Sheep Raising as a Profitable Enterprise

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The sheep enterprise fits well into the farming program of many Kentucky farms. Sheep use resources that compete little with tobacco and other farm enterprises. They are a good income producer and generally produce higher average returns per dollar of feed and pasture than do the dairy, beef, and swine enterprises, yet sheep numbers in Kentucky continue to decline.

THE SITUATION ON KENTUCKY FARMS

As of Jan. 1, 1967, the estimate of ewes 1 year of age and older on Kentucky farms was 129,000, which is only 14 percent of the 907,000 ewes on farms in Kentucky in 1942. Only in 4 out of the last 21 years have sheep shown an increase over the preceding year. This decline in sheep and lambs is not unique with Kentucky since the United States as a whole has been declining in sheep and lamb numbers. Not since records were first kept in 1867 have there been fewer stock sheep on farms and ranches than the Jan. 1, 1967 report shows (Fig. 1).

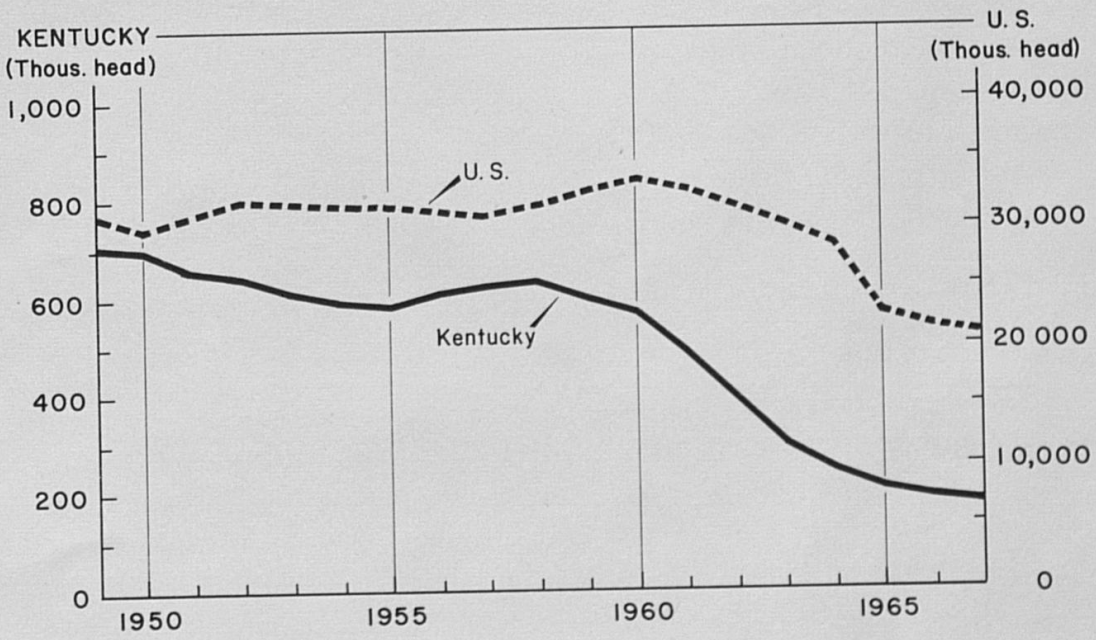

Fig. 1.—Sheep and lambs on farms, January 1, in Kentucky and in the United States.

The decline in Kentucky has been at a greater percentage rate than that in the United States as a whole. The decline in sheep numbers in Kentucky over the past 20 years has continued without regard to price changes. This is shown by the decline in numbers of sheep in Kentucky since 1961, even though lamb and wool prices generally have been rising.

The decline in sheep numbers in Kentucky and the contention of many farmers that the sheep enterprise has been their most stable and consistently profitable enterprise do not appear economically consistent. For this reason, a study was made by researchers at the University of Kentucky to evaluate the role of sheep in Kentucky's agriculture. The following information was taken from the study, "Economics of Sheep Production on Central Kentucky Farms," by Joe E. Fuqua and George B. Byers, University of Kentucky Agricultural Experiment Station Progress Report 102 (1961).

The objectives of the study were to point out: (1) the advantages and problems in sheep production as viewed by farmers; (2) the use of labor, capital, and land in sheep production, and the extent to which any one or more of these resources may limit sheep production; (3) the returns from and costs of the sheep enterprise; and (4) the production and marketing practices which contributed to higher returns.

