

# **Economic Analysis of Alternative Sheep Enterprises in Oklahoma**

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## TERMS

For persons not familiar with descriptive statistics, the following explanations may be helpful in interpreting the survey results reported here:

The term "mean" as used in the tables is the arithmetic average of all the survey records. "Median" indicates the mid-point with one-half of the survey results below and one-half above this figure. "Range" represents the lowest and highest answers obtained from farmers for a given question. "Mode" is the answer obtained from more farms in the survey than any other reply.

Standard deviation is a measure of variation about the mean. Two-thirds of all farm flocks surveyed would be expected to be within one standard deviation of the mean (average), or to be included in a range of plus or minus one standard deviation around the mean.

# **Economic Analysis of Alternative Sheep Enterprises in Oklahoma**

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## **INTRODUCTION**

This bulletin presents data which will help farmers and ranchers evaluate sheep as a source of income on individual farms and ranches in Oklahoma. The results presented here represent typical expectations of commercial sheep producers in this state.

The sheep industry in Oklahoma consists primarily of: (1) commercial flocks of western ewes<sup>1</sup> producing milk-fed lambs for early spring marketing; (2) feeder lamb flocks, finished on either small grain pasture or in dry lot; and (3) purebred farm flocks for show purposes, and for the production of rams for commercial farm flocks. This analysis considers only the first two systems of production.

The primary objective of this research is to specify conditions under which these two types of sheep enterprises may be profitable. The specific objectives were as follows:

- (1) To estimate physical input-output relationships for the selected sheep systems.
- (2) To budget income expectations for the selected sheep systems.

## **Trend in Sheep Numbers in Oklahoma**

Figure 1 shows the relative increases and decreases in sheep numbers in Oklahoma and in the United States since 1920.

Stock<sup>2</sup> sheep and lamb numbers in Oklahoma have more than doubled since 1949. However, the 240 thousand head in 1959 is much below the high of 340 thousand head on Oklahoma farms and ranches in 1940.

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\*The authors express their appreciation to the county agents, farmers, and O.S.U. personnel who cooperated in this study. Survey schedules were taken in Alfalfa, Garfield, Grant, Kay, Kiowa, and Jackson Counties.

<sup>1</sup>Few commercial farm flocks in Oklahoma have native ewes, although there are some mixed flocks.

<sup>2</sup>Stock refers to lambs, ewes and rams in the foundation flock. The difference in this number and numbers for "all sheep and lambs" is that "all sheep and lambs" include sheep and lambs on feed.

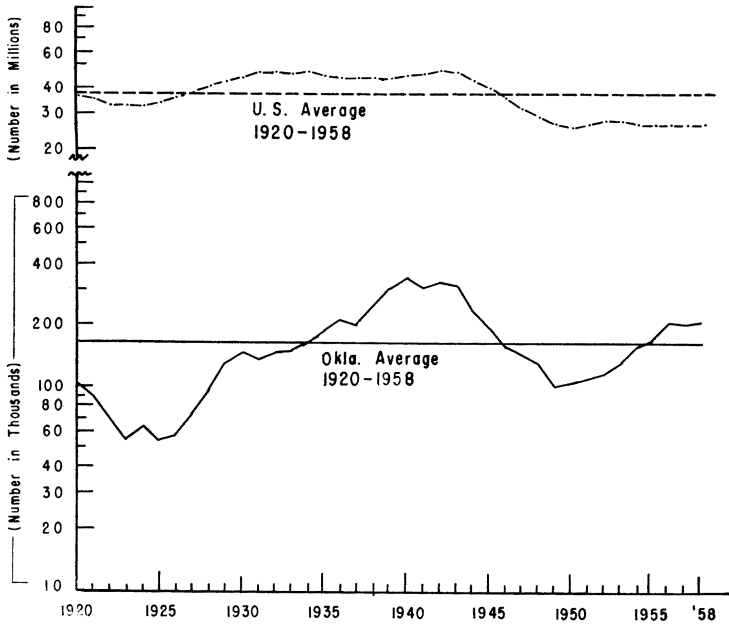


Fig. 1 Stock sheep and lamb numbers on farms and ranches in Oklahoma and in the United States, 1920-1958. Oklahoma sheep numbers have fluctuated more than the U. S. numbers. The slopes of the lines indicate relative rates of increases and decreases for the two areas described, since the data are plotted on a semi-logarithmic chart.

A decline in the farm labor supply, and the relatively low labor requirements for a farm flock system in months when crop labor requirements are highest, are two primary reasons for the recent increase. Low capital requirements and relatively high prices for lambs and wool (with the incentive payment) are contributing factors.

## Sources of Data

Data were secured from sheep producers in both north central Oklahoma and southwestern Oklahoma. A stratified random sample of sheep producers was drawn and information secured from them by personal interview during the summer of 1957. Commercial farm flock operators interviewed had been in the sheep business an average of 14 years.

Feed requirements also were obtained from experimental data provided by the Animal Husbandry Department of Oklahoma State University and from lamb feeding experiments and flock feeding data from Experiment Stations in Texas, New Mexico, Kansas, Missouri, and Colorado. Sheep specialists at Oklahoma State University examined

the experimental data and the data obtained from the survey, and assisted in the development of representative input-output data for typical Oklahoma farms and ranches.

Prices paid for feeder lambs, for ewes of various ages, and for western yearling ewes were obtained from interviews with producers, from price quotations for the Oklahoma City livestock market, and from price data obtained from other markets in the area. Prices received by Oklahoma farmers for spring lambs, fed lambs, ewes, and wool were obtained from the Agricultural Marketing Service of the USDA. Prices paid by farmers for feeds, minerals, fencing and miscellaneous costs were obtained from the survey, from *Agricultural Prices*, and from farm supply agencies.

## SURVEY RESULTS

### Commercial Ewe Flock

Data on ewe flock operations as reported by the farmers surveyed are given in Table 1. The percentage of ewes lambing varied considerably from farm to farm, but the standard deviation indicates that two-thirds of the flocks surveyed would be included in the range of 81 to 105 percent in a normal year. The indicated range in average lamb crop marketed, 87 to 107 percent, is relatively narrow, considering that different breeding and management practices could cause a wide variation. Variation in market lamb weights was also relatively small.

**Table 1.—Summary of Ewe Flock Operations, as Reported by Farmers Surveyed<sup>a</sup> (Data are for all years)**

Items	Range	Mean	Median	Standard Deviation
Number of Ewes	10-350	90	65	—
Number of Rams	1-13	3	2	—
Percent Ewes Lambing	53-100	93	95	11.7
Percent Lamb Crop Born	47-170	112	110	22.3
Percent Lambs Died	0-50	9	6	—
Percent Lamb Crop Mktd. <sup>b</sup>	39-167	97	100	10.4
Market Weight Lamb (Lbs.)	75-110	92.5	92	7.8
Days on Farm	150-210	178	180	—
Daily Gain (Lbs./Day)	.42-.63	.52	.53	—
Number Lamb Crops/Ewe	3-10	6	6	1.3
Number Years Ram Used	1-9	4	4	1.6

<sup>a</sup> Three farmers reported "double" lamb crops, (two lamb crops, or ewe produces lambs twice a year) but this is neither usual nor consistently possible. Therefore, the second lamb crops are not included in the data in this table.

<sup>b</sup> This percent is based on the total number of ewes in the flock, and not on the number of lambs born. If based on the number of lambs born, the mean for lamb crop marketed would be only 90 percent.

One-third of the farmers in the sample reported Wichita as their usual lamb market with 46 percent going to Oklahoma City and 21 percent to Enid and other local markets. On a volume basis, farmers in the sample marketed 35 percent of their spring lambs in Wichita, 53 percent in Oklahoma City, and 12 percent at other markets.

The average annual ewe death loss in the farm flock was 5.0 percent with "old age" being reported as the most important causal factor. The ram death loss averaged 6.1 percent and was caused almost entirely by old age or accidents. The lamb death loss averaged about 10 percent of the number of lambs born. The "at birth" death loss (which includes still-borns and cold weather losses) represented 58 percent of the total lamb losses.

### Labor Requirements

Table 2 indicates the average hours required for various jobs associated with the ewe flock enterprise, and the percentage of the total labor requirement for each of these jobs.

