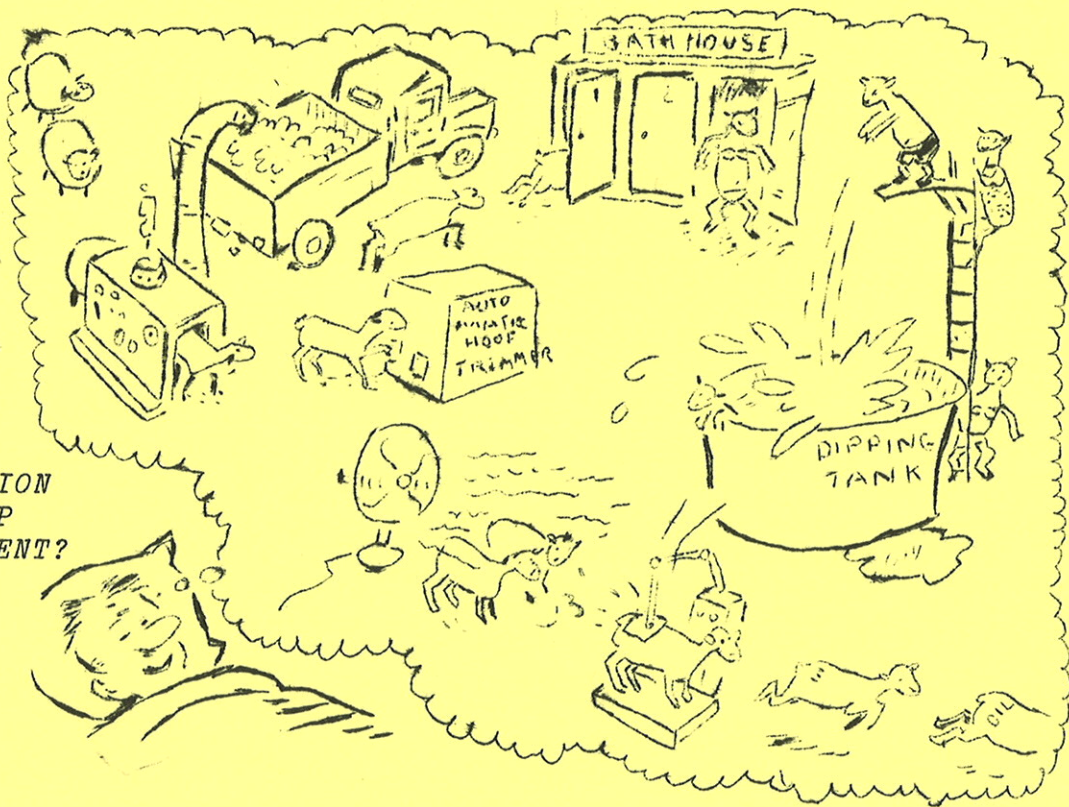


THIRTEENTH ANNUAL WESTERN DAKOTA SHEEP DAY

FEBRUARY 9, 1972

HETTINGER ARMORY

AUTOMATION
OF SHEEP
MANAGEMENT?



HETTINGER BRANCH
EXPERIMENT STATION
NORTH DAKOTA
STATE UNIVERSITY

TIMOTHY C. FALLER
SUPERINTENDENT
HETTINGER
NORTH DAKOTA

P R O G R A M

- 10:00 a.m. SHEARING AND DRENCHING
Mel Kirkeide, Extension
Livestock Specialist, N.D.S.U
Gary Reinhart, Student; N.D.S.U.
- 11:00 a.m. PROGRESS REPORT ---
-Crossbreeding Project
-Selection Study
-Triplet Rearing
Timothy C. Faller
Superintendent
Hettinger Branch Station
- 11:30 a.m. LAMB MILK REPLACERS AND EQUIPMENT
Mr. Merle Light
Assoc. Professor of Animal Science
North Dakota State University
- 12:00 NOON ROAST AMERICAN LAMB DINNER
- 1:15 p.m. Greetings
Dr. H. R. Lund
Asst. Director of Agricultural
Experiment Station.
North Dakota State University
Fargo, North Dakota
- 1:30 p.m. DISEASE PREVENTION
Dr. Ivan Berg, DVM
Veterinary Science Department
North Dakota State University
- 2:20 p.m. THE STORY OF A LARGE SOUTH DAKOTA
RANGE SHEEP OPERATION
Otto S. Wolff
South Dakota Rancher
Rapid City, South Dakota
- 3:15 p.m. DRAWING AND COFFEE

PRODUCTIVITY OF SELECTED SHEEP BREEDS AND CROSSES
UNDER NORTH DAKOTA CONDITIONS

(1971 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.

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.

RESULTS:

The combined February and April lambing performance for each ewe group is presented in Table 1.

Results of this first year's accumulation of data indicate wide differences in reproductive performance. Less pronounced differences are noted between groups when fleece traits or carcass traits are compared.

