HETTINGER BRANCH STATION

AGRICULTURAL EXPERIMENT STATION

NORTH DAKOTA STATE UNIVERSITY

6TH ANNUAL
WESTERN DAKOTA
SHEEP DAY

FEBRUARY 16, 1965

HETTINGER, N. DAK.

LEROY JOHNSON,

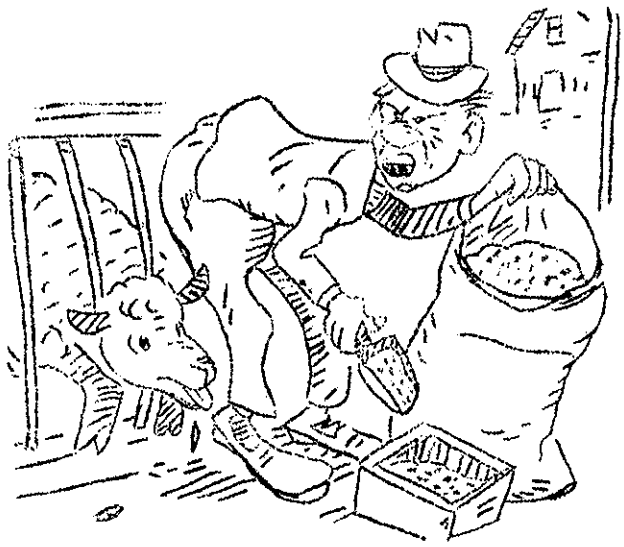
SUPERINTENDENT

SIXTH ANNUAL SHEEP DAY
Hettinger Experiment Station
Hettinger, North Dakota
February 16, 1965

9:30	Coffee
10:00	Ewe selection demonstration and contest
10:45	Experimental Work at North Dakota Stations Merle R. Light Assoc. Professor of Animal Science State University Station Fargo, North Dakota
12:00	Noon Lunch
1:00	Quality Roughages Dr. Wm. E. Dinusson Professor of Animal Science State University Station Fargo, North Dakota
1:45	Management for Maximum Sheep Production Harley Hanke Animal Husbandman Morris Station University of Minnesota
2:30	Flock Records C. LeRoy Johnson Superintendent Hettinger Experiment Station
3:00	Questions
3:30	Coffee

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 susceptable to infection than mature sheep.

2. Adequate nutrition is essential - Keep all sheep well fed at all times.

3. Attack <u>two</u> phases:
   a. The <u>infested sheep</u> is the source of infective material.
   b. The <u>pasture</u> is the source of reinfestation.

4. Feed phenothiazine in the salt:
   a. Use <u>along with</u> a good drenching program. (Do <u>not</u> depend on Pheno-salt for complete control).
   b. A good mix = 100# trace mineralized salt + 30# Dicalcium-phosphate + 13# phenothiazine powder.

5. Drench <u>regularly</u> 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:
      <u>Late April or early May</u> - ewes and lambs - Thibenzole
      <u>Mid-June or early July</u> - ewes and lambs - Phenothiazine
      <u>November</u> - Copper sulfate and nicotine sulfate
   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. <u>Rest</u> a pasture at least <u>three weeks</u> 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

CREEP FEEDING LAMBS ON PASTURE - DOES IT PAY?

Merle R. Light & C. N. Haugse[1]

The creep feeding of commercial lambs on pasture is not widely practiced in North Dakota. Because it is highly desirable to grow lambs quickly to take advantage of higher market prices which usually prevail early in the season, experiments were designed to test the effects of creep feeding on gains of grazing lambs. Trials were conducted during the 1963 and 1964 pasture seasons.

Experimental procedure -

Trial I - 1963. Forty-two ewes and their lambs were alloted into two groups according to age, sex, and birth type of lambs. Lot 1 served as the control group and Lot 2 was creep fed during the grazing period. The creep feed consisted of 50% whole oats and 50% whole corn and was fed in calf creep feeders that were modified for use by lambs. The creep feeders were located near the water supply and no particular problems were noted in getting lambs to consume feed.

The creep feeding period began on May 17, 1963 and was completed when all lambs were weaned on August 5th.