Complete records were obtained from 151 farms. The three types of farmers interviewed were: (1) those who raised sheep at the time of the study, (2) those who had discontinued their sheep enterprise 10 years prior to the study, and (3) those who had started sheep enterprises in the 10 years prior to the study. The Inner Bluegrass area was chosen for the study for two reasons: first, the concentration of sheep is greater in this area than in any other in the state (48 percent in 1959), and second, the soil type and topography are relatively consistent throughout the area, thus giving opportunity for more similarity in resources and farm organization.

ADVANTAGES AND PROBLEMS IN SHEEP PRODUCTION

Advantages

Good profits, supplementing income, and timeliness of income are the economic advantages often given by farmers continuing or acquiring sheep enterprises. Sheep raising is also advantageous because it keeps the farm free from weeds and bushes and utilizes resources that would otherwise remain unused.

The farmers' statements concerning sheep as a profitable enterprise were substantiated in the study. *Net returns* to management averaged $5.44 per ewe in 1957 and $4.07 in 1964. Even in 1961, when lamb

prices averaged lower ($16.80 per cwt) than in any other year since 1945, net returns averaged $1.47 per ewe. Returns to farm-owned and farm-produced resources (income above cash expenses) averaged $18.32 per ewe in 1957 and $18.53 in 1964. In the two-year period (1957 and 1964) for which costs and returns were analyzed, all sheep flocks in the study made a return above cash expenses, thus making some returns to farm resources (Fig. 2 and Table 1).