Table 3 indicates the labor requirements by month, and also the percent of the total labor occurring in each month. The greatest requirements are in the late fall and early winter, when crop labor requirements are generally lowest. The average annual labor requirement per ewe is approximately 4.5 hours for a 100-ewe flock.<sup>3</sup>

**Table 2.—Annual Labor Requirements for 100-Ewe Flock by Job and Percent of Total Labor Requirements by Job, as Reported by Farmers Surveyed**

Job	Number Farmers Reporting	Hours per 100 Ewes		Percent of Total
		Farmers Reporting Typical Jobs	All Farms	Labor Requirements (Based on All Farms)
	Each	Hours	Hours	Percent
Feeding	57	306.1	306.1	68.33
Lambing	38	78.3	55.8	12.46
Penning at Night	16	—	43.4	9.68
Transportation	43	20.4	14.8	3.31
Shearing	47	14.9	11.2	2.50
Moving (Pasture & Lots)	13	—	9.5	2.11
Drenching	44	5.4	4.5	1.01
Docking & Castrating	16	7.1	2.0	0.45
Dipping & Spraying	9	—	.7	0.15
Totals	—	432.2	448.0	100.00

<sup>3</sup>Spurlock (1) estimates annual labor requirements to be 5 hours per ewe; Pierce and Pugh (2) use estimates of 6 hours per ewe; and Smith and Mayo (3) use 3.9 hours per ewe.

**Table 3.—Percent of Total Labor Requirements and Hourly Labor Requirements for 100-Ewe Flock, by Month, as Reported by Farmers Surveyed<sup>a</sup>**

Month	Percent of Total Labor Requirements	Hours Labor Per 100 Ewes
January	12.02	53.85
February	11.12	49.82
March	9.01	40.37
April	6.57	29.43
May	4.75	21.28
June	2.63	11.78
July	1.69	7.57
August	3.62	16.22
September	8.44	37.81
October	13.61	60.97
November	13.78	61.73
December	12.76	57.17
Total	100.00	448.00

<sup>a</sup>Labor is for all essential elements for a 100-ewe flock; i.e., includes labor for rams and lambs.

Labor requirements per ewe were found to be related to the size of the ewe flock. Therefore, the relationship between the number of ewes and labor requirement per ewe was derived statistically.<sup>4</sup> The results are presented graphically in Figure 2. Due to the distribution of the sample flock sizes and the variations in practices, estimates for the smallest and largest size flocks are less reliable than for the medium size flocks.

The low "R<sup>2</sup>" value (.33) obtained for the equation indicates that factors other than size of the ewe flock affect labor requirements and result in large variations in labor requirements from farm to farm for similar size ewe flocks.

### Feed Requirements for Ewes and Rams

Farmers surveyed in both areas reported average harvested feed requirements of 108 pounds of grain and 196 pounds of hay equivalent<sup>5</sup> per head in a year of normal small grain grazing (Table 4). When small grain pasture was not available during the grazing season, the annual harvested feed requirements increased to 179 pounds of grain

<sup>4</sup>Three equations were fitted to the data obtained from the farm surveys. The equation which explained the greatest amount of variation in the labor requirements is plotted in Figure 2. This equation was  $Y = 1936.93 + 9.16 X_1 - 246.38 \sqrt{X_1}$  where Y = estimated annual labor requirements per 100-ewe flock and X<sub>1</sub> = size of ewe flock. The results indicate that as the ewe flock increases up to some optimum size (approximately 180 ewes), labor requirements per 100 ewes decrease.

<sup>5</sup>Hay equivalent means that all roughages fed have been converted to a hay basis. Three pounds of silage is assumed to equal one pound of hay.



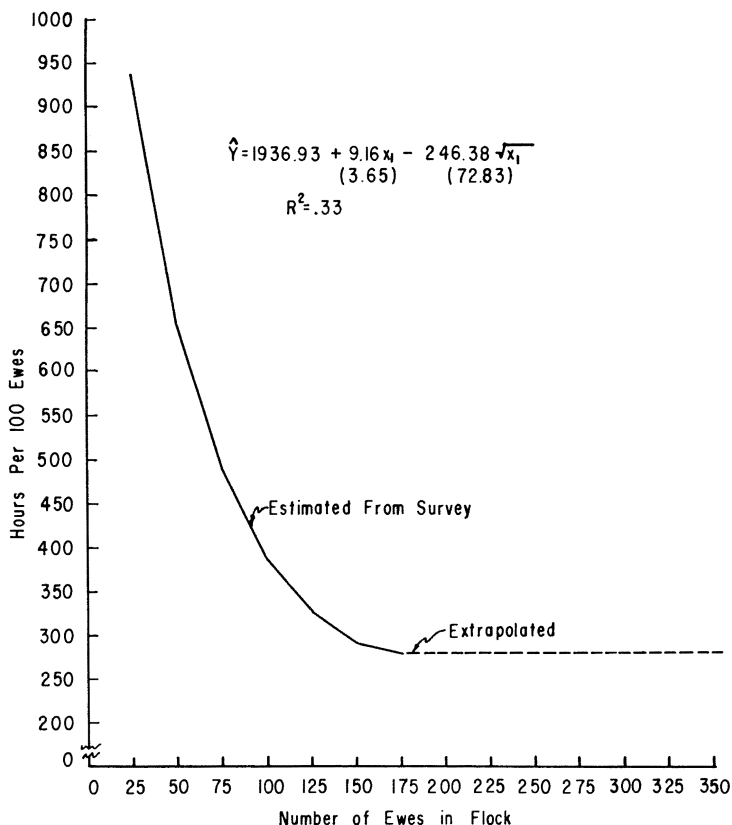


Fig. 2 Labor requirements per 100 ewes. As flock size increases, labor requirements per 100-ewe flocks decrease. The dotted line represents the expected labor requirements for large flocks. The data for flocks larger than 200 were too few to allow acceptable direct estimates.

and 481 pounds of hay. Table 4 also indicates that total digestible nutrients fed were 179 and 381 pounds per head, during normal and subnormal years, respectively.

### Creep Feeding Requirements

The farmers surveyed tended to creep spring lambs approximately the same length of time in years of both normal and subnormal small grain grazing (Table 5). In subnormal years, however, spring lambs consumed more grain and about the same amount of hay, and went to market at a lighter weight.

**Table 4—Harvested Feed Requirements for Ewes and Rams in Years of Normal and Subnormal Small Grain Grazing, as Reported by Farm Flock Operators Surveyed (Amount in Pounds Per Head)**

	Normal		Subnormal	
	Number Days Fed	Amount Fed/Period	Number Days Fed	Amount Fed/Period
Grain and Concentrates	127	108	173	179
Hay Equivalent	133	196	182	481
TDN	—	179	—	381

**Table 5—Harvested Feed Requirements for Lambs in Creep in Years of Normal and Subnormal Small Grain Grazing, as Reported by Farm Flock Operators Surveyed (Amount in Pounds Per Head)**

	Normal		Subnormal	
	Number Days Fed	Amount Fed/Period	Number Days Fed	Amount Fed/Period
Grain and Concentrates	137	126	138	165
Hay Equivalent	130	124	128	125
TDN	—	158	—	191

## Feeder Lambs

The feeder lamb survey data are based on data from feeder operators in Alfalfa, Garfield, Grant, Kay, Kiowa, and Jackson counties. Only five of the 20 farmers surveyed reported using dry lot feeding operations alone. The small grain system of fattening feeder lambs includes farmers who used primarily small grain grazing with some supplemental feeding to finish the lamb for market.<sup>6</sup> For these two systems of feeding lambs, the average experience for feeder operators was 11 years.

## Death Losses

Feeder lamb death losses were a small percentage of the total number of feeder lambs purchased (Table 6). The "miscellaneous" classification includes lamb deaths for which the farmer did not remember the cause and those for which the symptoms were not recognized.

## Labor Requirements

The average estimated labor requirements for 100 feeder lambs was 94 hours (Table 7). This varied greatly from farm to farm, making

<sup>6</sup>Only one of the farms surveyed had fattened lambs entirely on small grain pasture every year, although several farms had alternately used dry lot, small grain grazing, or a combination of these two systems, depending on the amount of grazing available in a given year.