All lambs were drenched and realloted after weaning to determine the feasibility of finishing lambs on pasture as compared to finishing in dry lot. One half the lambs from each lot were assigned to dry lot or to pasture finishing groups and were fed a ration consisting of 50% oats and 50% corn plus one pound of alfalfa pellets per day.

Trial II, 1964: Sixty ewes and their lambs were alloted into four groups to test the value of creep feeding on pasture. Each group was equalized as far as possible according to sire, sex, and birth type of lambs. Lots 1 and 3 were creep fed and Lots 2 and 4 served as control groups.

1-The authors gratefully acknowledge the able assistance of Sig Hendrickson in the care and management of the animals during these trials.

The creep feeding period began May 8, 1964 and was completed on July 24, 1964 when all groups were weaned and placed in dry lot for finishing to market weight.

The rations for creep feeding and finishing were pelleted and formulated as shown in Table I.

Table I - - 1964 Ration Composition

Ingredient	Ration 1	Ration 2[1]
Corn	500	540
Oats	185	400
SBOM	100	50
Alfalfa	200	
Dicalcium phosphate	5	5
TM Salt	10	5

Vitamin A was added at the level of 1,000 I.U./lb.
Vitamin D was added at the level of 200 IU/lb.
By analysis ration 1 contained 15% protein.
Ration 2 contained 13.9% proteim.

Results and Discussion -

The results of the 1963 pasture creep feeding trial are shown in Table II.

Table II - - Creep Feeding vs. No creep - - 1963

Treatment	Creep fed	non-creep fed
No. lambs	24	29
No. Days	77	77
Av. Gain lbs.	52.8	44.6
ADG	.463*	.402
Av. Daily Feed Consumed	.65	- - -

1- Fed June 6 until lambs were weighed off and marketed.
*- Significant at the 5% level.

The creep feeding period began May 8, 1963 and was completed on July 24, 1963 when all groups were weaned and placed in dry lot for finishing to market weight.

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Table I - - 1963 Ration Composition

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Oats	185	400
SBOM	106	50
Alfalfa	200	
Dicalcium phosphate	5	5
TM Salt	10	5

Vitamin A was added at the level of 1,000 I.U./lb.
Vitamin D was added at the level of 200 IU/lb.
By analysis Ration 1 contained 15% protein.
Ration 2 contained 13.9% protein.

Results and Discussion -

The results of the 1963 pasture creep feeding trial are shown in Table II.

Table II - - Creep Feeding vs. No Creep - - 1963

Treatment	Creep fed	non-creep fed
No. lambs	24	20
No. Ewes	22	22
Av. Gain lbs.	52.8	44.5
ADG	.403*	.402
Av. Daily Feed Consumed	.65	

1- Fed June 6 until lambs were weighed off and marketed.
*- Significant at the 5% level.

The creep fed lambs consumed a total of 2108 pounds of feed during the creep feeding period. Creep fed lambs had noticeably more "bloom" when weaned. If grain is figured at 2¢ per pound and lamb prices were assumed to be $21.50, then the cost for feed and the advantage of gain almost exactly counter balance one another.

The results of pasture finishing as compared to dry lot finishing lambs after weaning are presented in Table III.

Table III - - Dry lot vs. pasture finishing

Lots No.	1	2	3	4
Treatment	Pasture & Grain	Dry Lot	Pasture & Grain	Dry Lot
Initial wt. (lbs)	53.4	46.4	49.3	46.6
Final Wt. (lbs)	93.3	106.5	98.9	107.3
No. Days	98	98	98	98
ADG (lbs)	.316	.508*	.335	.461*
Feed/lb. gain	10.3	6.2	8.0	5.76
Feed cost lb/100 gain	$18.06	$ 10.81	$15.02	$10.83

The superiority of finishing lambs in dry lot as compared to pasture is clearly evident. Even though fall pasture and weather conditions were considered adequate, the performance of lambs on pasture was inferior under the conditions of this trial.

The 1964 creep feeding summary is shown in Table IV.