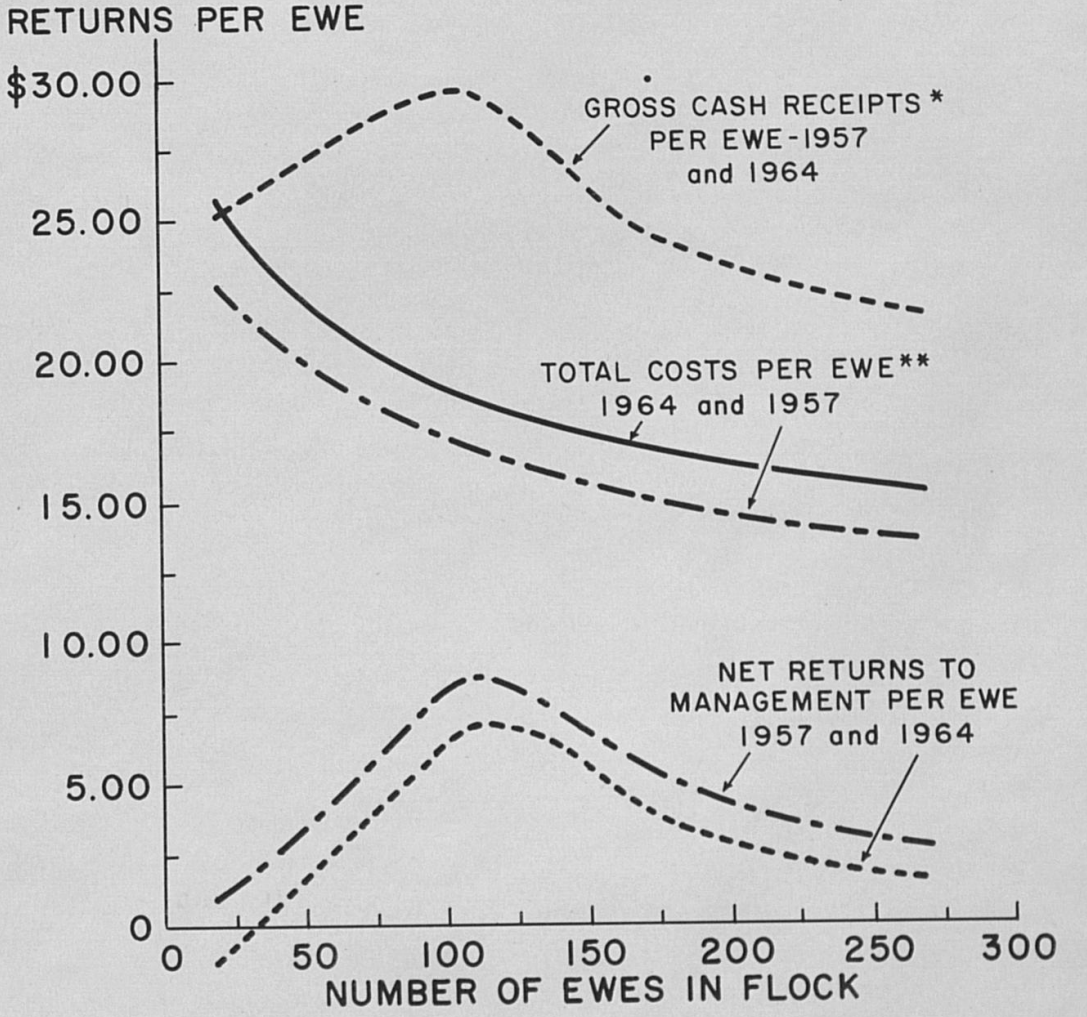

Fig. 2.—Receipts, costs and returns per ewe.

* Receipts were practically the same for 1957 and 1964.

** Sheep purchased excluded.

Problems

Thirty-two percent of the sheep producers in the study did not see any disadvantages in sheep production. Dogs, foot rot, and parasites were the serious problems facing the other 68 percent of the sheep producers. Some other serious problems mentioned were trouble at lambing time, difficulty of combining sheep with other livestock

Table 1.—Sources of Income and Financial Summary per Ewe in 1957 and 1964[1]

Items of Income	Income Per Ewe in Lambing Flock 1957	1964	Items	Income Per Ewe in Lambing Flock 1957	1964
Sale of lambs	$19.59	$19.60	Total value of production	$27.74	$27.80
Sale of ewes	1.32	1.55	Cash expenses	9.52	9.27
Sale of rams	0.14	0.17	Returns to farm resources	18.22	18.53
Sale of wool	4.73	4.56	Pasture charge	3.24	3.39
Wool incentive payment	0.95	1.01	Housing charge	0.59	0.59
Insurance claims	0.10	0.10	Value of farm-produced feed	6.22	7.33
Gross cash receipts	26.83	26.89	Returns to labor, capital, and management	8.17	7.22
Increase in inventory	0.91	0.91	Interest on investment	1.03	1.03
Sheep used in home	[2]	[2]	Returns to labor and management	7.14	6.19
Total value of production	27.74	27.80	Value of family labor[3]	1.70	2.12
			Net returns to management	5.44	4.07

1 Based on 106 flocks. Actual data used for 1957 and adjusted to 1964 price level.
2 Less than one cent per ewe. Only two farmers slaughtered lambs for home use.
3 Family labor was valued at $0.50 per hour in 1957 and adjusted to 1964 price level. Labor in 1964 was 124 per cent of 1957 or an hourly rate of $0.62.

enterprises, and labor problems. In most cases, these problems individually were not serious enough to cause discontinuance of the sheep enterprise. However, the accumulation of problems and/or the fear of problems causes producers to sell their flocks.

COSTS OF THE SHEEP ENTERPRISE

Total costs averaged $22.30 per ewe in 1957 and $23.73 in 1964 (Table 2). Total costs are divided into two major categories: cash expenses and noncash costs. Cash expenses are those "out-of-pocket" items of expense that are paid during the year, and noncash costs are the charges made to farm-owned or farm-produced resources. *Cash expense* was $9.52 per ewe in 1957 and $9.27 per ewe in 1964. Major items of cash expense per ewe in 1964 were: breeding replacements—$4.32; purchased feed—$1.49; marketing cost—$0.66; shearing cost—$0.61; and hired labor—$0.52. *Noncash costs* were $12.78 per ewe in 1957 and $14.46 per ewe in 1964. Major items of noncash cost per ewe in 1964 were: home-produced feed—$7.33; pasture—$3.39; and family labor—$2.12. Purchased and home-produced feed and pasture represented 51.5 percent of total cost. However, purchased feed comprised only 18 percent of the total value of feed (Fig. 4).

RETURNS TO THE SHEEP ENTERPRISE

Total cash receipts averaged $26.83 per ewe in 1957 and $28.89 in 1964. Total value of production, the cash receipts plus change in inventory and value of home use, averaged $27.74 in 1957 and $27.80 in 1964 (Table 1).