**Table 6—Death Losses by Cause for Feeder Lambs, as Reported by Feeder Lamb Operators Surveyed**

Cause of Death	1956-57			Typical		
	Number of Producers Reporting Loss	Percent of Total Losses	Percent of Total Lambs	Number of Producers Reporting Loss	Percent of Total Losses	Percent of Total Lambs
Dogs or Coyotes	4	8.52	.13	3	11.15	.20
Parasites	5	35.96	.56	4	19.68	.34
Overeating	5	13.88	.22	2	11.47	.20
Accidents	2	2.21	.03	2	3.93	.07
Other (Miscellaneous)	7	39.43	.62	6	53.77	.94
Total	23 <sup>a</sup>	100.00	1.55	17 <sup>a</sup>	100.00	1.75
Standard Deviation	—	—	2.34	—	—	1.85

<sup>a</sup>Some producers reported losses from several causes. Other feeder operators had no losses, or losses from only a single cause.

**Table 7—Feeder Lamb Labor Requirements by Job for Feeder Lamb Operations, as Reported by Feeder Lamb Operators Surveyed**

Job	No. Farmers Reporting This Job	Hours/100 Lambs	Percent of Total Labor Requirement
Feeding	12	61	64
Penning at Night <sup>a</sup>	5	16	18
Shearing <sup>b</sup>	7	7	7
Moving <sup>c</sup>	3	5	5
Transportation	6	2	2
Drenching	6	1	1
Fence Repair	3	1	2
Vaccination	5	1	1
Total		94	100
Standard Deviation		67	

<sup>a</sup>When applicable (dry lot operation already in corral).

<sup>b</sup>Some feeder operators did not shear the lambs while they had them.

<sup>c</sup>Moving means moving from lot to lot and from pasture to pasture.

the standard deviation 67 hours. Feeding accounted for 64 percent of total labor requirements. Shearing accounted for seven percent. However, not all farmers sheared their feeder lambs. Thus, for the non-sheared flocks, total labor requirements would be approximately 7 hours less than the total shown in Table 7. Drenching was sometimes performed before purchase, or before the lambs arrived on the farm. The fact that some farmers performed more jobs, such as shearing, accounts in part for the large degree of variability in labor requirements.

Estimated labor requirements for the small grain lamb-fattening operation averaged 11 hours per 100 feeder lambs. However, as only one farmer gave estimated requirements for small grain grazing as a separate operation, this estimate may not be representative.

## Feed Requirements

Feed requirements are shown in Table 8. Gains shown in that table are based on the purchase weight (usually at shipping points in Texas or New Mexico) and the sale weight at the stock yards. Very few operators weigh the lambs while they are on the farm. Thus, feed requirements as indicated in Table 8 actually include the feed required to make up for shrinkage at both ends of the feeding operation. The average daily gain per lamb possibly would have been higher also, had the additional weight gain to make up for the shrinkage been included in the weights.

Feeder operators reported average daily gains of .32 pounds per lamb in dry lot and .31 pounds per lamb grazing on small grain pastures. Lambs grazing on small grain pasture were typically lighter in weight when purchased, and usually were held on the farm for a longer period of time—an average of 139 days as compared to 112 days for lambs in dry lot. Data presented in Table 8 indicates that small grain pasture apparently substituted for 398 pounds of grain and 390 pounds of hay (in producing weight gains of 100 pounds).

## Miscellaneous Costs

Costs of vaccinating, drenching, and dipping are given in Table 9. The average cost for custom dipping was 10 cents. However, this is not an appropriate estimate if the farmer dips the lambs himself. Estimates by informed observers place the "out-of-pocket" cost for dipping on the farm at approximately three cents per feeder lamb.

**Table 8—Harvested Feed Requirements for Feeder Lambs in Dry Lot and Grazing on Small Grain Pasture, as Reported by Feeder Lamb Operators Surveyed (Amount Fed Measured in Pounds of Feed per 100 Pounds Gain)**

	Dry Lot		Small Grain Grazing	
	Number of Days Fed	Amount Fed /Period	Number of Days Fed	Amount Fed /Period
Grain and Concentrates	112	572	a	174
Hay Equivalent	112	598	a	208
TDN	—	728	—	234

<sup>a</sup>The number of days that feeder lambs on small grain grazing were fed grain and hay depended on the weather, and the length of time the operator fed to supplement the lambs grazing on small grain pasture.

## Wool Production and Shearing Costs

### Wool Production

Average wool production per ewe was 10.72 pounds (Table 10). The standard deviation of 2.01 pounds is relatively small, considering the many different crosses of western ewes and the various management practices used by farmers.

Feeder lambs produced an average of 5.35 pounds of wool per lamb sheared. Not all feeder operators sheared their lambs. Feeder lambs purchased in the early fall to be fed for a fairly long time were generally sheared. Some feeder operators sheared in January and February and sold the lambs four to six weeks later, thus securing income from the wool but taking a price discount (usually a 1 to 2 cent per pound reduction from the "going" market price) because of short pelts when the lambs were marketed.

Several farmers stated that one of the main reasons for shearing feeder lambs is to take off five or more pounds which allows lambs to be held longer and to put on additional weight. This has become particularly important in recent years when feeder lambs have been unusually heavy (70 pounds or more per head when purchased). One disadvantage to shearing lambs on small grain pastures, unless done early in the feeding period, is that they do not have enough wool to keep them warm in wet, freezing weather.

**Table 9—Vaccinating, Drenching, and Dipping Costs, as Reported By Feeder Lamb Operators Surveyed**

Practice	No. of Farmers Reporting Practice	Price in Cents per Head	
		Mean	Range
Vaccinating <sup>a</sup>	8	9	6-12
Drenching	12	7	6-11
Dipping	1 <sup>b</sup>	10	10

<sup>a</sup>This is the Bacterin vaccination for enterotoxemia (overeating disease). Antitoxin which gives immediate protection costs considerably more. If lambs are vaccinated 8 to 10 days before being placed in dry lot on full feed, then the Bacterin is satisfactory.

<sup>b</sup>This would be considerably higher if all feeder lambs that were dipped in Texas and New Mexico before being shipped were included. This only includes dipping after the feeders arrived on farm.

**Table 10—Typical Wool Production, as Reported by Feeder Lamb and Ewe Flock Operators Surveyed (Pounds Wool Per Head)**

Kind	Mean	Range	Mode	Standard Deviation
Ewe	10.7	4.5-17.7	10	2.01
Ram	9.0	4.5-20	8	3.03
Feeder Lamb	5.4	2.5- 8.5	6	1.45

## Shearing

Table 11 presents shearing costs for ewes, rams, and feeder lambs. Typical shearing charges for budgeting purposes appear to be 40 cents per head for feeder lambs, 50 cents per head for ewes, and 60 cents per head for rams.

## SELECTED SHEEP ENTERPRISES

### Price Relationships<sup>7</sup>

For budgeting, one must determine expected prices to be paid for resources and received for products over the planning period of the individual firm. Obviously, prices for future periods are unknown, yet predictions must be made if the consequences of alternative decisions are to be evaluated.

There are several bases for price predictions, and it has been shown that average prices over a recent period often provide an acceptable estimate of long-term prices. Average prices over some recent period are particularly valid for establishing the relationships between the prices of resources and products. Such price ratios are often adequate for choosing between alternative systems, but absolute price levels are needed to predict income levels, debt repayment capacity, etc. Thus, where long-term capital commitments are under consideration, an estimate of absolute price levels is needed.

For purposes of budgeting, average prices for the ten-year period 1947-56 were used (Table 12). This period was not influenced by price controls, and it included years of decreasing and increasing sheep numbers, and years of low and high prices for sheep products. Although

**Table 11—Shearing Costs for Ewes, Rams, and Feeder Lambs, as Reported by Ewe Flock Producers and Feeder Lamb Operators Surveyed (Cost in Cents Per Head)**

	North Central <sup>a</sup>			Southwestern <sup>a</sup>			Both Areas		
	Ewes	Rams <sup>b</sup>	Feeder Lambs	Ewes	Rams <sup>b</sup>	Feeder Lambs	Ewes	Rams	Feeder Lambs
Range	—	50-100	35-50	35-50	50-100	35-50	35-50	50-100	35-50
Mode	50	50	40	50	50	40	50	50	40
Mean	50	55	42	47	75	42	49	62	42

a Jackson and Kiowa farmers usually hire Mexican shearers. Alfalfa, Garfield, Grant, and Kay farmers use mostly local shearers.

b Cost for shearing ram in north central counties appears to be same as for shearing ewe. In southwestern counties many shearers charge twice as much to shear ram as they do to shear ewe.