Table IV - - Creep Feeding on Pasture - 1964

Lot. No.	1	2	3	4
Treatment	Control	Creep Fed	Control	Creep Fed
Initial Wt.	29.5	31.4	30.6	32.1
Weaning Wt.	60.2	72.8	60.3	75.8
Days	77	77	77	77
ADG (pasture)	.498	.537	.383	.559

*- Significant at 1% level.

The creep fed lambs consumed a total of 2102 pounds of feed during the creep feeding period. Creep fed lambs had noticeably more "bloom" when weaned. If grain is figured at 2¢ per pound and lamb prices were assumed to be $21.50, then the cost for feed and the advantage of grain almost exactly counter balance one another.

The results of pasture finishing as compared to dry lot finishing lambs after weaning are presented in Table III.

Table III - - Dry lot vs. pasture finishing

Lots No.	1	2	3	4
Treatment	Pasture & Grain--Dry lot--Pasture & Grain--Dry lot			
Initial wt. (lbs)	53.4	46.4	49.3	45.6
Final Wt. (lbs)	93.3	100.5	98.9	107.3
No. Days	90	90	98	98
ADG (lbs)	.310	.509*	.333	.461*
Feed/lb. gain	10.3	6.2	8.0	5.76
Feed cost lb/100 gain	$13.06	$ 10.91	$15.02	$10.83

The superiority of finishing lambs in dry lot as compared to pasture is clearly evident. Even though fall pasture and weather conditions were considered adequate, the performance of lambs on pasture was inferior under the conditions of this trial.

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Lot. No.	1	2	3	4
Treatment	Control	Creep Fed	Control	Creep Fed
Initial Wt.	29.5	31.4	30.6	32.1
Weaning Wt.	66.2	72.6	66.3	75.8
Days	77	77	77	77
ADG (pasture)	.498	.537	.303	.559

*- Significant at 1% level.

The average gain for creep fed lambs was 42.1 lbs. as compared to 34.1 lbs. for non-creep fed lambs or 19% faster. The creep fed lambs were, as in 1963, fatter and had more bloom. The creep fed lambs consumed 1.04 lbs. of creep feed per day during the 1964 trial. Using the same figures of 2¢ per pound for feed and $21.50 as the price of lambs, the cost of gain is quite similar to the value of the gain ($1.60 vs $1.72)

Following weaning, all lambs were finished for market in dry lot. The ration fed was ration 2 shown in Table 3.

Table V - - Dry Lot Performance - 1964

Lot No.	1	2	3	4
Prior Treatment	Control	Creep Fed	Control	Creep Fed
Initial Wt.	68.2	72.8	60.3	75.8
Final Wt.	104.0	101.2	97.3	103.4
Days	76	48	76	48
ADG	.471	.592	.487	.576

Summary of Performance - 1964

Table VI

Treatment	Creep Fed	Control
No. lambs	39	43
Av. Initial Wt.	31.3	30.0
Av. Final Wt.	102.2	100.6
Total Creep Feeding	3130	- -
Total Finishing Feeding	7129	12,822
Total Gain lbs.	2737	3,020
Lbs. feed/lb. gain	3.74	4.25

A point of particular interest is the length of time required to bring the lambs to market weight. Creep fed lambs were finished for market 28 days more quickly than non-creep fed lambs. Each group of

lambs sold for top market prices on the day when sold. The creep fed lambs sold for $2.00 more per hundred pounds than the non-creep fed lambs due to the fact that they were marketed on September 14th as compared to October 12th for non-creep fed lambs. The actual total feed required to finish pasture fed lambs is not far different for either group but is in favor of creep fed lambs. The practice of creep feeding lambs on pasture under the conditions of this trial was advantageous from the standpoint of time and feed required to finish the lambs.

Summary:

1. Dry lot finishing after weaning was superior to pasture finishing in terms of rate of gain and in cost of gain.
2. Creep fed lambs gained significantly faster than non-creep fed grazing lambs.
3. Cost of gains for creep fed lambs was approximately equal to the increased value of the lamb when weaned.
4. Creep fed lambs outperformed non-creep fed lambs in the finishing lot.

