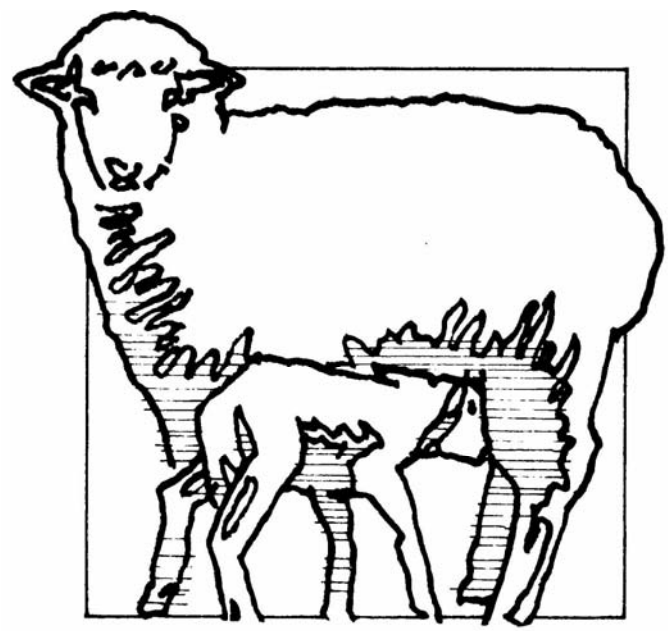
KANSAS SHEEP RESEARCH 1994

Report of Progress 703



Agricultural Experiment Station

Kansas State University, Manhattan

Marc A. Johnson, Director

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PERFORMANCE OF LAMBS SIRED BY RAMBOUILLET, TUNIS, ROMANOV, AND KATAHDIN RAMS -- LAMB CROP 2

Frank J. Schwulst[1] and Linda C. Martin[2]

Summary

Rambouillet and Rambouillet crossbred ewes were bred to Rambouillet, Tunis, Romanov, and Katahdin rams to produce fall-born F_1 lambs. Conception rates were 72.9% for the second lamb crop and 64.7% for the first two lamb crops combined. Ewes bred to Romanov rams produced the most (1.50) lambs per ewe lambing. Survival to weaning was over 90% for all groups, except the Rambouillet-sired lambs (76%). Preweaning average daily gains were about .5 lb. for all breed groups. Postweaning daily gains were over .7 lb. for lambs sired by Rambouillet rams and about .6 lb. for those sired by rams of the other breeds.

Experimental Procedure

Rambouillet and Rambouillet crossbred ewes were allotted by age and breed to eight lots with one ram and 30 to 32 ewes per lot. The composition of the ewe population for the second lamb crop was 65% straight Rambouillet, 11% Rambouillet (3/4) x Booroola Merino (1/4), 13% Rambouillet (3/4) x Finn (1/4), and 11% Dorset (1/2) x Rambouillet (1/2). The ewe population for the second crop varied only slightly from that for the first crop. Two different rams of the Rambouillet, Tunis, Romanov, and Katahdin breeds were used to produce each of the first two lamb crops. Two new rams of each breed were used to produce the third lamb crop. Each breeding season extended from May 15 to June 30. The first lamb crop was born during the fall of 1991, the second in 1992, and the third in 1993. Ewe lambs of each F_1 type will be retained in the flock and bred to Suffolk rams to compare reproductive performance and lamb production.

Results and Discussion

The data reported here are from the second lamb crop and for the first two lamb crops combined. The data will not be analyzed until data from all three lamb crops are complete.

[1]*Northwest Research-Extension Center*
[2]*Department of Animal Science and Industry*

Preweaning data for the second lamb crops are shown in Table 1. Conception rate was lowest for the Rambouillet rams among all sire breeds and was much lower than the Rambouillet conception rate (78.3%) for the first lamb crop. Conception rates for the Tunis, Romanov, and Katahdin sires, though less than 90%, were probably satisfactory for out-of-season, single-sire matings. The number of lambs born per ewe lambing was very nearly equal for all sire-breed groups. This was in contrast with data for the first lamb crop, which showed that ewes bred to Romanov rams had about .3 more lambs born per ewe lambing. Lambs sired by Katahdin rams were the heaviest at birth and those sired by Romanov rams were the lightest.