<sup>7</sup>A discussion of seasonal variation in spring lamb and fed lamb prices, and also prices of yearling ewes, feeder lambs, ewes and wool is presented in Okla. Agri. Exp. Sta. Bulletin B-517.

lamb prices rose in 1950 to an all-time peak, this rise was not due entirely to the outbreak of the Korean hostilities, but rather to other factors inherent in the red meat supply and demand situation at that time. The sharp drop in prices in 1951 seems to support this reasoning. Prices during other periods are also presented in Table 12 for comparison.

**Table 12—Prices Paid by Farmers<sup>a</sup> for Production Goods, and Prices Received by Farmers<sup>b</sup> for Resulting Sheep Products, for Various Periods**

Commodity	Unit	Price in Dollars per Unit			
		1947-56	1952-56	1956	1957
<i>Resources:</i>					
Alfalfa Hay	ton	27.82	30.53	28.92	28.22
Milo	cwt.	2.34 <sup>c</sup>	2.29	2.02	1.88
Corn (U. S.)	bu.	1.50 <sup>c</sup>	1.43	1.30	1.16
Oats (U. S.)	bu.	.78 <sup>c</sup>	.73	.66	.66
Rye (U. S.)	bu.	1.45	1.25	1.08	1.07
Barley (U. S.)	bu.	1.21	1.12	.96	.91
Salt (U. S.)	cwt.	1.37	1.47	1.52	1.56
Minerals (U. S.)	cwt.	6.25	6.32	6.50	5.00
Feeder Lambs <sup>d</sup>	cwt.	19.00	16.40	14.94	18.03
Yearling Ewes <sup>d</sup>	head	21.00	17.85	18.00	21.00
Rams <sup>d</sup>	head	60.00	60.00	60.00	60.00
<i>Products:</i>					
Spring Lambs (Ch. & Pr.)	cwt.	24.64	22.76	21.50	21.98
	(G. & C.) cwt.	22.74	21.22	20.27	20.77
Lambs (Ch. & Pr.)	cwt.	23.34 <sup>e</sup>	19.69	17.73	22.18
	(G. & C.) cwt.	21.47 <sup>e</sup>	18.59	19.04	21.04
Ewes & Rams (G. & C.)	cwt.	8.31 <sup>f</sup>	5.78	4.64	6.37
	(C. & U.) cwt.	7.05 <sup>f</sup>	4.80	3.64	4.79
Wool <sup>g</sup>	lb.	.44	.41	.33	.44

<sup>a</sup>Prices are quoted for Oklahoma products and resources unless otherwise noted. The last three resources and the products except wool are prices paid and received on the Oklahoma City market. Oklahoma wool prices were obtained from *Agricultural Prices*, USDA, AMS. Prices for alfalfa hay and milo are prices received by Oklahoma farmers since these resources could be purchased locally.

<sup>b</sup>United States prices for corn, oats, rye and barley are prices received by farmers and were obtained from *Agricultural Prices*, USDA, AMS.

<sup>c</sup>The ten-year average prices of the three grains—milo, corn, and oats—were averaged together to derive the \$2.48 per hundredweight of grain for purposes of budgeting.

<sup>d</sup>Feeder lamb prices (paid by farmers) are usually quoted from August to November for purchase by Oklahoma farmers. Yearling ewe prices (paid by farmers) are usually quoted in the spring months. Thus, the annual averages are only for these months in both instances. Ram prices are prices paid by commercial flock producers to pure bred flock producers.

<sup>e</sup>The average price (\$22.40) of the two grades of lambs is used for purposes of budgeting.

<sup>f</sup>The average price (\$7.68) of the two grades of ewes is used for purposes of budgeting.

<sup>g</sup>Wool prices do not include the incentive price paid by the Government in 1955, 1956 and 1957. This would have increased Oklahoma wool price to a higher level, but the incentive price received varies from year to year.

## **Feeder Lamb Prices**

A large percentage of the feeder lambs on Oklahoma farms are purchased through Oklahoma City brokers. Therefore, prices shown in Table 12 are the average price paid by farmers for feeder lambs on the Oklahoma City market. Most of the lambs originate in the San Angelo area of Texas or in the Roswell area of New Mexico.

## **Yearling Ewe Prices**

The price paid for yearling ewes was derived from estimates made by the farmers interviewed, as revised by price data obtained from the Oklahoma City livestock market. The ten-year (1947-55) estimated price paid was \$21.00 per head for western yearling ewes, purchased in April and May and delivered at Oklahoma City. The average in 1957 was approximately \$20 per head, and it was \$21 per head in 1958.

## **Ram Prices**

The normal range of prices quoted as being paid for yearling purebred rams was \$50 to \$75, with a typical price of \$60. These estimates were obtained from several purebred flock owners who sell rams, and from commercial farm flock operators who purchase them.

## **Input-Output Relationships and Income Expectations**

Table 13 presents estimates of typical requirements and production rates for four systems of sheep production. In all cases, the input-output data given in this table have been checked for reasonableness and consistency by comparing them with similar data from other sources and with estimates of informed persons. In certain cases, the survey data have been adjusted on the basis of experimental data. However, individuals using these data may need to make adjustments to their existing farm situations.

Certain adjustments in the data require elaboration. The feed requirements for feeder lambs in dry lot are average requirements derived from the results of experimental feeding trials in several states. The results obtained from the survey sample suggest greater feed inputs than required for an efficiently managed feeder lamb operation. Several reasons why farmer estimates are higher than experimental results may be; (1) farmers tend to base their estimates on the most recent years, and these have been drought years; (2) good, light-weight feeder lambs for fattening have been difficult to purchase in the last few years (usually the lambs are in the 70-pound range which does not allow the farmer to put as much weight on the lamb as desired, or to attain an optimum feed conversion ratio); and, (3) the lamb purchase weight is usually the weight at the originating market, and the sale



**Table 13—Resource Requirements and Production for Selected Sheep Systems as Determined from Farmer Surveys and Experimental Data**

Item	Unit	100 Ewe Flock		100 Feeder Lamb Flock		
		Normal Year	Subnormal Year	Dry Lot		Normal Year
				Shear	Not Shear	
<b>Resources:</b>						
Native Pasture	A.U.D.G. <sup>a</sup>	4,015	4,015	50	50	50
Sudan Pasture	A.U.D.G. <sup>a</sup>	1,953	1,953	--	--	--
Small Grain Pasture	A.U.D.G. <sup>a</sup>	1,953	456	--	--	643
<b>Grain</b>						
Rams & Ewes <sup>b</sup>	cwt	111.24	184.37	--	--	--
Lambs <sup>b</sup>	cwt	122.22	160.05	157.50	157.50	74.82
<b>Hay</b>						
Rams & Ewes <sup>c</sup>	Tons	10.10	24.77	--	--	--
Lambs <sup>c</sup>	Tons	6.01	6.06	7.875	7.875	4.47
Replacement Ewes <sup>b</sup>	Each	21	21	--	--	--
<b>Establishment of</b>						
Sudan <sup>e</sup>	Dollars	54.50	54.50	--	--	--
Miscellaneous <sup>f</sup>	Dollars	91.72	91.72	126.96	126.96	126.96
<b>Ram Depreciation &amp; Death Loss<sup>g</sup></b>						
Tax <sup>h</sup>	Dollars	50.52	50.52	--	--	--
Labor <sup>i</sup>	Hours	20.60	20.60	--	--	--
Minerals <sup>j</sup>	cwt	450	500	94	87	11
Salt <sup>j</sup>	cwt	4	4	1.12	1.12	1.40
Shearing <sup>k</sup>	Dollars	4	4	1.12	1.12	1.40
<b>Products:</b>						
Lambs <sup>l</sup>	Each	49.30	49.30	40.00	--	--
Cull Ewes <sup>m</sup>	Each	97	97	98	98	98
Wool <sup>n</sup>	Pounds	16	16	--	--	--
		1,045	1,045	535	--	--