INJECTABLE VITAMIN A (a progress report)

In recent years, considerable interest has been shown in the use of vitamins in various forms and quantities for livestock nutrition. The injectable form, it it can be shown to be effective as an aid to production, would have the advantage of more uniform dosages to individuals in a flock than when fed in salt, grain or water. Ewes grazing dry native grasses (which are low in vitamin A content) in late fall and winter would perhaps be treated once and assured an adequate supply of Vitamin A. Relatively large amounts of A are stored in the liver.

There has been some speculation that keeping Vitamin A levels high during breeding season might result in some increase in percentage of ewes conceived, increase in twinning and/or a more uniform conception rate in a given flock.

A 1963 trial conducted at Hettinger involved the use of relatively high levels of a combination of Vitamins A, D, and E. Indications were that these large amounts of the combination might even have a negative effect on production. In 1964, it was decided to test two levels of injectable Vitamin A alone.

Experimental Procedure:

Forty-one Suffolk ewes, scheduled to lamb in February were divided into three groups. The groups were equalized as nearly as possible as to weight and age. One group was given 500,000 Internation Units of Vitamin A, one group received 250,000 I. U. of A and the other group was not treated. Injections were made two weeks prior to the beginning of breeding season. The same procedure was used on three small flocks of Columbia ewes bred to Suffolk rams and scheduled to begin lambing on February 1, March 15, and May 1 respectively. An oil based vitamin was used costing 24¢ for 500,000 Units and 12¢ for 250,000 Units.

During breeding season, the February lambers, both Suffolk and Columbia, were grazed on native fall range. The March and May lambers were grazed on standing corn and fall re-groth alfalfa. After November 19, all ewes received a balanced ration based on good quality alfalfa hay.

Results and Discussion:

Table 1 - Summaries of data by groups:

Suffolks - February lambing	Lot 1 500,000	Lot 2 250,000	Lot 3 No vit.
Number of ewes in trial	14	13	14
Ave. age of ewes at start	3.07	3.15	3.36
Ave. weight of ewes at start	150.7	152.8	149.3
Ave. birth weight - lambs	10.1	10.8	10.6
Ave. 120 day weight all lambs	71.9	75.4	74.4
Percent lambs dropped/ewe bred	192.9	163.6	166.6
Percent lambs weaned/ewe bred	178.6	138.5	114.3
Columbias - February lambing			
Number of ewes in trial	7	6	6
Ave. age of ewes at start	2.85	3.17	2.33
Ave. weight of ewes at start	147.3	156.8	144.3
Ave. birth weight - lambs	12.4	11.6	12.0
Ave. 120 day weight all lambs	93.8	89.9	91.3
Percent lambs dropped/ewe bred	100.0	183.3	183.3
Percent lambs weaned/ewe bred	100.0	183.3	166.6
Columbias - March lambing			
Number of ewes in trial	5	7	4
Ave. age of ewes at start	2.6	3.28	3.5
Ave. weight of ewes at start	133.2	133.9	138.3
Ave. birth weight - lambs	9.9	11.7	11.8
Ave. 120 day weight all lambs	67.0	74.5	80.6
Percent lambs dropped/ewe bred	180.0	171.4	100.0
Percent lambs weaned/ewe bred	140.0	114.3	75.0
Columbias - May lambing			
Number of ewes in trial	6	6	6
Ave. age of ewes at start	2.67	2.67	2.67
Ave. weight of ewes at start	138.2	142.5	142.3
Ave. birth weight - lambs	12.0	11.1	12.5
Ave. 120 day weight all lambs	61.2	64.1	68.5
Percent lambs dropped/ewe bred	133.3	133.3	133.3
Percent lambs weaned/ewe bred	116.7	116.7	133.3