Table 1. Preweaning Data -- Lamb Crop 2

Item	Breed of Sire			
	Rambouillet	Tunis	Romanov	Katahdin
No. ewes exposed	60	64	60	63
No. ewes lambed	25	54	45	56
% ewes lambed	41.7	84.4	75.0	88.9
No. lambs born	33	77	62	73
% lamb crop	55.0	120.3	103.3	115.9
Lambs/ewe lambing	1.32	1.43	1.38	1.30
No. multiple births	9	21	17	17
% multiple births	36.0	38.9	37.8	30.4
Avg. birth weight (lb)	10.4	10.6	9.6	11.1

Table 2 presents postweaning data for the second lamb crop. Survival rate to weaning (50 $\pm$ 3 days) was greatest for the Romanov-sired lambs followed in decreasing order by lambs sired by Katahdin, Tunis, and Rambouillet rams.

Table 2. Postweaning Data -- Lamb Crop 2

Item	Breed of Sire			
	Rambouillet	Tunis	Romanov	Katahdin
No. lambs weaned	25	68	59	66
% born weaned	75.8	88.3	95.2	90.4
Avg. weaning weight (lb)	38.8	37.6	35.4	37.1
ADG birth-weaning (lb)	0.547	0.532	0.515	0.514
No. lambs marketed	22	64	57	63
% born marketed	66.7	83.1	91.9	86.3
Avg. market weight (lb)	118.0	113.1	110.1	113.0
ADG weaning-market (lb)	0.729	0.609	0.596	0.616

Preweaning average daily gains were about equal for lambs of all sire groups. Postweaning average daily gains were over .7 lb. for Rambouillet-sired lambs and about .6 lb. for each of the other breed groups.

Preweaning data for the first two lamb crops combined are shown in Table 3. Conception rates were as much as 15% lower than the average of about 85% for fall-lambing ewes in the NWREC flock over the past 15 years. Much of that reduction is probably attributable to the use of a single-sire mating system. Ewes bred to Romanov rams gave birth to the most lambs per ewe lambing, because over 48% of the ewes produced twins or triplets. Birth weight was heaviest for Rambouillet-sired lambs and lightest for those sired by Romanov rams.

Table 3. Preweaning Data -- Lamb Crops 1 & 2

Item	Breed of Sire			
	Rambouillet	Tunis	Romanov	Katahdin
No. ewes exposed	120	122	118	121
No. ewes lambed	72	83	70	86
% ewes lambed	60.0	68.0	59.3	71.1
No. lambs born	100	114	105	116
% lamb crop	83.3	93.4	89.0	95.9
Lambs/ewe lambing	1.39	1.37	1.50	1.35
No. multiple births	29	29	34	30
% multiple births	40.3	34.9	48.6	34.9
Avg. birth weight (lb)	11.0	10.8	9.5	10.8

Survival rate to weaning (50 $\pm$ 3 days) was higher than 90% for lambs sired by Tunis, Romanov, and Katahdin rams (Table 4). Survival rate for the Rambouillet-sired lambs was about 15% lower. Weaning weights and birth-to-weaning ADGs were highest for Rambouillet- and Tunis-sired lambs and lowest for lambs sired by Romanov and Katahdin rams. Katahdin-sired lambs, which were the slowest gainers prior to weaning, were the second-fastest gainers during the weaning-to-market phase, trailing only the Rambouillet-sired lambs.

Each year, the ewe lambs that were selected to remain in the flock were sheared at 9 months of age. For the second lamb crop, the heaviest (Table 5) fleece weights were produced by Rambouillet-sired ewe lambs. As should be expected, spinning count was highest for the Rambouillet-sired ewe lambs and lowest for those sired by Romanov and Katahdin rams. Hair fibers were present in 100% of the fleeces from the Katahdin group and about 82% of the fleeces from the Romanov-sired ewe lambs. Hair fibers made up about half of those fleeces.

Table 4. Postweaning Data -- Lamb Crops 1 & 2

Item	Breed of Sire			
	Rambouillet	Tunis	Romanov	Katahdin
No. lambs weaned	76	104	95	107
% born weaned	76.0	91.2	90.5	92.2
Avg. weaning weight (lb)	38.1	37.7	35.4	35.6
ADG birth-weaning (lb)	0.533	0.534	0.515	0.492
No. lambs marketed	71	100	93	103
% born marketed	71.0	87.7	88.6	88.8
Avg. market weight (lb)	114.6	106.2	106.8	112.3
ADG weaning-market (lb)	0.653	0.574	0.575	0.622

Ewe-lamb wool data for the two lamb crops combined are presented in Table 6. Rambouillet-sired ewe lambs have produced the heaviest fleeces with the highest spinning count. Tunis-sired ewe lambs were intermediate for those traits, and the more hairy fleeces of the Romanov and Katahdin groups were lowest. Percent clean yield was similar for all breed groups.