The sale of lambs was the largest source of income to the sheep enterprise. This source of income amounted to $19.59 per ewe in 1957 and $19.60 per ewe in 1964. The second most important item of income was the sale of wool, which averaged $5.68 per ewe in 1957 and $5.57 per ewe in 1964 (Figs. 3 and 5).

The remaining income after subtracting cash expenses is the return to the farm-owned or farm-produced resources. The return to all

Table 2.—Cash and Noncash Expenses per Ewe with Lambing Flock in 1957 and 1964[1]

Cash Expense Per Ewe				Noncash Cost Per Ewe		
Items	No. of Farms Reporting	1957	1964	Items	1957	1964
Salt	102	$0.22	$0.25	Pasture charge	$ 3.24	$ 3.39
Minerals	32	0.22	0.24	Building charge	0.59	0.59
Supplies	29	0.15	0.14	Home-produced feed	6.22	7.33
Veterinary, medicine, and insecticides	69	0.24	0.24	Value of family labor	1.70	2.12
Electricity	59	0.13	0.11	Interest on investment	1.03	1.03
Insurance	27	0.06	0.07	Total noncash cost	12.78	14.46
Interest	13	0.06	0.06	Total cost (cash and noncash)	$22.30	$23.73
Grinding and mixing feed	47	0.23	0.26			
Pasture rented	2	0.04	0.04			
Hired labor	20	0.42	0.52			
Shearing cost	98	0.55	0.61			
Transportation	40	0.11	0.12			
Purchased feed	71	1.35	1.49			
Marketing cost[2]	106	0.66	0.66			
Promotional charge[3]	99	0.11	0.11			
Taxes	94	0.03	0.03			
Breeding replacements	63	4.94	4.32			
Total	106	9.52	9.27			
Total (excluding breeding replacements)	—	4.58	4.95			

1 Based on 106 flocks. Actual data used for 1957 and adjusted to 1964 price level. Average cost per ewe was calculated by dividing the total of each expense item by 8,342 ewes—the number in the lambing flocks of all 106 farms.