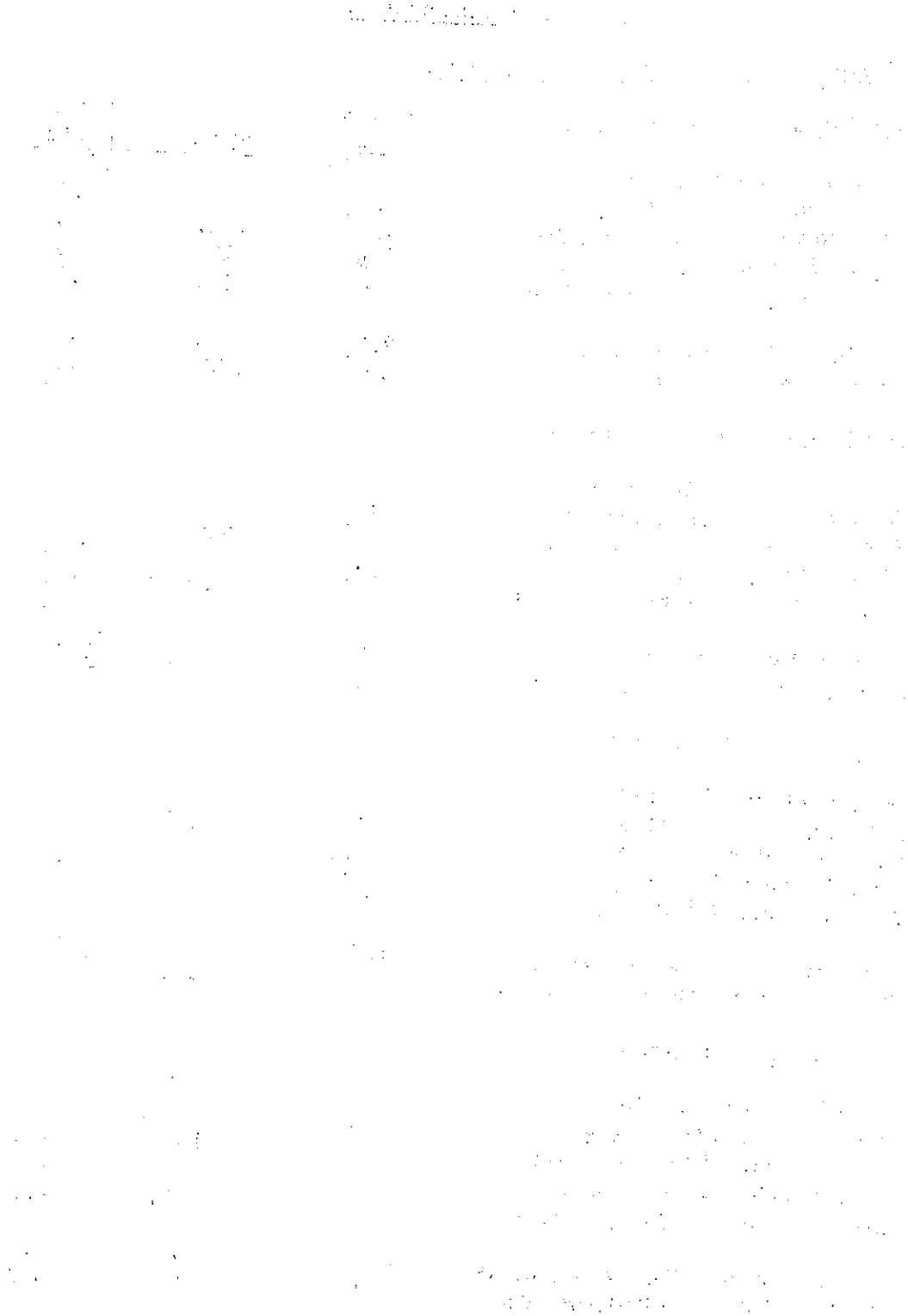

Table 2 - Summary of data, all groups:

	Lots 1 500,000	Lots 2 250,000	Lots 3 No vit.
Number of ewes bred	32	32	30
Number of ewes dry	1	2	3
Number of lambs dropped	51	49	43
Number of lambs weaned	46	44	37
Percent ewes lambed 1st 17 days	78.1	62.5	53.3
Percent lambs dropped per ewe bred	159.4	153.1	143.3
Percent lambs weaned per ewe bred	143.8	137.5	123.3
Percent lambs dropped per ewe lambed	164.5	163.3	159.3
Percent lambs weaned per ewe lambed	148.4	146.6	137.0
Percent death loss	9.8	10.2	16.3

Summary:

At the close of this first year of trial using only injectable Vitamin A at two levels, it should be remembered that the results should be used as "indicator" information only.