Hair fibers were present in about 77% of the Romanov-sired fleeces and about 68% of the fleeces from the Katahdin group. Fleeces from two of the Tunis-sired ewe lambs contained small amounts of hair. Fleeces from Tunis-sired lambs were the most likely to contain colored fibers, followed by those from lambs sired by the Romanov and Katahdin rams. No hair fibers or colored fibers were found in any of the fleeces from Rambouillet-sired ewe lambs.

Table 5. Ewe Lamb Wool Data (9 mos.) -- Lamb Crop 2

Item	Rambouillet	Tunis	Romanov	Katahdin
No. ewes	7	37	22	32
Fleece weight (lb)	8.5	7.5	6.1	5.7
Staple length (in)	4.6	5.5	7.5	6.5
Spinning count	61.4	55.4	48.5	48.3
Clean yield (%)	50.3	54.1	55.1	54.6
No. ewes --- hair	----	2/37	18/22	32/32
% ewes --- hair	----	5.4	81.8	100.0
% fleece --- hair	----	6.0	41.4	54.6
No. ewes --- color	----	9/37	4/22	2/32
% ewes --- color	----	24.3	18.2	6.3

Table 6. Ewe Lamb Wool Data (9 mos.) -- Lamb Crops 1 & 2

Item	Rambouillet	Tunis	Romanov	Katahdin
No. ewes	29	56	35	59
Fleece weight (lb)	8.0	7.3	5.8	5.4
Staple length (in)	5.8	5.8	7.4	6.2
Spinning count	62.1	55.3	48.6	50.2
Clean yield (%)	53.2	54.4	55.1	54.8
No. ewes --- hair	----	2/56	27/35	40/59
% ewes --- hair	----	3.6	77.1	67.8
% fleece --- hair	----	6.0	43.7	52.2
No. ewes --- color	----	13/56	5/35	2/59
% ewes --- color	----	23.2	14.3	3.4

REPRODUCTIVE AND PRODUCTION PERFORMANCE OF EWES SIRED BY RAMBOUILLET, TUNIS, ROMANOV, AND KATAHDIN RAMS -- PROGRESS REPORT 1

Frank J. Schwulst[1] and Linda C. Martin[2]

Summary

Data from the first two lamb crops show that Romanov-sired ewes produced more lambs per ewe lambing than the Tunis- and Katahdin-sired ewes, which were about equal, and the Rambouillet-sired ewes, which gave birth to the fewest lambs. Preweaning average daily gains were about .5 lb. for lambs born to Rambouillet-, Tunis-, and Katahdin-sired ewes. Preweaning ADGs for lambs born to the Romanov-sired ewes were .4 lb. for the first lamb crop and a little more than .3 lb. for the second lamb crop. Postweaning ADGs (lamb crop 1 only) were about .6 lb. for lambs born to each of the ewe-breed groups. All lambs were sired by Suffolk rams.

Experimental Procedure

Ewe lambs sired by Rambouillet, Tunis, Romanov, and Katahdin rams were exposed to Suffolk rams during September of 1992 to produce a lamb crop during January and February of 1993. The ewe lambs were about 14 mo. old when they lambed. After weaning their lambs in March and April, the ewes were exposed to Suffolk rams from mid-May through June to produce a fall-born lamb crop. The ewes will continue on a fall-lambing schedule. The data reported here are for the ewe lambs that were born in the fall of 1991. Ewe lambs born in the fall of 1992 and 1993 will follow the same spring- and then fall-lambing scheme. The data reported are raw means and summarizations. Analysis will be done after the project is completed.

Results and Discussion

Preweaning data for the spring lamb crop are shown in Table 1. Conception rate was high for all groups, because 77 of the 80 ewes exposed to rams did lamb. Percent lamb crop was highest for the Romanov-sired ewes, because about 77% had multiple births. The Katahdin-sired and Tunis-sired ewes were about equal for percent lamb crop and about 50% less than the Romanov-sired group but 7-8% more than the Rambouillet-sired ewes.