It is important that no attempt is made to draw conclusions from these limited data. A most important consideration in a study of this type should be life-time performance which will not be known for several years.

This report is offered as a "progress report". Hence, no attempt has been made to test the data for significant differences or to make recommendations to producers on the basis of this study. However, growers should watch closely in subsequent years when additional data from this experiment are reported. If trends indicated at this early stage continue in the same pattern, it appears that the reproductive performance of North Dakota's commercial ewe flock could be enhanced greatly through the use of a specific crossbreeding program.

In 1971 identical groups of crossbred ewe lambs were purchased from different commercial sources. These ewe lambs will be used to check experimental data already collected. Finnish Landrace Rams were also used on like Columbia and Rambouillet dams, these ewe lambs will be added to the project for future evaluations.

TABLE 2. LAMB GROWTH DATA

DAM BREED TYPE GROWTH DATA	Sire =	Ramb. x Ramb.	B. Leic. x Ramb.	N.C. Chev. x Ramb	Col. x Ramb	Col. x Col.	B. Leic. x Col.	N.C. Chev. x Col.	Ramb. x Col.
	Dam =								
A.D.G. Birth to Weaning	1967	0.779	0.778	0.675	0.724	0.695	0.778	0.762	0.768
	1968	0.766	0.760	0.703	0.764	0.715	0.848	0.727	0.790
	1969	0.701	0.744	0.680	0.732	0.716	0.724	0.717	0.779
	1970	0.677	0.664	0.686	0.631	0.681	0.683	0.640	0.683
A.D.G. Birth to Market	1967	0.581	0.609	0.535	0.535	0.530	0.603	0.560	0.557
	1968	0.661	0.663	0.602	0.653	0.634	0.655	0.618	0.677
	1969	0.589	0.625	0.546	0.621	0.590	0.596	0.581	0.639
	1970	0.581	0.596	0.617	0.560	0.592	0.625	0.566	0.611
A.D.G. Weaning to Market	1967	0.351	0.380	0.367	0.359	0.369	0.385	0.372	0.334
	1968	0.470	0.441	0.416	0.429	0.448	0.459	0.449	0.438
	1969	0.386	0.423	0.369	0.438	0.406	0.394	0.382	0.385
	1970	0.426	0.469	0.511	0.429	0.486	0.483	0.450	0.435
Average Shrunken Weight at Market	1967	105.76	106.92	103.04	103.24	101.41	106.44	105.91	105.06
	1968	101.31	100.49	99.96	100.27	99.55	99.00	102.03	101.83
	1969	101.22	102.77	99.75	99.53	103.46	99.94	98.77	103.05
	1970	99.38	99.83	100.09	99.15	98.23	100.24	97.24	99.44
Average Days Age to Market	1967	188.83	181.23	197.08	195.52	196.77	178.50	193.75	191.35
	1968	157.78	157.02	171.31	158.40	161.54	154.27	169.97	154.36
	1969	177.44	170.46	186.55	167.21	181.82	174.63	175.18	168.31
	1970	173.84	170.89	165.03	181.07	168.45	168.78	174.60	169.33
Adjusted 90 Day Weight	1967	72.39	76.11	65.07	68.81	64.29	71.61	72.95	70.47
	1968	75.91	78.58	70.25	75.10	72.48	83.32	71.79	77.88
	1969	69.28	74.34	66.60	69.83	68.75	69.00	70.63	73.75
	1970	72.23	71.75	72.49	66.58	72.46	72.83	69.48	73.14
Adjusted Production Per ewe @ 90 Days	1967	95.01	133.19	105.74	90.31	81.44	76.09	109.43	94.87
	1968	102.00	136.62	117.84	91.19	94.78	104.15	100.50	93.46
	1969	87.15	133.81	111.00	94.00	93.75	93.64	98.37	99.18
	1970	109.68	137.51	110.07	90.78	112.31	107.79	108.39	116.48