Summaries of data by groups (table 1) showed some variation in response to treatment between groups as all groups did not follow the same patterns. Numbers in these groups were very small so these variations could be due to natural (genetic) potential of the ewes involved. However, when the groups were added together (table 2) thus involving more ewes in each treatment, there is some indication that total production increases and death loss decreases as the relative concentration of the injectable vitamin was increased. Differences were slight. Lambing rate (percent ewes dropping lambs the first 17 days) increased as vitamin levels were increased indicating some advantage in rate of conception.

It should be remembered that these ewes were fed a basic ration of good quality alfalfa hay so Vitamin A may or may not have been a limiting factor. Information is not conclusive enough at this stage to make definite recommendations to commercial producers.

TIME OF LAMBING (a progress report - second year)

One of the major decisions a sheep producer must make is to set his lambing dates. Many considerations must be made such as availability of winter feed and summer pasture, seasonal availability of labor, available housing and markets.

This trial was designed to compare the results obtained and the costs involved when lambing ewes at various times of the year.

Experimental Procedure:

Sixty Columbia ewes were divided into three groups of nearly equal weight and age. Group 1 started lambing February 1, the lambs were creep fed, weaned and placed on the early market as fat lambs. Group 2 started lambing March 15. These lambs were not creep fed, but were allowed to grazed early crested wheat grass and then native pasture. At weaning time, they were priced as feeders and then fed out and sold as fat lambs. Group 3 started lambing May 1 on grass. These lambs were handled in the same manner as those in group 2. All groups were bred to the same Suffolk rams.

Because of some dog trouble after the initial lotting and during breeding season, several ewes were bred incorrectly. These were dropped from their respective groups. One was dropped from Lot 1, four from Lot 2 and two from Lot 3.

Results and discussion:

Table 1 - basic information for use throughout trial:

Feed prices on basis of local market - fall 1963:

Corn	$ 1.20 per bushel
Oats	.55 per bushel
Barley	.76 per bushel
Cob corn	25.00 per ton
Two year old alfalfa hay	12.00 per ton
Alfalfa-crested hay	10.00 per ton
Good quality alfalfa hay	18.00 per ton
Corn silage	6.00 per ton

Pasture charges:

Charge per animal unit per month (crested & native) . .	$ 2.50
Charge per animal unit per month (alfalfa pasture) . .	4.00
Charge per animal unit per month (standing corn) . . .	5.00

Animal Unit coversion factors used:

5 ewes with lambs = 1 animal unit or 150 sheep days = one animal unit month

7 dry ewes = 1 animal unit or 210 sheep days = one An. U. Mo.

7 weaned lambs = 1 animal unit or 210 sheep days = one An. U. Mo.

Costs considered constant between all lots :

Sires, veterinary, ewe replacement, shearing, salt, vaccinations and drenching.

Costs considered constant between February and March lambs :

Bedding and housing

Costs considered constant between March and May lambs :

Stilbestrol implants @ 10¢ per lamb.

Selling costs :

Shrink - 6% to St. Paul

Shrink - 2% to local market

Commissions and trucking to St. Paul - $ 2.00 per head

Commissions only to local market - .50 per head

Fleeces :

12.5# average per ewe @ .63 or	7.88
Estimated Fed. Subsidy	2.00
Total per ewe	9.88

Creep rations used:

First:

800# Oats
800# Corn
200# Soybean oil meal
100# Wheat bran
50# Trace mineralized salt
40 grams Aureomycin
2,000,000 Units Vitamin A
Ground and mixed commercially
Total cost, $52.23 or .0268 per lb.

Second:

800# Oats
800# Barley
200# Soybean Oil meal
50# trace mineralized salt
Ground and mixed commercially
Total cost, $40.60 or .0219 per lb.