2 Includes yard and commission fees for selling sheep and fees for selling wool when applicable.

3 Deducted from the wool incentive payment on both shorn wool and unshorn lambs.

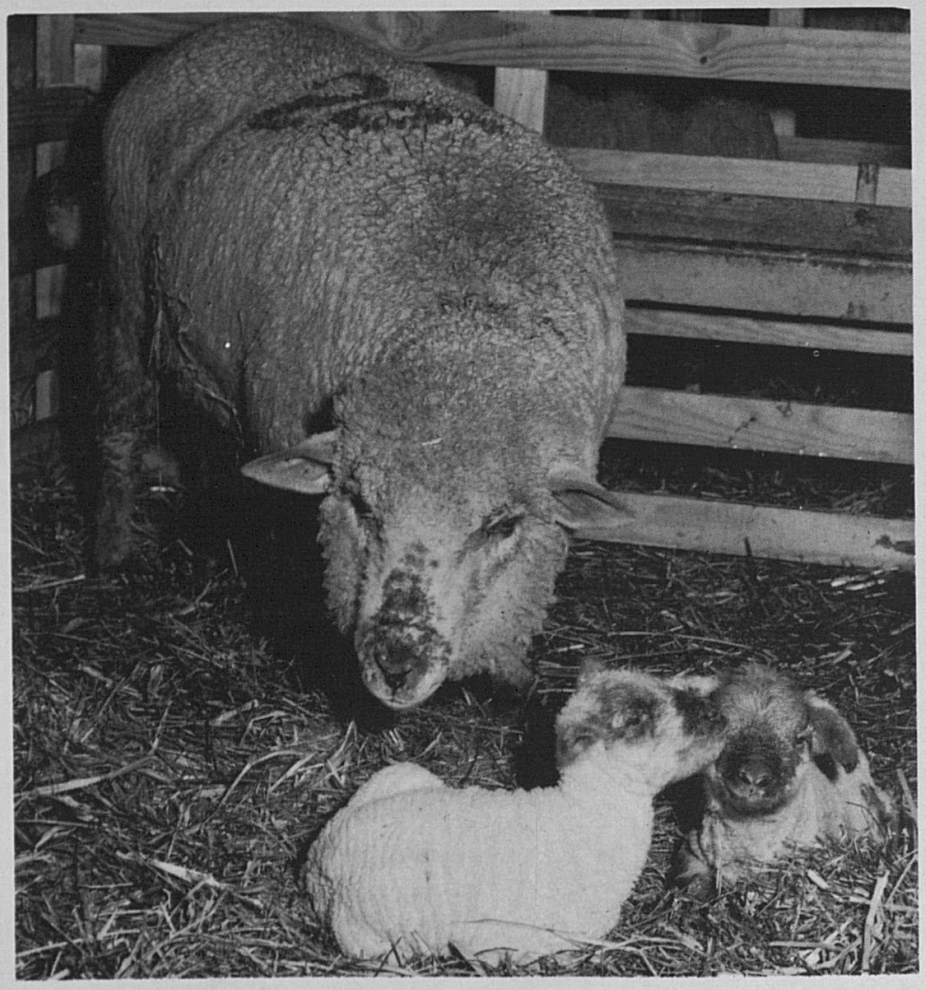

Fig. 3.—More lambs per ewe increase the profit.

resources averaged $18.22 per ewe in 1957 and $18.53 in 1964. Many times this is called net returns without regard for the farm resources and their alternative uses. Income minus cash expenses equals the amount a farmer has to put in the bank for any single year, but after so long he will have to pay for some of the resources considered free.

Net returns to management averaged $5.44 per ewe in 1957 and $4.07 in 1964. Here, net returns mean the charges have been made for all resources, except management. If a person could have hired labor, rented pasture, rented barn space, bought feed, and borrowed capital at the rates used in the study, he would have averaged $5.44 per ewe in 1957 and $4.07 per ewe in 1964 for his management of the flock (Fig. 2).

Size of flock had an important effect on net returns to management. In 1964, flocks of 100-150 ewes averaged $7.00 in net returns per ewe, while flocks of fewer than 50 ewes averaged only $0.34 per ewe and flocks of more than 200 averaged $1.56 per ewe. Economies of scale in

feed and labor costs had major effects on net returns. Most of the economies of scale in feeding were obtained at a flock size of 50 ewes, even though the trend of decreasing costs continued as size of flock increased. This would indicate overfeeding among the smaller flocks, probably because of the availability of home-produced feed and that it is considered a free resource (Fig. 2).

Labor costs per ewe in 1957, both hired and unpaid family labor, varied from an average of $3.12 for flocks of fewer than 25 ewes to $1.23 for flocks of more than 200 ewes when unpaid family labor was valued at $0.50 per hour. With the $0.50 per hour rate adjusted to the 1964 price level, a rate of $0.62 per hour, the variation was $3.86 to $1.53 per ewe for flocks of fewer than 25 and more than 200 ewes (Fig. 4).

The average cost per ewe of some items such as electricity, insurance, transportation, insecticides, and veterinary services had a