C A R C A S S D A T A

EWE BREED TYPE	Sire =		Ramb.		B. Leic.		N.C. Chev.		Col.		B. Leic.		N.C. Chev.		Ramb.	
	Dam =		x	Ramb	x	Ramb.	x	Ramb.	x	Ramb.	x	col.	x	Col.	x	Col.
<u>DATA</u>																
Average Carcass	1967		0.290	0.304	0.269	0.270	0.254	0.300	0.278	0.278	0.300	0.278	0.278	0.300	0.278	0.278
Weight per day	1968		0.324	0.327	0.290	0.322	0.316	0.333	0.306	0.306	0.333	0.306	0.306	0.333	0.306	0.338
	1969		0.285	0.311	0.261	0.286	0.299	0.283	0.270	0.270	0.283	0.270	0.270	0.283	0.270	0.323
Average Carcass	1967		0.381	0.532	0.437	0.354	0.322	0.318	0.417	0.417	0.318	0.417	0.417	0.318	0.417	0.295
Weight per ewe/day	1968		0.435	0.591	0.486	0.391	0.413	0.416	0.428	0.428	0.416	0.428	0.428	0.416	0.428	.406
	1969		0.359	0.560	0.435	0.385	0.408	0.384	0.376	0.376	0.384	0.376	0.376	0.384	0.376	0.434
Average Cold Car-	1967		52.81	53.31	51.86	52.18	51.26	53.01	52.46	52.46	53.01	52.46	52.46	53.01	52.46	52.46
cass weight	1968		51.89	51.37	49.68	50.96	51.06	51.32	52.17	52.17	51.32	52.17	52.17	51.32	52.17	52.17
	1969		51.31	52.39	49.78	51.37	52.27	51.57	52.89	52.89	51.57	52.89	52.89	51.57	52.89	52.89
Average fat at	1967		0.16	0.22	0.18	0.18	0.21	0.23	0.16	0.16	0.23	0.21	0.19	0.23	0.16	0.16
loin	1968		0.22	0.21	0.19	0.19	0.22	0.24	0.22	0.22	0.24	0.22	0.24	0.22	0.22	0.22
	1969		0.19	0.21	0.18	0.21	0.23	0.25	0.19	0.19	0.25	0.23	0.19	0.25	0.19	0.19
Average Loin Eye	1967		2.16	2.07	2.27	2.16	2.10	2.10	2.21	2.21	2.10	2.10	2.25	2.25	2.21	2.21
Areas	1968		2.15	2.14	2.19	2.15	2.15	2.15	2.12	2.12	2.14	2.13	2.12	2.13	2.12	2.12
	1969		2.24	2.15	2.28	2.14	2.22	2.19	2.23	2.22	2.19	2.22	2.22	2.22	2.23	2.23
Average USDA Grade*	1967		11.10	10.89	10.92	11.95	11.13	11.63	11.12	11.12	11.63	10.91	11.12	10.91	11.12	11.12
	1968		10.94	10.93	11.06	10.99	10.95	10.93	10.87	10.87	10.93	10.88	10.87	10.88	10.87	10.87
	1969		11.06	11.15	11.40	11.24	11.61	11.38	11.31	11.31	11.38	11.27	11.31	11.27	11.31	11.31

*Number 10's choice -; 11 is choice; 12 is choicet; 13 is prime

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. Mechanical (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 will 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 Association.

Flock C-1. Yearling ewes with heaviest fleeces at
first shearing.

2. Replacement yearlings must be physically sound.

Results:

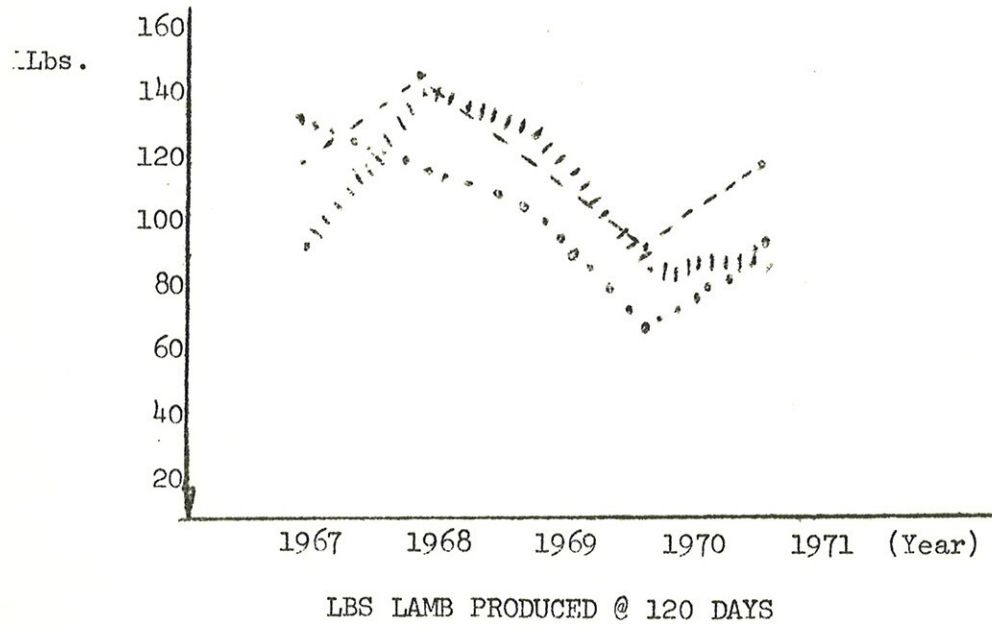
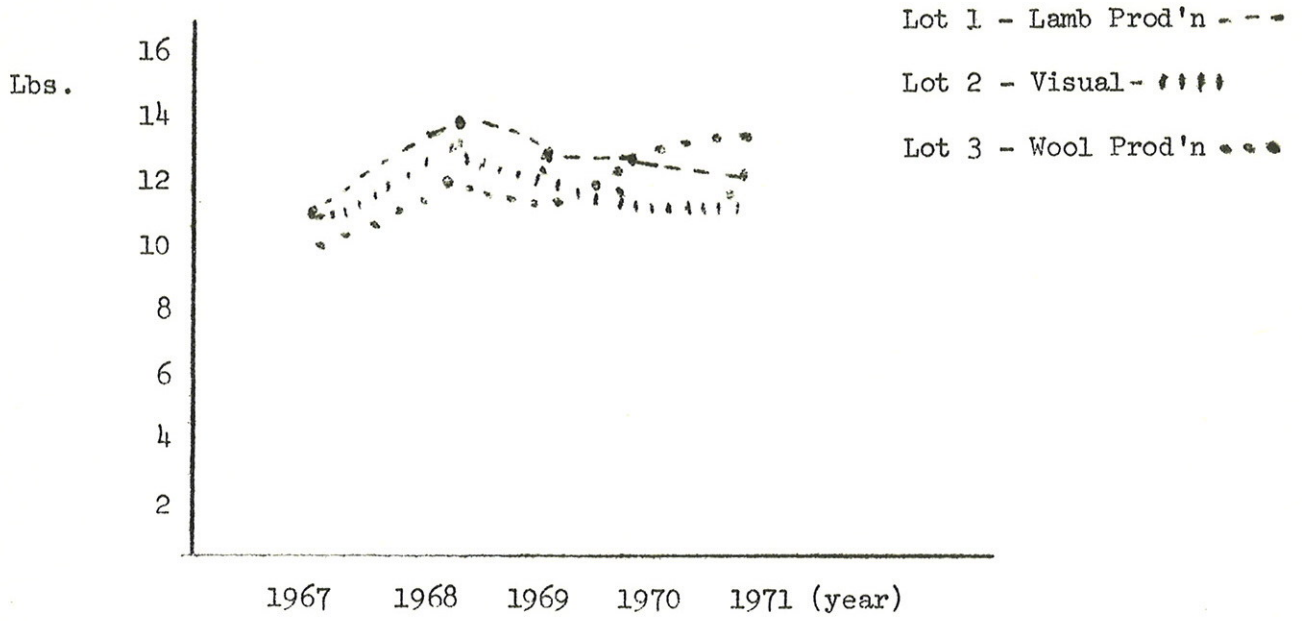
Yearly comparisons of productive performance are presented on Chart 1, and graph 1 which shows the comparison of the three groups on the basis of the two traits selected for.

This report is offered as a progress report, no attempt has been made to test the data for significance or to make recommendations on the basis of data collected.

SUMMARY OF "MEANS OF DATA"

/	Lot 1-Lamb Prod'n		Lot 2-Visual		Lot 3-Fleece Prod'n	
	1967-70		1967-70		1967-70	
	Average Prod'n	1971 Prod'n	Average Prod'n	1971 Prod'n	Average Prod'n	1971 Prod'n
Ewes Exposed	30	30	30	30	30	30
Age @ breeding	2.78	2.73	2.68	2.9	2.78	2.67
Initial Wt. (lbs.)	160.4	169.1	159.6	165.8	155.6	165.9
Gain During Breeding	+1.5	+2	+6	+3.0	+78	+1.0
Gain breeding to lambing	+25.4	+15.7	+22.4	+11.1	+23.3	+11.2
Ewes Lambing	28.5	27	27	26	28	26
% Lambs dropped/ewe exposed	164.15	166.7	144.45	166.7	149.15	153.3
% Lambs weaned/ewe exposed	143.3	153.3	134.3	126.7	130.0	133.3
Corrected pounds of lamb per ewe @ 120 da.	125.4	123.7	117.0	96.8	112.1	105.7
Grease Fleece wt.	12.82	13.0	12.52	12.53	12.20	13.03
Lamb Birth weight	11.1	12.1	10.45	11.16	10.45	11.22
Uncorrected weaning wt.	79.1	76.3	78.7	72.4	78.6	75.5
Corrected weaning wt.	87.2	80.6	86.8	76.3	85.9	79.3
Age in days @ weaning	120.8	121.3	120.5	120.3	121.2	122.6
Birth type of dams @ lotting						
% Singles	10.9	3.3	25.3	26.7	25.0	30.0
% Twins	85.3	92.3	72.2	70.7	71.67	66.7
% Triplets	3.3	3.3	3.3	3.3	3.3	3.3
Production of Replace -						
ments	1969	1970	1971	1969	1970	1971
% Lambs Dropped	146.7	75.0	112.5	140	100	125
% Lambs Weaned	126.7	75.0	75.0	140	100	75
Pounds of Lamb/ew exposed @ 120 day.	114.5	60.7	56.1	124.6	83.9	62.9
Grease Fleece wt.	13.40	12.63	12.8	12.67	11.68	13.00
					13.84	13.31 13.00