Table 2 - Summary of data collected:

	Feb. 1st	Mar. 15th	May 1st
Number of ewes in lot	19	16	18
Ave. age of ewes @ breeding	2.79	3.13	2.67
Ave. weight of ewes @ breeding	149.4	134.8	140.9
Ave. birth weight of lambs	11.8	10.9	11.9
Ave. weaning weight of lambs	64.3	69.7	80.5
Ave. age (days) @ weaning	93.6	116.3	149.4
Ave. market weight (station)	149.8	193.8	207.9
Percent lambs born	152.6	131.3	133.3
Percent lambs weaned	147.4	112.5	122.2
Percent lambs marketed	147.4	112.5	122.2
Ewe grazing costs (total)	46.75	58.85	72.05
Winter feed cost for ewes (total)	167.20	115.31	102.33
Average total feed cost per ewe (year)	11.26	10.89	9.69
Feed costs for lambs only (total)	137.56	77.29	67.82
Wool return	187.72	158.08	177.84
Return from lambs (fat)	536.32	367.26	423.02
Return from lambs (feeder)	- - -	230.66	310.35
Total returns over feed costs (fat)	372.53	269.89	358.66
Total returns over feed costs (feeder)	- - -	214.58	313.81
Profit over feed cost per ewe bred when lambs sold as fats	19.61	16.87	19.92
Profit over feed cost per ewe bred when lambs sold as feeders	- - -	13.41	17.43

Average of two years data:

Percent lambs dropped	155.3	144.2	129.8
Percent lambs marketed	139.5	118.2	108.5
Annual feed cost per ewe (ewe only)	10.18	10.13	9.14
Return per ewe over feed cost (fats)	19.93	17.47	17.56
Return per ewe over feed cost(feeder)	- - -	15.31	14.66

Table 2 - Summary of data collected

	Feb.	Mar.	May
	Lot	Lot	Lot
Number of ewes in lot	19	19	19
Ave. age of ewes @ breeding	2.79	3.13	3.07
Ave. weight of ewes @ breeding	140.6	132.2	140.9
Ave. birth weight of lambs	11.3	10.3	11.9
Ave. weaning weight of lambs	86.3	90.7	96.5
Ave. age (days) @ weanig	93.6	110.3	140.4
Ave. market weight (grade)	149.3	150.8	147.9
Percent lambs born	152.6	131.3	137.3
Percent lambs weaned	147.4	112.5	122.2
Percent lambs marketed	147.4	112.5	122.2
Sub grazing costs (total)	46.75	58.85	72.05
Winter feed cost for ewes (total)	167.20	135.31	102.30
Average total feed cost per ewe (year)	11.26	10.89	9.60
Feed costs for lambs only (total)	137.36	77.29	93.52
Wool return	137.72	158.08	177.84
Return from lambs (fat)	536.32	367.26	453.02
Return from lambs (feeder)	- - -	230.66	310.35
Total returns over feed costs (fat)	472.52	409.80	330.50
Total returns over feed costs (feeder)	- - -	314.38	313.81
Profit over feed cost per ewe bred when lambs sold as fats	10.81	10.87	19.80
Profit over feed cost per ewe bred when lambs sold as feeders	- - -	13.41	12.43
Average of two years data:			
Percent lambs dropped	135.3	144.2	129.8
Percent lambs marketed	133.3	119.2	106.3
Annual feed cost per ewe (ewe only)	10.18	10.13	9.18
Return per ewe over feed cost (fats)	10.93	17.47	17.85
Return per ewe over feed cost(feeder)	- - -	13.31	14.80

Summary:

This is only the second year of trial, but some observations can be made at this time as to patterns that have formed in the two years:

1. The percentages of lambs dropped and consequently weaned were proportionate to earliness of birth. (Early lambs = more lambs)

2. Total annual feed costs per ewe remains about constant between groups of ewes assigned to various lambing periods.

3. Earliest born lambs continue to show greatest returns over feed costs alone.

An interesting ovservation should be made that in 1963, the May born lambs, and in 1964, the March born lambs, were weaned at relatively light weights - 66.5 and 69.7 pounds respectively. Both of these situations indicated that these lambs should be fed out before marketing. Profits in feeding are not so distinct for the lots of lambs which were weaned at heavier weights.

The strongest point made in this trial to date is the very close relationship between percentage of lambs weaned and relative profits.

NOTES