- a Animal Unit Days Grazing is determined on the basis of a minimum of 90 days grazing on normal small grain pastures, 21 days grazing on subnormal small grain pastures, 90 days grazing on sudan grass, 7 days grazing on native pasture by feeder lambs, and 185 days grazing on native pasture by the ewe flock. The coefficients were derived by using Forster's (6) estimates of 14 lambs or 7 ewes or 7 rams to one animal unit. The ewe flock operation has 193 ewes and rams and 97 lambs for 21.7 A.U. and the feeder lamb operation has 100 feeder lambs for 7.1 A.U.
- b 103 ewes and rams consumed an average of 108 pounds of grain per head annually for a total of 111.24 hundredweights of grain in a normal year and 179 pounds of grain per head annually for a total of 184.37 hundredweights of grain in a subnormal year. Milk-fed lambs (97) required 126 pounds per head or 122.22 hundredweights of grain in a normal year and 165 pounds per head or 160.05 hundredweights of grain in a subnormal year. Feeder lambs (100) in dry lot consumed 450 pounds of grain per one hundred pounds gained or 15,750 pounds (157.5 cwt) were required to obtain weight gains of 3,500 pounds, based on a 35 pound gain per lamb. Feeder lambs in a normal year of small grain grazing (100) required 174 pounds of grain per 100 pounds gain, or 7,482 pounds (74.82 cwt) of grain for 4,300 pounds gain, based on 43 pound gain per lamb. All grain requirements are estimates obtained from the survey sample with the exception of dry lot feeder lambs. The 450 pounds of grain per 100 pounds gain estimate is based on experimental data and survey data combined.
- c 103 rams and ewes consumed 196 pounds of hay per head annually in a normal year and 481 pounds of hay per head annually in a subnormal year. The annual requirements were 10.1 and 24.77 tons of hay for the normal and subnormal grazing operations, respectively. Milk-fed lambs required 124 and 125 pounds of hay per head for creeping in normal and in subnormal grazing years, respectively. Feeder lambs (100) in dry lot required 450 pounds of hay per 100 pounds of gain for a total of 15,750 (7.875 tons) for the period of feeding. Feeder lambs (100) on small grain pasture required 208 pounds of hay for 100 pounds of gain. All hay requirements, with the exception of dry lot feeder lambs, are estimates obtained from the survey sample. The estimate of 450 pounds of hay per 100 pounds gain is based on experimental data and survey data combined.
- d Replacement ewes are determined on the assumption of 6 lamb crops before selling the ewe (replace 1/6 or 16 of the old ewes annually) and a death loss of 5 percent or 5 ewes each year.
- e Estimated costs of establishing sudan grass are \$5.45 per acre. Based on the survey, approximately 10 acres were needed to graze the ewe flock for 90 days during the summer ( $10 \times \$5.45 = \$54.50$ ).

- f Miscellaneous costs for the ewe flock include: Drenching, \$.07 head for 103 ewes and rams; commission \$.10 head for 97 lambs and 16 cull ewes; transportation to market; \$.25 head for 97 lambs and 16 cull ewes; yardage and handling, \$.17 head for 97 lambs and 16 cull ewes; and veterinary and medicine \$.25 head for 103 ewes and rams. Miscellaneous costs for the feeder lamb flock includes: transportation (\$.50 head) and buying commission (\$.10 head) for 100 feeder lambs; transportation (\$.25 head), selling commission (\$.10 head) and yardage and handling (\$.17 head) for 98 feeder lambs; and, vaccination (\$.09 head) and drenching (\$.07 head) for 100 feeder lambs.
- g An allowance is made for the salvage value of the ram (\$.7.05 per head based on the ten-year average price for cull ewes). This coupled with the estimated death loss of 6% and an expected useful life period of 4 years gives an annual depreciation cost of \$16.84 for each ram.
- h County Assessor Records indicate that the average assessed value of ewes and rams is \$5.00 per head. Based on \$4.00 tax per \$100.00 value, the tax per head is \$.20.
- i Labor requirements as estimated from survey sample averaged 4.5 hours per ewe for the ewe flock in a normal year (approximately .50 additional hours per ewe for feeding in subnormal year); .94 hours per feeder lamb in dry lot if shorn; .87 hours per feeder lamb in dry lot if not shorn; and .11 hours per feeder lamb on small grain grazing in a normal year.
- j Salt and minerals were each consumed at the rate of .01 pounds per day by ewes and rams, and lambs. These estimates were obtained from surveys and are also the approximate amount consumed in experimental trials.
- k Shearing costs are based on the survey estimates and computed as follows: 95 Ewes, \$.50 per head; 3 Rams, \$.60 per head; and 100 Lambs, \$.40 per head.
- l Number of lambs marketed is 97 (97 percent) for the ewe flock, and 98 for the dry lot and small grain grazing operation (based on a 1.75 percent death loss). These figures were estimated from the survey data.
- m Number of cull ewes sold is based on six lamb crops before selling the ewe, or replacing 1/6 of the ewe flock each year. This coefficient was determined from the survey sample.
- n Pounds of wool are based on the survey and computed as follows: 10.72 pounds per head for 95 ewes; 8.99 pounds per head for 3 rams; and, 5.35 pounds per head for 100 feeder lambs.

weight is the weight at the receiving market. The weight loss due to shrinkage at both ends is not considered by the farmer in his weight estimates. Thus, the actual feed data for each farm needs to be related to a weight gain of eight or ten additional pounds.

Harvested feed requirements for feeder lambs fattened on winter small grain pastures are significantly less than those for a dry lot operation. Although experimental results indicate that no hay is necessary for this type of feeding operation, actual farmer practices are to feed both hay and grain the last month or so. Dry roughage also is fed for a few days after lambs arrive on the farm and on rainy days when the lambs are not able to graze on the small grain pasture. The grain requirements as estimated from the survey are similar to typical results of experimental trials. The requirements of 174 pounds of grain and 208 pounds of hay per 100 pounds of gain appear to represent many small grain grazing operations in the State and thus are used in the budgets.

## **Enterprise Budgets**

In the following budgets, labor, capital, land, management and fencing costs are not included as a part of the annual resource costs. Because of the variability of the labor input (see page 9) and the difficulty of evaluating the other costs, the budget returns are gross returns to labor, capital, equipment, land, management, and fencing. However, such charges may be estimated in order to estimate net returns for a specific farm or ranch.

Incentive payments for wool, under the National Wool Act of 1954, fluctuate from year to year. For the budgets, an average estimate of \$.10

per pound for shorn wool and \$.60 per hundred pounds (liveweight) of lamb for pulled wool is used.

### **Ewe Flock**

Estimated resource costs and gross returns for a 100-ewe flock operation in a year of normal small grain grazing are shown in Table 14. It is assumed that the ewes lamb in November, and that the lambs are marketed in May. May is normally the month of highest prices for spring lambs on the Oklahoma City and Wichita markets.

The estimated annual gross income from the 100-ewe flock in a year of normal grazing is \$3,232.88. The annual variable resource costs are \$1,765.29, which leaves an estimated \$1,467.59 as gross returns to this operation.

In a year of subnormal small grain grazing, harvested feed costs increase considerably. The lambs gain less, and usually go to market lighter. Wool production probably also is reduced, since poor grazing conditions have an adverse effect on wool growth. However, no significant decrease in wool production was reported by the farmers surveyed, so the same estimates for wool are used in the budgets for both normal and subnormal grazing years. Thus, the budgets for years of normal and subnormal grazing are the same except for the increased hay and grain costs, and the decrease in the weight of lambs sold in a subnormal grazing year.

Annual variable resource costs for a subnormal small grain grazing operation are \$2,449.97 (additional hay and grain requirements represent a \$684.68 increase in variable costs). The annual gross income for the subnormal grazing operation is \$3,165.63, and gross returns are \$715.66 (Table 15). Thus, in a year of normal small grain pasture grazing, an annual gross return of approximately \$15 per ewe would be expected, while in a year of subnormal grazing, the annual gross return amounts to approximately \$7 per ewe.