	Sire No. 1	Sire No. 2	Sire No. 3
Sire Records - 1967	Marshall	N.D.S.U. #1	Archibald
Ewes Exposed	29	30	30
% lambs dropped	151.7	166.7	166.7
% lambs weaned	134.5	143.3	140.0
Sires Records - 1968	Marshall	N.D.S.U. #1	E. Ehlers
Ewes Exposed	30	30	30
% lambs dropped	163.3	143.3	140.0
% lambs weaned	150.0	150.0	136.7
Sire Records - 1969	J. Ehlers	N.D.S.U. #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	N.D.S.U. #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



SUMMARY

Wool production* decreased in all lots except the group selected for wool production which increased a figure similar to the other lots percent decrease. (Ewes were sheared in 11 no fleece).

Lamb production at 120 days increased in all lots with the most significant gain being made in the lot selected for lamb production.

Nine yearling ewes did not conceive, thusly affecting lamb production in all lots.

Any attempt to establish trends or draw conclusions at this point would be premature as the averages and the average change will be of more importance.

This project is of long duration as only one complete turnover of breeding ewes has been made since the projects origination.

* traits selected for and considered of primary importance.

TRIPLET REARING PROJECT

TITLE: Raising Triplets on Dam?

OBJECTIVES: To determine the feasibility of raising triplet lambs on dam under western North Dakota conditions.

PROCEDURE: All ewes from the Hettinger Experiment Station flocks bearing triplet lambs are to be exposed to hi level feeding for a period of 28 days and then they will be returned to their respective flocks and managed with the rest of the flocks till weaning time. No excessive or special care is to be given to any of the ewes bearing triplets including the hi level 28 day feeding period. Lambs are to be taken away from any ewes not capable of raising 3 lambs any time during 28 day period.

Group A - February lambing crossbreds. This group will go under confinement after 28 day hi level feed period, ewes will receive 1½# oats daily, 4# good alfalfa and the lambs will have creep feed available till weaning at 70-90 days of age.

Group B - March lambing Columbia ewes will go to a lot after the 28 day feeding period and receive 1½# oats and 4# alfalfa till pasture is available where they will be grazed till a 120 day weaning date with no creep feed available to lambs.

Group C - April lambing crossbreds, this group will go immediately to grass after the 28 day feeding period till weaning at a 120 day average and no creep feed will be available to lambs.

ANALYSIS

The following data will be collected: ewe weights; prior to breeding, prior to lambing and at weaning. Lamb wts: at weaning, at birth, and 120 day corrected weaning wt. Cause of elimination of lambs from the project.

Supplemental ewe data collected will consist of second year performance of ewes involved in the project: rebreeding dates and lamb rearing performance.

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 of age.

TRIPLET REARING PROJECT

1971 Lambing

	Ewe Data					Lamb Performance Data					Cause of Death Loss
	Ewe No.	Breed ing No.	Lamb ing Wt.	Wean ing Wt.	Wean ing Age	#lambs born	No. Lambs Weaned	#lambs weaned	Cor.#of lamb at 120 day		
Early X Breds	118	154	178	126	87	30	3	165	231		
	424	154	184	128	86	28.5	3	136	188		
	161	158	187	150	85	26.5	1	63	90	Ewe had 1 teat	
	857	141	180	122	85	32.0	3	160	234		
	111	175	183	0	0	27.5	0	0	0	Ewe had no milk	
	571	131	163	116	81	26.5	3	183	270		
	261	172	198	160	79	26.0	2	100	151	Mastitis on 1 side	
	823	171	202	0	0	30.0	0	0	0	Nitelamber goofed	
	256	181	208	150	71	29.5	3	131	238		
	711	163	165	0	0	10.5	0	0	0	Ewe was sick	
	259	166	178	130	65	30.0	2	66	130		
	670	165	181	137	64	32.0	3	112	247		
	152	156	178	135	64	30.5	1	58	94	Ewe had mlk 1 side	
	727	156	169	115	63	24.0	2	98	194	No milk one side	
	773	145	163	130	53	26.5	3	95	231		
Col. Prd.	7120	170	194	153	127	29.0	3	205	212		
Prodn	6177	159	208	137	125	33.0	3	220	231		
Visual Fleece	5154	190	241	178	124	33.0	2	174	179	Not enough milk	
Visual Fleece	7027	174	192	153	122	31.0	3	219	236		
Visual Fleece	5181	168	200	155	121	29.5	3	189	198		
Visual Fleece	6196	157	186	148	120	27.5	2	146	154	Not enough milk	
Visual Fleece	6133	155	158	138	119	17.5	1	86	77	Died (lunger)	
Visual Fleece	6120	187	210	193	118	27.0	2	69	73	1 lamb bloated	
Visual Fleece	7098	163	180	156	117	26.5	3	139	149		
Visual Fleece	5173	200	218	151	118	29.5	3	195	225		
Late X Breds	220	180	229	147	129	36.0	3	235	241		
	216	189	229	174	128	35.5	3	216	223		
	323	205	222	200	125	30.5	2	152	158	1 lamb got caught in fence	
	360	157	175	160	123	29.5	3	182	194		
	853	180	200	162	123	32.5	3	199	213		
	659	154	165	139	120	32.0	2	127	134	1 lamb died on pasture	
Total	31	5176	5924	4143	7176	889.5	70	3920	5198		
Mean		166.9	191.1	148.0	102.5	28.7	2.258	126.4	167.6		
Mean/Lamb								56.0	74.25		