[1]*Northwest Research-Extension Center*
[2]*Department of Animal Science and Industry*

Table 1. Preweaning Data -- Lamb Crop 1

Item	Ewe Groups			
	Rambouillet-sired	Tunis-sired	Romanov-sired	Katahdin-sired
No. ewes exposed	21	19	13	27
No. ewes lambed	21	18	13	26
% ewes lambed	100.0	94.7	100.0	96.3
No. lambs born	24	23	23	33
% lamb crop	114.3	121.1	176.9	122.2
Lambs/ewe lambing	1.14	1.28	1.77	1.27
No. multiple births	3	5	10	7
% multiple births	14.3	27.8	76.9	26.9
Avg. birth weight (lb.)	11.9	10.0	8.0	10.7

Weaning and postweaning data for the first lamb crop are presented in Table 2. The most striking results displayed are the high preweaning death losses for lambs born to each ewe group. Though preweaning death losses for spring lamb crops generally have been high in the NWREC flock, these losses were exceptionally severe. Lambs born to the Katahdin-sired ewes had the best survival rate. Preweaning daily gains were about .5 lb. for lambs born to ewes sired by Tunis, Rambouillet, and Katahdin rams. Lambs born to Romanov-sired ewes were more likely to have been multiples and gained only .4 lb. per day. Postweaning gains were slightly more than .6 lb. per day for lambs born to each of the ewe groups.

Table 2. Weaning and Postweaning Data -- Lamb Crop 1

Item	Ewe Groups			
	Rambouillet-sired	Tunis-sired	Romanov-sired	Katahdin-sired
No. lambs weaned	16	11	12	26
% born weaned	66.7	47.8	52.2	78.8
Avg. weaning weight (lb.)	38.6	38.5	28.3	36.3
ADG birth-weaning (lb.)	0.519	0.549	0.408	0.510
No. lambs marketed	15	11	9	26
% born marketed	62.5	47.8	39.1	78.8
Avg. market weight (lb.)	120.0	122.1	120.8	123.0
ADG weaning-market (lb.)	0.641	0.620	0.610	0.653

Table 3 shows data from the second lamb crop, which was born during the fall of 1993. Conception rates of about 90% occurred in the Romanov- and Katahdin-sired groups. Conception rates for fall lambing were lower for the Tunis-sired ewes and lowest for ewes sired by Rambouillet rams. The ewes had been exposed to rams shortly after weaning their spring-born lambs, so that a ewe could have lambed twice by the time she was 2 years old. Percent lamb crop for the Romanov-sired ewes (190.9) was 80% and 75% greater than for the Katahdin-sired and Tunis-sired groups, respectively. Rambouillet-sired ewes produced the smallest lamb crop (77.8%). Survival to weaning was improved greatly over the results from the first lamb crop. Survival was highest for lambs born to Katahdin-sired ewes. Birth-to-weaning average daily gains were about .5 lb. for lambs born to all ewe groups except the Romanov-sired group. Those lambs were almost all multiple births and gained about .3 lb. per day.

Table 3. Preweaning and Weaning Data -- Lamb Crop 2

	Ewe Groups			
Item	Rambouillet-sired	Tunis-sired	Romanov-sired	Katahdin-sired
No. ewes exposed	18	18	11	27
No. ewes lambed	12	13	10	24
% ewes lambed	66.7	72.2	90.9	88.9
No. lambs born	14	18	21	31
% lamb crop	77.8	100.0	190.9	114.8
Lambs/ewe lambing	1.17	1.38	2.10	1.29
No. multiple births	2	4	9	7
% multiple births	16.7	30.8	90.0	29.2
Avg. birth weight (lb.)	11.4	10.0	7.4	10.6
No. lambs weaned	12	14	15	29
% born weaned	85.7	77.8	71.4	93.5
Avg. weaning weight (lb.)	36.3	36.6	24.4	36.8
ADG birth-weaning (lb.)	0.505	0.504	0.335	0.520

RATION DENSITY FOR PROLIFIC EWES IN LATE GESTATION

Frank. J. Schwulst[1] and Clifford. W. Spaeth[2]

Summary

In late gestation and lactation, Finn x Rambouillet and Booroola Merino x Rambouillet ewes were fed rations of different densities to determine the effect of ration form on lamb birth weight, preweaning gain, and survival rate. All lambs were sired by Dorset rams. First- and second-year data show small differences between treatment groups in most traits measured.