### **Feeder Lambs**

Budgets for 100 feeder lambs in dry lot (both shorn and non-shorn) are presented in Table 16. A budget for a 100-feeder lamb small-grain grazing operation in years of normal small-grain pasture grazing is presented in Table 17.

For the particular set of assumptions used in these budgets, the dry lot feeder lamb operation returned \$86.55 more for 100 shorn lambs than for 100 lambs which were not shorn.<sup>8</sup>

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<sup>8</sup>Shorn lambs are usually discounted in price, according to the pelt length, when the lambs are marketed. The usual classification is to place the lambs on a number 1, 2, or 3 pelt basis, with number 1 being the longest and number 3 being a lamb that has been shorn shortly before marketing. If the lambs are sheared two or three months before marketing, they usually sell as a number one pelt with a discount from \$1.00 up per hundredweight off the price quoted for an unshorn lamb. For purposes of budgeting, the minimum discount of \$1.00 per hundredweight is considered.

**Table 14.—Estimated Resource Requirements and Income for a 100-Ewe Foundation Flock in a Year of Normal Small Grain Pasture Grazing (Ewes Lamb in November; Sell Lambs in May)<sup>a</sup>**

<b>Capital Investment</b>					
	<b>Unit</b>	<b>No. of Units</b>	<b>Price/Unit</b>	<b>Total</b>	
Ewes (Yearling)	Each	100	\$21.00	\$2,100.00	
Rams	Each	3	60.00	180.00	
Land for Sudan	Acre	10	100.00	1,000.00	
Native Pasture	Acre	100	50.00	5,000.00	
<b>TOTAL</b>				<b>\$8,280.00</b>	
<b>Annual Resource Costs &amp; Income</b>					
Hay					
103 Ewes & Rams	Ton	10.10	27.82	\$ 280.98	
97 Lambs (Creep)	Ton	6.01	27.82	167.20	
Grain					
103 Ewes & Rams	Cwt	111.24	2.48	275.88	
97 Lambs (Creep)	Cwt	122.22	2.48	303.11	
Replacement Ewes	Each	21	21.00	441.00	
Shearing					
Ewes	Each	95	.50	47.50	
Rams	Each	3	.60	1.80	
Miscellaneous	Total	--	--	91.72	
Minerals	Cwt	4	6.25	25.00	
Salt	Cwt	4	1.37	5.48	
Tax	Head	103	.20	20.60	
Sudan Grass	Acre	10	5.45	54.50	
Ram Deprec. & Death loss	Each	3	16.84	50.52	
<b>ANNUAL COSTS</b>				<b>\$1,765.29</b>	
<b>Product</b>	<b>Sold Lbs./Head</b>		<b>No. Units</b>	<b>Price/Unit</b>	<b>Total</b>
Milk Fed Lambs	97	93.5	90.695 cwt	\$27.13	\$2,460.56
Cull Ewes	16	125	20 cwt	7.68	153.60
Wool	--	--	1,045 lbs.	.44	459.80
Shorn Wool Incentive			1,045 lbs.	.10	104.50
Pulled Wool Incentive	97	93.5	90.695 cwt	.60	54.42
<b>TOTAL</b>					<b>\$3,232.88</b>
Estimated Gross Income	\$3,232.88				
Estimated Variable Costs	1,765.29				
Estimated return to labor, capital, equipment, land, & management	<u>\$1,467.59</u>				

<sup>a</sup> The May price is normally 110.1 percent of the annual average price for the Choice Prime grade of spring lambs. (Explanation of seasonal prices in Station Bulletin B-517.)

**Table 15—Estimated Resource Requirements and Annual Income for A 100-Ewe Flock in a Year of Subnormal Small Grain Pasture Grazing (Ewes Lamb in November; Sell Lambs in May)<sup>a</sup>**

<b>Capital Investment</b>					
	<b>Unit</b>	<b>No. of Units</b>	<b>Price/Unit</b>	<b>Total</b>	
Ewes (Yearling)	Each	100	\$ 21.00	\$2,100.00	
Rams	Each	3	60.00	180.00	
Native Pasture	Acre	100	50.00	5,000.00	
Land for Sudan	Acre	10	100.00	1,000.00	
<b>TOTAL</b>				<b>\$8,280.00</b>	
<b>Annual Resource Costs &amp; Income</b>					
<b>Hay</b>					
103 Ewes & Rams	Ton	24.77	27.82	689.10	
97 Lambs (creep)	Ton	6.06	27.82	168.59	
<b>Grain</b>					
103 Ewes & Rams	Cwt	184.37	2.48	457.24	
97 Lambs (creep)	Cwt	160.05	2.48	396.92	
Replacement Ewes	Each	21	21.00	441.00	
<b>Shearing</b>					
Ewes	Each	95	.50	47.50	
Rams	Each	3	.60	1.80	
Miscellaneous	Total			91.72	
103 Ewes & Rams	Cwt	184.37	2.48	457.24	
Salt	Cwt	4	1.37	5.48	
Tax	Head	103	.20	20.60	
Sudan Grass	Acre	10	5.45	54.50	
Ram Deprec & Death Loss	Each	3	16.84	50.52	
<b>TOTAL ANNUAL COSTS</b>				<b>\$2,449.97</b>	
<b>Product</b>	<b>Sold Lbs./Head</b>		<b>No. Units</b>	<b>Price/Unit</b>	<b>Total</b>
Milk Fed Lambs	97	91	88.27 cwt	\$27.13	\$2,394.77
Culled Ewes	16	125	20 cwt	7.68	153.60
Wool	--	--	1045 lbs.	.44	459.80
Shorn Wool Incentive			1045 lbs.	.10	104.50
Pull. Wool Incen.	97	91	88.27 cwt	.60	52.96
<b>TOTAL</b>					<b>\$3,165.63</b>
Estimated Gross Income	\$3,165.63				
Estimated Variable Costs	<u>2,449.97</u>				
Estimated returns to labor, capital, equipment, land, & management.	\$ 715.66				

<sup>a</sup> The May price is normally 110.1 percent of the annual average price for the Choice Prime grade of spring lambs. (Explanation of seasonal prices in Station Bulletin B-517.)

**Table 16—Estimated Resource Requirements and Annual Income for A 100-Feeder Lamb Operation in Dry Lot**

<b>Capital Investment</b>						
	Unit	No. of Units	Wt./Unit	No. of Cwt	Price/Cwt	Total
Feeder Lambs	Each	100	65	65	\$20.00 <sup>a</sup>	\$1,300.00
<b>Resource Costs and Income</b>						
	Lbs. for 100 # Gain	Total Cwt. Gained	Unit	No. of Units	Price/Unit	Total
Hay	450	35	Tons	7.875	\$27.82	219.08
Grain	450	35	Cwt	157.50	2.48	390.60
Trans. & Buying	--	--	Each	100	.60	60.00
Trans. & Selling	--	--	Each	98	.52	50.96
Minerals	--	--	Cwt	1.12	6.25	7.00
Salt	--	--	Cwt	1.12	1.37	1.53
Vacc. & Drench	--	--	Each	100	.16	16.00
Resource Costs (Not Shear)						\$745.17
Shearing	--	--	Each	100	.40	40.00
Misc. Wool Costs <sup>b</sup>	--	--	--	--	--	9.00
Resource Costs (Shear)						\$794.17
	<i>Shear</i>		<i>Not Shear</i>			
Capital Costs	\$1,300.00		\$1,300.00			
Resource Costs	794.17		745.17			
Variable Costs	<u>\$2,094.17</u>		<u>\$2,045.17</u>			
<b>Not Shear</b>	No. of Units	Wt./Unit	No. Units	Price/Unit	Total	
Fat Lambs	98 <sup>c</sup>	100	98 cwt.	\$22.40	\$2,195.20	
Pulled Wool Incentive	98	35	34.3 cwt.	.60	20.58	
					<u>\$2,215.78</u>	
<i>Shear</i>						
Fat Lambs	98 <sup>c</sup>	100	98 cwt.	21.40	2,097.20	
Wool	100	5.35	535 lbs.	.44	235.40	
Shorn Wool Incentive <sup>d</sup>	535	.35	187.25 lbs.	.10	18.73	
					<u>\$2,351.33</u>	
		<i>Shear</i>	<i>Not Shear</i>			
Estimated Gross Income		\$2,351.33	\$2,215.78			
Estimated Variable Costs		2,094.17	2,045.17			
Estimated returns to labor equipment, capital, land & management		<u>\$ 257.16</u>	<u>\$ 170.61</u>			

a Ten year average price for feeder lambs was \$19.00 per hundredweight on the Oklahoma City Market. However, \$1.00 has been added to this cost to include a charge for shrinkage.

b Miscellaneous wool costs include two bags at \$1.00 each and 7 hours of labor for handling lambs (during shearing) and wool at \$1.00 per hour.

c Two lambs died based on 1.75 percent death loss.

d Pulled wool incentive is based on 5 pounds (average wt. of pulled wool per lamb) times 80 percent of the difference between the national average price per pound for shorn wool and the U. S. incentive level (62 cents/pound). The 60 cents/cwt is an approximate average for 3 yrs. incentive payments have been in effect. Feeder operator is only paid for the proportion of weight he puts on lamb. The lambs gained 35 pounds. For shorn wool incentive, feeder operator will receive .35 of incentive payment for wool or \$.10 pound for 187.25 pounds.