SECOND YEAR PERFORMANCE OF EWES INVOLVED

Lambing Dates and Rates

<u>No.</u>	<u>Triplet Yr.</u>	<u>Next Yr.</u>	<u>No. Born</u>	<u>Performance</u>
204	2-3-70	2-15-70	2	Could only raise one, didn't clean
408	2-8-70.	-----	0	Died prior to lambing, lunger
308	2-10-70	2-1-70	2	One died from being small and weak
107	2-10-70	2-6-71	1	
214	2-23-70	2-21-71	1	Ewe didn't clean
309	3-27-70	2-23-71	2	
6120	3-6-70	3-16-71	3	Only raised one/ one bad side to udder
6104	3-14-70	3-7-71	2	
886	3-20-70	-----	--	Culled
353	4-3-70	4-13-71	2	Caesarean for twisted uterus
201	4-7-70	4-11-71	2	
726	4-8-70	4-5-71	1	
102	4-8-70	4-12-71	2	

SUMMARY

1970 Data

Ewes Bearing Triplets	13
Lambs born	39
Lambs weaned	32
% of triplets raised	82%
Lambs born alive	34
% raised by those born alive	94.1%
Weaning weight	65 lbs.
Age at weaning	114.6 days
120 day corrected weaning weight	77.3 lbs.
% lambs weaned/ewe	246%
# of lamb produced @ 120 days	190.3 lbs.

1971 Data

Ewes Bearing triplets	31
Lambs born	93
Lambs weaned	70
% of triplets raised	75.2%
Lambs born alive	84
% raised of those born alive	83.3%
Weaning weight	56.0 lbs.
Age at weaning	101.5 days
120 day corrected weaning wt.	74.25 lbs.
% lambs weaned per ewe	226%
# of lamb produced @ 120 day	167.6 lbs.

1970-71 Summary of Combined Data.

Ewes bearing triplets	44
Lambs born	132
Lambs weaned	102
% of triplets raised	77.3%
Lambs born alive	116
% raised of those born alive	86.4%
Weaning weight	58.8 lbs.
Age at weaning	105.4 days
120 day corrected weaning wt.	75.2 lbs.
% lambs weaned per ewe	231.8%
# of lamb produced at 120 day	174.3 lbs.

CONCLUSION

It would be premature to make any permanent conclusions before the re-breeding data and income and expense figures are finalized.

It does appear that raising triplets on dam under Western North Dakota conditions puts an overload of stress on the ewes. Lamb performance has been good to excellent.

It would appear that breeding sheep with higher genetic capabilities is going to be a much more sought after practice to supply replacement ewes for sheep setup that are managed for intensive production under more farm flock conditions.

WOOL PRODUCTION AND HANDLING

(M. A. Kirkeide)

(Extension Animal)

(Husbandman)

The goal of the ewe flock owner is to produce the greatest number of pounds of wool per sheep that is possible and that this wool commands the highest possible price per pound.

Wool growers can achieve this goal through changes in the genetic makeup of their flocks and through superior nutrition and management.

Genetic change is brought about through selection. A wool grower can increase the salability or relative value of his clip if he will consistently cull from his flock if possible, ewes and rams that have:

Light-weight fleeces

Short-stapled fleeces

Fleeces that are markedly different in grade from other fleeces in the clip

Fleeces with hairy breeches

Fleeces that are excessively plain (without crimp)

Fleeces having excessive grease

It is not always economically feasible to cull ewes that are already in the flock. The most convenient way to affect changes in the genetic makeup of a flock is through care in selecting replacement animals. Only the best possible rams and ewes available should be allowed to enter the flock as producers.

Changes in pounds of wool produced per sheep are made largely through changes in length of staple and density (number of fibers per square inch of skin surface) or fiber. Changes in pounds of wool produced per sheep are made largely through changes in length of staple and density of fiber. These traits are generally considered quite highly heritable and therefore progress through a well planned breeding program is relatively rapid.

Management: Wool production management is not limited to shearing day. Year-long considerations are important.