Experimental Procedure

This project was designed to determine the effect of ration form (bulky or dense) on birth weight, preweaning gain, and survival rate of lambs born to highly prolific ewes. Treatment rations were fed during the last 45 days of gestation and during lactation.

The fall-born Booroola Merino x Rambouillet (BMR) and Finn x Rambouillet (FR) ewes involved in this project were 4 and 5 years old when the trial began with the fall 1991 lamb crop. All lambs born in this experiment were sired by Dorset rams. A second lamb crop was born in the fall of 1992, and a third was born in the fall of 1993. About 45 days before the expected date of the first-born lamb, the ewes were allotted to treatment on the basis of breed and expected prolificacy, with two replications (lots) per treatment. For the first lamb crop, expected prolificacy was determined by ultrasound examination. Expected prolificacy for the following lamb crops was estimated using the prolificacy history of each ewe. As lambs were born, the ewe-lamb families were moved from gestation lots to lactation lots.

The gestation and lactation rations are shown in Tables 1 and 2, respectively. The bulky rations were the more traditional, consisting of corn silage, tub-ground alfalfa, and whole milo. In the dense ration, the alfalfa was in the form of sun-cured pellets and the milo was whole. All rations were fed once daily in fence-line feed bunks.

[1]Northwest Research-Extension Center
[2]Department of Animal Sciences and Industry

Table 1. Daily Feed -- Gestation

Treatments			
Bulky		Dense	
Ingredient	lb	Ingredient	lb
Corn silage	6.00	Alfalfa pellets	2.25
Alfalfa	1.25	Milo	2.25
Milo	.85		
SBM	.15		

Table 2. Daily Feed -- Lactation

Treatments			
Bulky		Dense	
Ingredient	lb	Ingredient	lb
Corn silage	8.00	Alfalfa pellets	3.25
Alfalfa	1.20	Milo	3.25
Milo	1.00		
SBM	.75		

Results and Discussion

Ewe and lamb performance data for the second year are shown in Table 3. Table 4 presents combined data for 2 years. The data will not be analyzed until the 3-year trial is complete, and, until then, discussion will be limited.

Table 3. Raw Data -- Lamb Crop 2

Item	Treatment	
	Bulky	Pelleted
No. ewes exposed	37	37
No. ewes lambed	37	36
% ewes lambed	100.0	97.3
No. lambs born	62	68
% lamb crop	167.6	183.8
Lambs/ewe lambing	1.68	1.89
No. multiple births	21	27
% multiple births	56.8	75.0
Avg. birth weight (lb)	9.4	9.3
No. lambs weaned	55	56
% born weaned	88.7	82.4
Avg. weaning weight (lb)	39.6	38.5
ADG birth-weaning	0.594	0.584

Table 4. Raw Data -- Lamb Crops 1 and 2

Item	Treatment	
	Bulky	Pelleted
No. ewes exposed	77	75
No. ewes lambed	76	74
% ewes lambed	98.7	98.7
No. lambs born	143	144
% lamb crop	185.7	192.0
Lambs/ewe lambing	1.88	1.95
No. multiple births	51	55
% multiple births	67.1	74.3
Avg. birth weight (lb)	8.9	9.0
No. lambs weaned	122	123
% born weaned	85.3	85.4
Avg. weaning weight (lb)	38.3	38.4
ADG birth-weaning (lb)	0.581	0.585

When the data were combined over the first 2 years, only very small differences existed between the two treatments. Ewes on the pelleted treatment had 7.2% more multiple births, resulting in a 6.3% increase in lamb crop size. All lambs were raised by their birth mothers. All male lambs were castrated using an elastrator at about 7-10 days of age.

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BREEDING, LAMBING, AND LACTATION PERFORMANCE OF KATAHDIN EWES

Frank J. Schwulst[1]

Summary

The reproductive characteristics and production performance of Katahdin ewes under western Kansas conditions have been studied since 1990. Results from the spring lamb crops of 1992 and 1993 show an overall conception rate of 88.1% and a 140% lamb crop. Average daily gains were about .5 lb., both preweaning and postweaning.