**Table 17—Estimated Resource Requirements and Annual Income for a 100-Feeder Lamb Operation on Small Grain Grazing, Normal Year**

<b>Capital Investment</b>							
	Unit	No. of Units	Wt./Unit	No. of Cwt	Price/Cwt	Total	
Feeder Lambs	Each	100	60	60	\$20.00 <sup>a</sup>	\$1,200.00	
<b>Resource Costs and Income</b>							
	Lbs. for 100 #	Total Cwt Gain	Total Cwt Gained	Unit	No. of Units	Price/Unit	Total
Hay	208	43		Ton	4.47	27.82	\$124.36
Grain	174	43		Cwt	74.82	2.48	185.55
Trans. & Buying	--	--		Each	100	.60	60.00
Trans. & Selling	--	--		Each	98.00	.52	50.96
Minerals	--	--		Cwt	1.40	6.25	8.75
Salt	--	--		Cwt	1.40	1.37	1.92
Vacc. & Drench	--	--		Each	100.00	.16	16.00
						Resource Cost	\$447.54
Capital Costs	\$1,200.00						
Resource Costs		447.54					
Variable Costs		<u>\$1,647.54</u>					
	No. of Units	Wt./Unit	No. of Cwt	Price/Cwt	Total		
Fat Lambs	98 <sup>b</sup>	103	100.94	\$22.40	\$2,261.06		
Pulled Wool Incentive <sup>c</sup>	98	43	42.14	.60	25.28		
			<b>TOTAL INCOME</b>		<u>\$2,286.34</u>		
Estimated Gross Income		\$2,286.34					
Estimated Variable Costs		<u>1,647.54</u>					
Estimated returns to land, labor, capital, equipment & management		\$ 638.80					

a Ten year average price for feeder lambs was \$19.00 per hundredweight on the Oklahoma City market. However, \$1.00 has been added to this cost to include a charge for shrinkage.

b Two lambs died based on 1.75 percent death loss.

c Pulled wool incentive has been in effect only since the 1955 marketing season. The price per hundredweight of live lamb is based on the average prices of the 1955-1957 marketing years. The feeder operator receives payment only on the weight the lamb has gained while in his possession. The original owner can file claim with his local ASC office for the weight of the lamb when sold to the feeder operator.

This assumes that shorn lambs gain more efficiently and do not require additional hay or grain (over the amount fed the non-shorn lambs) to put on five pounds of gain in place of the wool which has been shorn off. Experimental trials in Oklahoma partly substantiate this assumption. The dry lot feeder operation with shorn lambs returned \$257.16 annually, while the same type of feeding operation with non-shorn lambs returned \$170.61 annually.

It is estimated that 100 feeder lambs fattened on small grain pasture in a normal year of small grain grazing return \$638.80 annually. This is by far the largest return to land, labor, capital, management, equipment, and fencing. These figures provide conclusive evidence that wheat pasture grazing, when it is available, is a highly profitable method of fattening feeder lambs.

## Break-Even Prices for Dry-Lot Feeder Lamb Operations

Figure 3 can be used as a guide in determining approximate prices a feeder can afford to pay for feeder lambs, given several price levels

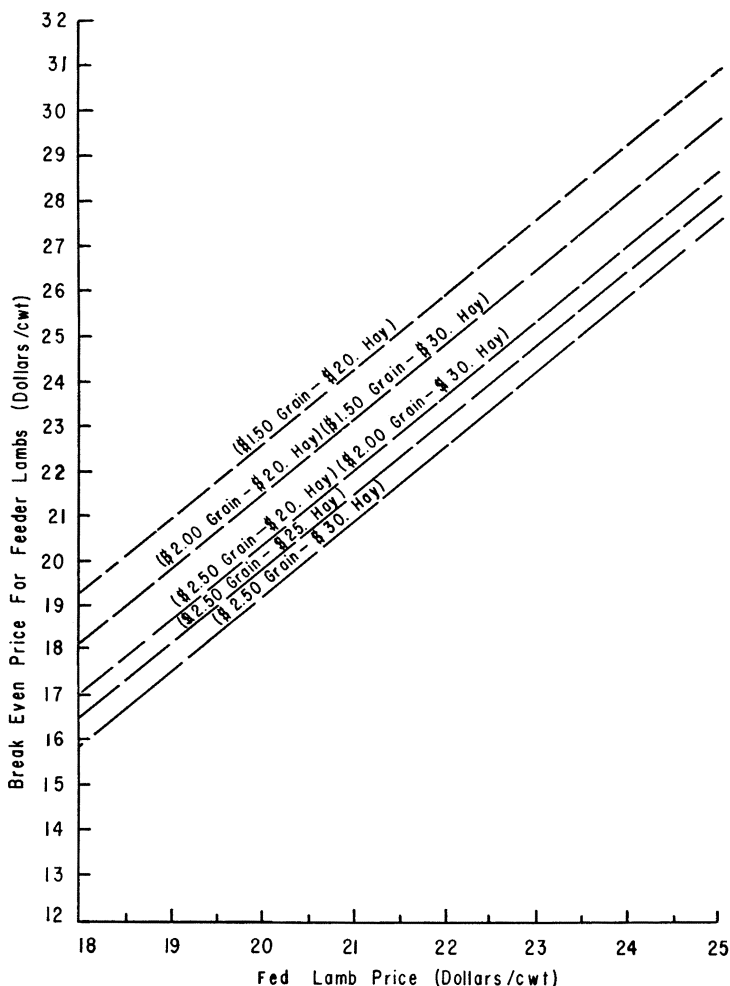


Fig. 3 Break-even prices for dry lot feeder lamb operations. These prices are based on the input data shown in Table 16, except that the purchase weight of the lambs is 70 pounds. The price the feeder operator pays for hay and grain largely determines how much he can afford to pay for the feeder lamb without incurring a loss on the operation. For example, if hay is \$30/ton and grain \$2.50/cwt, the break-even price, after variable costs are deducted, for feeder lambs is \$15.93/cwt and \$20.93/cwt if the expected selling price for fed lambs is \$18.00 and \$21.00 per hundredweight, respectively.



for fed lambs.<sup>9</sup> This chart also indicates the price the feeder operator would have to receive for the lamb to break even on his feeding operation, given the price paid for the feeder lamb.

The prices shown are computed, using the basic input-output data from Table 16 (i.e. 450 pounds each of hay and grain to produce 100 pounds gain on the lambs). It is assumed that the weight of the feeder lambs is 70 pounds. Thus, hay and grain are required for 30 pounds gain on each lamb plus feed to replace whatever shrinkage occurs in transit.

## RELATED FACTORS

Two factors cause some concern to individuals considering a sheep enterprise. They are: (1) the effects of increased production on the price received by farmers for their lambs; and, (2) the cost of establishing and maintaining fences.

### Effect of Expanded Production on Price

Impact on the lamb market of increased Oklahoma production must be considered. Oklahoma's total production is an insignificant part (1.25%) of total United States slaughter of lamb and mutton. The prices received per hundredweight of lamb by farmers in the United States and in Oklahoma are highly correlated. Therefore, it is assumed that, ignoring transportation costs, the price received by Oklahoma farmers will react essentially the same as the United States price. Based on an estimated price elasticity of demand of  $-.67$  (7), the annual average U.S. farm price received for lambs would have been \$19.45 in 1957 rather than the actual average price of \$19.82 (a reduction of only \$.37) per hundredweight, if Oklahoma production had been twice as much as the actual production.