Nutrition -- wool growth does respond to a high level nutrition.

Freedom from foreign material:

Use a minimum amount of branding fluid

Always use a scourable branding paint

Avoid handling hay and straw over the backs of sheep

Good worm control reduces scouring and therefore the proportion of dungy tags.

Handling the Clip:

Shearing day is harvest day for a crop that has been growing for 12 months. The following points will increase the value of the clip when offered for sale:

1. Keep fleeces clean - free from straw, manure and trash.
2. Make sure shearers avoid second cuts.

3. Remove all tags, dung locks and stained fleece.
4. Tie fleeces neatly, skin side out and use only paper twine.
5. Shear sheep that have black fibers and black-faced sheep last.
6. Pack burry fleeces separately.
7. Dead wool, tags and face clippings should be packed separately.
8. Mark every bag on the outside to show the kind of wool it contains.
9. Never sack wet wool.
10. Store bags off the ground in a dry place. Wool is easily spoiled.

Basic factors that determine the relative value of Grease Wool:

1. Diameter of Fiber - called "grade"
 Fibers of different diameter have different uses and are valued accordingly. Bulky fabrics are made of coarser wools and light-weight fabrics or those woven tightly are usually made from finer wool fibers.

Uniformity of fibers within fleeces and between fleeces is important.

2. Length of Fiber - called "staple".

Fibers of different lengths must be handled differently in manufacturing processes.

Staple length is a prime factor in determining yield. Longer stapled fleeces yield more than shorter fleeces of the same grade.

3. Impurities - called "shrink"

Natural: Grease (natural oils), Hair and Kemp.

Acquired: Ticks, insects, hay grains, straw, burrs, dust sand, dirt, paints and dip.

Moisture: Under normal conditions averages 4 to 12%
 Standard condition for marketing wool is:

Moisture:	12.0%
Grease	1.5%

4. Factors often considered when grease wool is marketed.

Crimp - gives wool a pleasing appearance

Handle- wools from white faced sheep are softer to the feel and have different uses than that from black faced sheep which is usually considered harsh.

Color - freedom from black fibers. Also, fleeces that are excessively yellow are considered as high shrinking. Stains from manure and phenothiazine are objectionable.

THE SEVEN WONDERS OF WOOL

1. Wool is the only animal fiber that can be easily spun and woven. Wool cloth fits but does not restrict body movement. It allows the skin to breathe; it is soft, yet rugged and tough.
2. Wool fibers act as a natural regulator of body temperatures.
3. Wool allows perspiration to evaporate slowly.
4. It is comforting to remember that wool resists fire.
5. A single wool fiber can be stretched 70% beyond its own length under laboratory conditions, and will return to original length when released. This is an important reason why wool fabrics hold their shape, do not wrinkle easily and are easy to care for.
6. Wool fibers are actually as strong as metal. A wool fiber and a gold wire of the same thickness will each support exactly the same weight.
7. Lift a modern, mid-winter blanket. The bulk would lead you to expect a heavy weight, but yet it is surprisingly light.

Wool is not hot.

Wool is not always heavy and bulky

Wool is not always scratchy

Wool is not always hard to care for.

High fashion: Fashion's leaders wear wool.

Economical. Wool is economical to wear. When comparing prices of wool goods, remember wool materials are usually at least 54 inches wide - other materials are seldom more than 39 inches wide.

INTERNAL PARASITE CONTROL

HORACE

"Let's get this straight. . . .
It's one scoop for you, two for
your worms".



CONSIDERATIONS FOR CONTROL OF INTERNAL PARASITES

1. Basic:
 - a. Assume every animal in the flock is infested.
 - b. Contamination of pastures is continuous.
 - c. Lambs are more susceptible to infection than mature sheep.
2. Adequate nutrition is essential - Keep all sheep well fed at all times.
3. Attack two phases:
 - a. The infested sheep is the source of infective material.
 - b. The pasture is the source of re-infestation.
4. Feed phenothiazine in the salt:
 - a. Use along with a good drenching program. (Do not depend on Pheno-salt for complete control).
 - b. A good mix = 100# trace mineralized salt + 30# Dicalcium-phosphate + 13# phenothiazine powder.
5. Drench regularly to attack the source of infective material. (remember that drenches are not 100% effective in every sheep on every occasion.)
 - a. Drench by the calendar.
 - b. Consider the use of more than one kind of drench.

Example:
Late April or early May - ewes and lambs - Thibenzole or Loxon
Mid-June or early July - ewes and lambs - Phenothiazine
w/lead arsenate
November - Phenothiazine, or Thibenzole or Loxon
 - c. Drench during the summer when a need is indicated such as rainy spells or when lambs show unthrifty while on good range.
6. Change pastures regularly if possible. Rest a pasture at least three weeks to allow eggs and larvae to die.
7. One practice such as drenching or pasture rotation is not effective in itself. These practices are most effective when combined.

