. Signs

(1) Loss of appetite
(2) Elevated temperature - 105° - 106°
(3) Marked depression
(4) Thin water diarrhea
(5) Downers
(6) Death 3-5 days

c. Prevention

(1) Isolation
(2) Dry quarters
(3) Sulfaquanidine, Sulfathalidine

4. Intestinal parasites

MANAGEMENT SECTION

Taken From

Previous Sheep Day Reports

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.

6. Iodine for disinfecting navels.

7. Soap and mineral oil.

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

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.