Thus, it would appear that Oklahoma farmers and ranchers can increase stock sheep and lamb numbers (with the corresponding increase in fat lambs) substantially during the next few years without causing any significant decrease in the price received for lambs, if other things remain constant.

### Cost of Fencing

Although the cost of establishing a fence is not included in the budgets, it is a factor that must be considered in determining the economic returns to the various sheep enterprises.

The costs of four different types of fence construction for typical Oklahoma farming situations have been estimated. These are: (1) initial five barb wire; (2) initial woven with two barb wire; (3) initial

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<sup>9</sup>Miscellaneous variable costs were computed as follows: \$1.00 for shrink; \$.90 for labor (.9 hour at \$1.00 per hour); \$.60 for buying commission and transportation; \$.07 for minerals; \$.02 for salt and \$.16 for vaccination and drench. The total variable costs, excluding hay and grain, were \$3.27 per lamb.

woven with three barb wire; and, (4) addition of two barb wires to existing woven wire or barb wire fence. Estimated costs on a running rod basis for the various types of fencing are given in Appendix Table 2. Costs for corner assemblies and gates are also given. Costs for different fencing materials and labor were derived from current Oklahoma and United States figures and are shown in Appendix Table 1.

The costs per running rod for the various types of fencing include the cost of labor at the rate of \$1.00 per hour. Based on these estimates, initial costs of the five barb wire fence are only about one half-as much as the woven wire (39 inches) with two strands of barb wire. There is a difference of \$.095 per running rod in the construction of the woven wire (39 inches) with two barb wires and the woven wire (32 inches) with three barb wires; the costs being \$3.027 and \$2.932 respectively per running rod.

A tight, three barb wire or woven wire fence, with solid posts approximately one rod apart, can be made sheep-tight by adding two strands of barb wire. The cost is estimated to be \$.307 per running rod.

A yearly fencing cost can be derived by estimating the expected life of a particular type of fence, dividing this (number of years) into the total cost, and adding an estimated cost for annual repairs. This figure can be deducted from the gross returns from the alternative sheep enterprises as determined by the budgeting.

## SUMMARY

This bulletin presents and analyzes data useful in evaluating sheep as a source of income on farms and ranches. The basic data were obtained from 68 ewe-flock producers and 20 feeder operators. This information was supplemented with data from Experiment Station feeding trials in Oklahoma, Kansas, and New Mexico, and by talks with informed specialists in the sheep industry. The budget method was used to estimate the returns.

The estimated return to a 100 feeder-lamb operation utilizing small-grain grazing is \$639. The dry lot feeder operation returns \$257 for 100 shorn lambs and \$171 for 100 non-shorn lambs. These estimates are based on a \$20.00 purchase cost and a \$22.40 selling price for the non-shorn lambs and \$21.40 for the shorn lambs. This price margin, of course, will vary from year to year.

The 100-ewe flock operation returns an estimated \$1,468 in a normal, small-grain grazing year. This return represents returns to capital, labor, management, land, equipment, and fencing. The ewe flock operation in a subnormal grazing year returned \$716.

Prospects for production of spring lambs by Oklahoma farmers and ranchers appear bright. Expansion of sheep numbers in Oklahoma is not likely to significantly affect the price received by United States or Oklahoma farmers for lambs. It is estimated that the doubling of sheep and lamb numbers in Oklahoma in 1957 would have depressed the United States price received by farmers for lambs by approximately \$0.37 per hundredweight.

Cost of new fence construction or improvement of existing fences is a factor that must be considered in deciding whether an alternative sheep enterprise could be profitably added to the existing farm organization.

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**Appendix Table 1—Prices and Costs of Various Materials and Labor Used in Determining the Costs Per Running Rod of Various Kinds of Fencing**

Materials	Size	Unit	Quantity	Avg. 1957 Okla. Price/Unit	Cost/ Rod
Barb Wire (one barb wire)	U.S. 2 pt.	Rod	80	\$10.00	\$ .1250
Woven wire	32 inch	Rod	20	28.50	1.4250
Woven wire	39 inch	Rod	20	33.25	1.6600
Staples	Medium	Lb.	90/lb.	.16	.0018
Line Posts (Creosote Wood)	6½'x2½"—3½"	Each	1	.60	.6000
Corner Assembly					Cost/Corner
End Post	8' x 6"	Each	1	2.35	2.35
Brace Post	8' x 5"	Each	2	.90	1.80
Anchor Lumber	—	Each	-	.50	.50
Gates					Cost/Gate
Steel	14' x 4'	Each	1	30.46	30.46
Wood	14' x 4'	Each	1	24.95 <sup>a</sup>	24.95
<b>Labor</b>					
<b>Type Job</b>	<b>Minutes/Rod<sup>c</sup></b>	<b>Cost Labor/Minute<sup>b</sup></b>	<b>Cost Labor/Rod</b>		
Erect 2 barb wires	3.2	\$ .0167	\$ .053		
Erect 3 barb wires	4.1	.0167	.068		
Erect 5 barb wires	5.9	.0167	.098		
Erect Woven wire	9.3	.0167	.155		
Erect Line Posts	17.7	.0167	.295		
	<b>Hours/Job<sup>c</sup></b>	<b>Cost Labor/Hour</b>	<b>Cost Labor/Job</b>		
Erect End Assembly	11.5	1.00	11.50		
Erect Gate	1.0	1.00	1.00		

a This cost includes \$9.95 for hardware (braces, bolts, etc.), \$11.00 for lumber and \$4.00 for labor to construct the gate (4 hours at \$1.00/hour).

b Labor cost per minute based on rate of \$1.00 per hour.

c Estimates on minutes per rod and hours per job obtained from E. L. Burroff, E. N. Moore, and L. S. Robertson, *Woven Wire Fencing, Methods and Costs in Central Indiana*, Ind. Exp. Sta. Bul. No. 570, Dec. 1951, pages 8, 41.

**Appendix Table 2—Cost of Establishing Various Kinds of Fencing per Running Rod; Also Costs of Corner Assemblies and Gates for Oklahoma Farms and Ranches**

Item	Materials Size	Unit	Quantity	Costs		
				Materials	Labor	Total
<i>Initial Barb Wire (5 barbs)</i>						
Barb Wire	U.S. 2 Pt.	Rod	5	\$ .625	\$ .098	\$ .723
Creosote Posts	6½' × 2½" — 3½"	Each	1	.600	.295	.895
Staples	Medium	Each	5	.009	--	.009
						<u>\$ 1.627</u>
<i>Initial Woven w/Barb Wire (2 barbs)</i>						
Woven Wire	39"	Rod	1	1.660	.155	1.815
Barb Wire	U.S. 2 Pt.	Rod	2	.250	.053	.303
Creosote Posts	6½' × 2½" — 3½"	Each	1	.600	.295	.895
Staples	Medium	Each	8	.014	--	.014
						<u>\$ 3.027</u>
<i>Initial Woven w/Barb Wire (3 barbs)</i>						
Woven Wire	32"	Rod	1	1.425	.155	1.580
Barb Wire	U.S. 2 Pt.	Rod	3	.375	.068	.443
Creosote Posts	6½' × 2½" — 3½"	Each	1	.600	.295	.895
Staples	Medium	Each	8	.014	--	.014
						<u>\$ 2.932</u>
<i>Additional 2 barbs to existing woven or barb wire fence</i>						
Barb Wire	U.S. 2 Pt.	Rod	2	.250	.053	.303
Staples	Medium	Each	2	.004	--	.004
						<u>\$ .307</u>
<i>Corner Assembly</i>						
End Post	8' × 6"	Each	1	2.35	11.50	13.85
Brace Post	8' × 5"	Each	2	1.80	--	1.80
Anchor Lumber	—	Each	1	.50	--	.50
						<u>\$16.15</u>
<i>Gate</i>						
Steel Gate	14' × 4'	Each	1	30.46	1.00	\$31.46
Wood Gate	14' × 4'	Each	1	24.95	1.00	25.95