Introduction

Development of the Katahdin breed began in Maine during the late 1950s with crosses among African hair sheep. The original breeder believed that putting protein into growing wool detracted too much from the production of meat. Thus, the Katahdin was developed to meet the need of a hardy meat sheep that required no shearing. However, crosses subsequently were made with Suffolk and other wool breeds to add meatiness. In 1976, Wiltshire Horn germplasm was introduced to the breed to add size and improve carcass quality. Today, the Katahdin generally breeds true with white hair predominating, though various color patterns and vestiges of wool can occur. The breed was named for Mt. Katahdin, Maine's loftiest peak and the northern head of the Appalachian Trail.

Experimental Procedure

The general objectives of this project are to determine the reproductive characteristics and production performance of the Katahdin under western Kansas conditions. An early specific objective was to determine if Katahdin ewes would breed and conceive from mid-May through mid-July to produce fall-born lambs.

The first NWREC Katahdin flock of 15 ewe lambs and two ram lambs arrived in Colby during November of 1989. The ewes were exposed to the Katahdin rams during the summers of 1990 and 1991 for lambing during the fall of those years. Disappointing fall-lambing results prompted switching the flock to a spring-lambing schedule.

[1]*Northwest Research-Extension Center*

Results and Discussion

The results discussed here are from the spring lamb crops of 1992 and 1993. Preweaning data are presented in Table 1. Percent conception varied greatly with year, because an increase of three open ewes was expressed as a 14% decrease in conception rate. The overall rate of 88.1% is lower than that expected for other spring-lambing ewes in the NWREC flock. The 140% lamb crop produced by the Katahdin ewes was also less than expected from the other spring-lambing group. Comparison to that group may not be entirely appropriate, because it contains all crossbred ewes and most are part Finn.

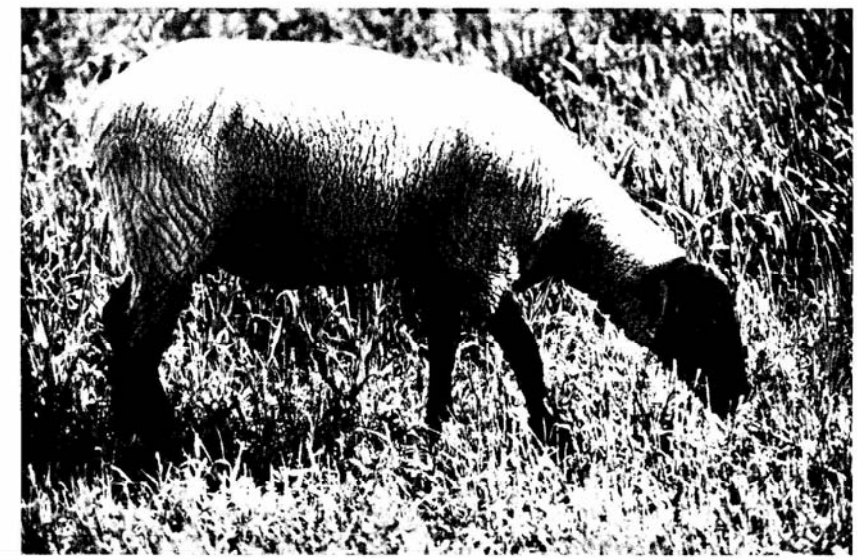
Table 1. Preweaning Data

Item	Year 1992	Year 1993	Total
No. ewes exposed	21	21	42
No. ewes lambed	20	17	37
% ewes lambed	95.2	81.0	88.1
No. lambs born	33	26	59
% lamb crop	157.1	123.8	140.5
Lambs/ewe lambing	1.65	1.53	1.59
No. multiple births	12	9	21
% multiple births	60.0	52.9	56.8
Avg. birth weight (lb.)	7.8	9.7	8.6

Weaning and postweaning data are shown in Table 2. Average daily gains were about .5 lb., both preweaning and postweaning. Death losses were high but not greatly different from those of other spring-lambing ewes in the NWREC flock.

Table 2. Weaning and Postweaning Data

Item	Year 1992	Year 1993	Total
No. lambs weaned	27	22	49
% born weaned	81.8	84.6	83.1
Avg. weaning weight (lb.)	31.9	30.0	31.0
ADG birth - weaning (lb.)	0.492	0.403	0.452
No. lambs marketed	25	19	44
% born marketed	75.8	73.1	74.6
Avg. market weight (lb.)	110.5	112.7	111.5
ADG weaning - market (lb.)	0.517	0.543	0.528



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