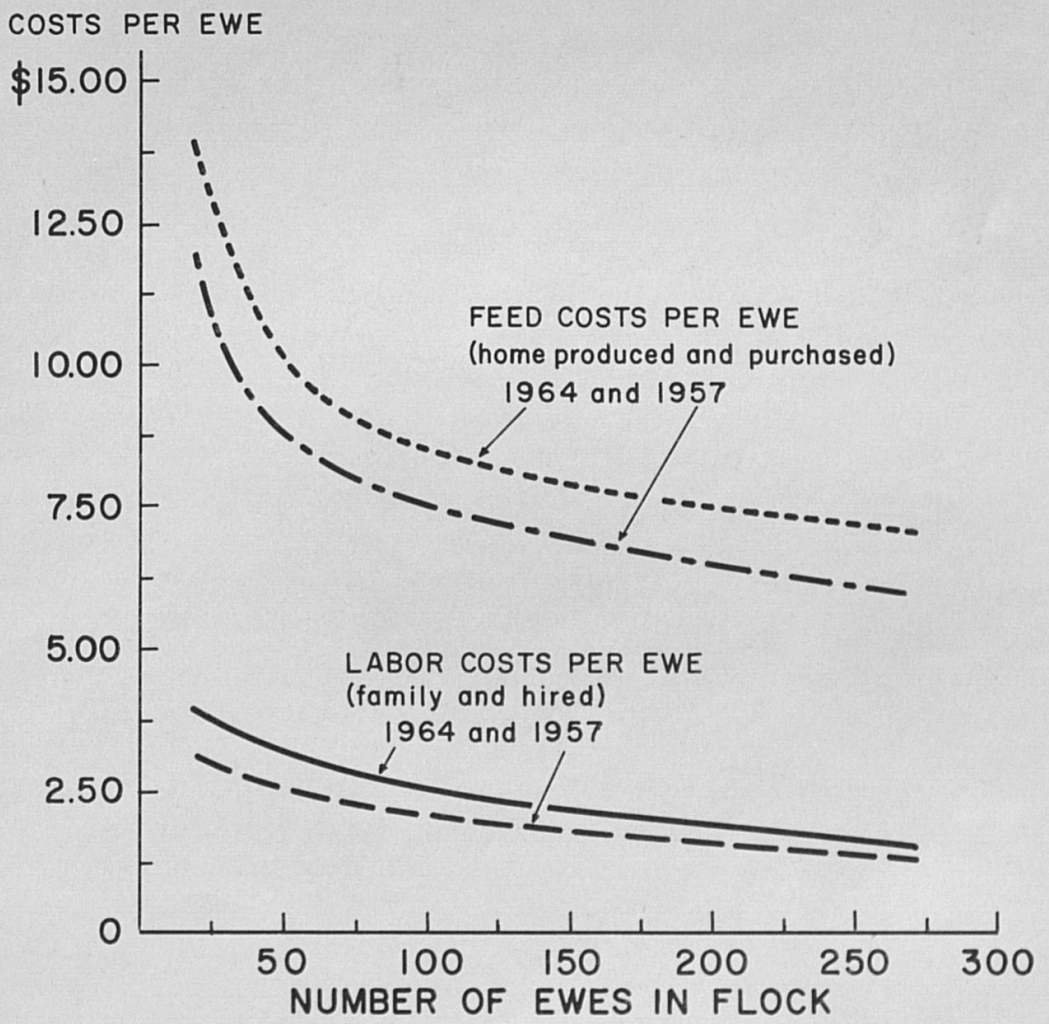

Fig. 4.—Feed and labor cost per ewe by size of flock (Plotted points are class interval averages.)

tendency to be lower in the small and large flocks than in the medium-sized flocks. Lambs raised to a marketable size numbered about 8 more per 100 ewes which were valued at $2.07 more per ewe on farms using electricity with their sheep enterprise. On the farms using electricity, the cost was $0.23 per ewe. Therefore, this practice appears to be quite profitable.[1]

PRODUCTION PRACTICES

Many management practices influence returns to the sheep enterprise. By averaging net returns and other income-related factors on farms where a certain practice was performed or not performed, some indication can be gained as to the profitability of that practice.

Breeding Practices

The flocks that had Southwestern ewes averaged much higher net returns per ewe than those that had either Northwestern or Native ewes. In comparing the Southwestern and Northwestern ewe flocks, the Southwestern averaged higher in all income factors. The factor with the most pronounced difference was the number of lambs raised per 100 ewes, which resulted in $3.18 more per ewe for the Southwestern flocks. Lambs from Native flocks were slightly higher in weight, in price per 100 pounds and in value per lamb sold, but were lower in number of lambs per 100 ewes and wool per head sheared. Net returns per ewe for Native flocks averaged less than for the other two groups, but much of this can be attributed to the higher costs associated with the smaller, native flocks.

Age of the ewes in the breeding flock had a marked effect on all the income-related factors. With the exception of wool sheared per head, the values of all the factors increased when greater percentages of ewes in the flocks were less than 5 years old. A good culling and replacement program which would maintain at least 75 to 90 percent of the ewe flock of less than 5 years old appears to be a profitable practice.

Ewe flocks that were *flushed* before breeding resulted in an average of almost four more lambs per 100 ewes. Flushing is increasing the feed available to the ewe just prior to and during the breeding season. The most common and convenient method is to put ewes in a fresh lush pasture.

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[1] Better farmers use more advanced technology. Therefore, some of the increased profit from the use of electricity may also be attributed to other profitable practices.