Repeat: KEEP SHEEP WELL FED AT ALL TIMES - DRENCH REGULARLY.

LIQUID DRENCHING - is the most widely used, most effective, and most economical method of internal parasite control in the long run, it's main problem is that it requires additional labor.

Pill Method and Equipment

Various brands of wormers have bolouses available for parasite control. The bolouses can be given with a forceps or balling gun, this method is more expensive per treatment although the equipment for this method is quite cheap. Is very adaptable to treating thin individuals in the flock.

Feeding Method

Various feeds are available for worming sheep. These feeds are quite easy to use as they can be mixed in with the daily ration and thusly require less labor. The main thing wrong with this method of treatment is that the stronger ewes get more of the feed and the thinner, poorer doing sheep that need the medication most do not get adequate levels to accurately control internal parasites.

Mineral Supplements

Mineral mixtures with wormer additives are an excellent source of additional parasite control and work well with a sound drenching and pasture rotation system, but it must be remembered that this method is not an effective total control.

* It should be remembered that a sound drenching program is essential to maximum production and increasing profits.

ORPHAN LAMBS - MANAGEMENT IDEAS

1. Buy a good milk replacer. Should be 30% fat. Good replacers available from:
 - a. K & K Mfg., Rogers, Minn.
 - b. Land O'LakesIt 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 assembly 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 that are 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 L 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 pen should be heated. A plastic tent can easily be devised and heated. Extra heat 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.

A FEW COMMON HEALTH PROBLEMS OF SHEEP

A. Enterotoxemia

1. Common names.
 - a. milk colic.
 - b. pulpy kidney.
 - c. over-eating.
2. Cause
 - a. Bacteria - Clostridium perfringens
 - b. High state of nutrition
3. Symptoms
 - a. Often none. Find them dead
 - b. Nervous signs, head thrown back, convulsions
4. Prevention.
 - a. Immunization
 - 1) range sheep-vaccinate ewes
 - 2) farm flocks-same but also vaccinate lambs at about 6 weeks.
 - 3) feedlot lambs - vaccinate 2 weeks before starting on heavy feed.
5. Control.
 - a. Watch feeding practice

B. Contagious ecthyma

1. Common name - sore mouth
2. Cause - virus
3. Symptoms
 - a. usually lambs at about 4-5 months of age affected.
 - b. crusta and scab on lips
 - c. cannot eat properly so serious loss of condition develops.
4. Immunization
 - a. liver virus is used
 - b. be careful - disease is transmissible to man

C. Pinkeye

1. Cause
 - a. Said to be a bacteria. May be more than one Vit A?
 - b. Direct contact - no insect vector needed
2. Symptoms
 - a. swollen conjunctiva
 - b. runny eyes - clear to like pus
 - c. cornea becomes cloudy
 - d. recovery complete in most cases
3. Control - little can be done. Make sure adequate Vit A.
4. Treatment
 - a. injection of eyelids
 - b. sprays
 - c. Vit A injections

D. Urinary calculi

1. Other Names
 - a. urolithiatic
 - b. kidney stones
2. Wethers and rams affected
3. Causes
 - a. Vit A deficiency - denied by some
 - b. mineral imbalance - Ca & P
 - c. overdosing with stilbestrol
4. Symptoms
 - a. how would you feel if you couldn't urinate
 - b. "gravel" on sheath
 - c. death if bladder ruptures
5. Treatment
 - a. urine acidifiers
 - b. surgery
 - c. smooth muscle relaxants - allow passage of "stone".
6. Prevention
 - a. Calcium: Phosphorus ratio of not less than 1.5:1
 - b. use of alfalfa as a roughage
 - c. unlimited fresh water
 - d. 10% sodium chloride in ration
 - e. watch the stilbestrol dosage
 - 1) 6 mg implants
 - 2) less than 0.5 mg/pound if in feed
(maybe shouldn't use feed grade)

E. Pneumonia

1. Progressive pneumonia
 - a. "lungers"
 - b. caused by a virus
 - c. act somewhat like a "heavy horse"
 - d. finally die from lack of usable lung tissue
 - e. treatment - none
 - f. control - eliminate lungers as soon as detected.
2. Acute pneumonia
 - a. Cause: bacteria or bacteria plus virus. Stress in important factors
 - b. Symptoms:
 - 1) fever
 - 2) depressed and off feed
 - 3) runny nose and eyes
 - 4) cough
 - 5) maybe considerable death loss
 - c. Treatment
 - 1) good nursing care
 - 2) antibiotics and sulfas

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 more lush 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.

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.
3. Shear ewes, trim hooves and vaccinate ewes for example: Entro-, toxemia, Vibriosis, Soremouth.

4. Four weeks before lambing increase grain to 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. (Don't ever put a new set of twins into a large group of ewes and lambs).
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.
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.