Use of *purebred rams* resulted in $0.82 greater net returns per ewe. Two practices commonly recommended to sheep producers—tagging ewes and shearing rams before breeding—had no positive effect on most of the income-related factors.

Feeding Practices

The practice that had one of the most pronounced effects on income-related factors was the *grazing of a cover crop.* Flocks that grazed a cover crop raised 11 more lambs per 100 ewes; the lambs weighed 2.8 pounds more per head and sold for $0.95 more per 100 pounds. The value of lambs raised was $3.09 greater per ewe for the flocks that grazed a cover crop.

Creep feeding did not appear to be profitable. Net returns per ewe were $1.06 higher in flocks that did not creep feed. The flocks with creep feeding had about the same feed cost per ewe as those without crep feeding, but the flocks without creep feeding raised seven more lambs per ewe. The better feeding of ewes during gestation and lactation probably accounted for the major difference in number of lambs raised per ewe. This provides some insight as to where the emphasis should be in the feeding program.

General Practices

The flocks that were drenched three times or more averaged higher returns than those drenched zero, one, or two times.

Flocks in which lambs were castrated and docked averaged higher in all factors considered.

MARKETING PRACTICES

Successful sheep production in Kentucky depends primarily on the marketing of lambs in the spring and early summer. Spring and early summer marketed lambs have a seasonal price advantage. During the past 15 years considered in this study, the highest average price for Kentucky lambs occurred 7 times in May, 6 times in June, and once each in February and March.

The importance of timing in marketing is made even more evident when average weights and prices of lambs are observed by month of sale (Table 3). Lambs sold in May averaged higher than in any other month in weight per lamb (90.3 pounds), in price per 100 pounds ($24.40), and in value per lamb ($22.04). Lambs sold in April and June were well above the yearly averages. The average price per 100 pounds stayed strong in July; however, a drop in average weight of

lambs marketed lowered the value per lamb to almost $1.00 less than in June.

A combination of lighter lambs and lower prices from the first of August through the fall months caused the value per lamb to drop sharply. The lowest average value per lamb during the year was $15.18 in October, which was $6.86 per lamb less than the May average.

Table 3.—Number, Percentage, and Average Weight of Lambs Sold by Months, and the Effect on Price per Hundred Pounds and per Head on 106 Farms in 1957[1]

Date Sold	No. of Lambs	% of Total	Wt. per Lamb, Lb.	Price for Lambs per Cwt.	Value per Lamb
April	229	2.6	85.6	$22.75	$19.46
May	697	7.8	90.3	24.40	22.04
June	1,980	22.2	86.6	22.39	19.39
July	2,060	23.1	81.7	22.64	18.50
August	784	8.8	76.6	21.23	16.25
September	841	9.4	78.1	21.15	16.53
October	682	7.6	77.4	19.61	15.18
November	357	4.0	80.9	21.43	17.33
December	147	1.6	78.2	22.30	17.44
After January 1	200	2.2	83.9	22.71	19.06
Unknown	957	10.7	[2]	[2]	—
All Lambs	8,932	100.0	82.2[3]	22.16[3]	18.22[3]

1 Prices for lambs were so near the same in 1964 that the distribution of prices and value would be practically the same.
2 Weights and prices were not obtained on all of these and averages were used.
3 Includes only the lambs for which weights and prices were obtained.

PROFITABILITY AND VARIABILITY OF SHEEP COMPARED WITH OTHER LIVESTOCK ENTERPRISES

Sheep enterprises compared very favorably with the beef, dairy, and hog enterprises during the 1946-64 period on the basis of adjusted gross returns per dollar of feed (including pasture). A pasture maintenance charge of $2.15 per acre plus taxes was assessed to each enterprise on an annual unit basis on each farm. Adjusted gross returns per dollar of feed for sheep ranged from $2.73 in 1951 to $1.69 in 1961 and averaged $1.98 for the 19 years. Beef averaged $1.90 for the period, with a range of $1.21 to $2.61. Dairy averaged $1.69 with a range of $1.29 to $1.90. Hogs averaged $1.78 with a range of $1.42 to $2.09. Some farm management studies charge pasture maintenance at a much higher rate, giving a return to pasture as a crop. If pasture were charged a higher rate, the returns per dollar of feed for the major forage-consuming livestock enterprises would be lower relative to the hog enterprise.

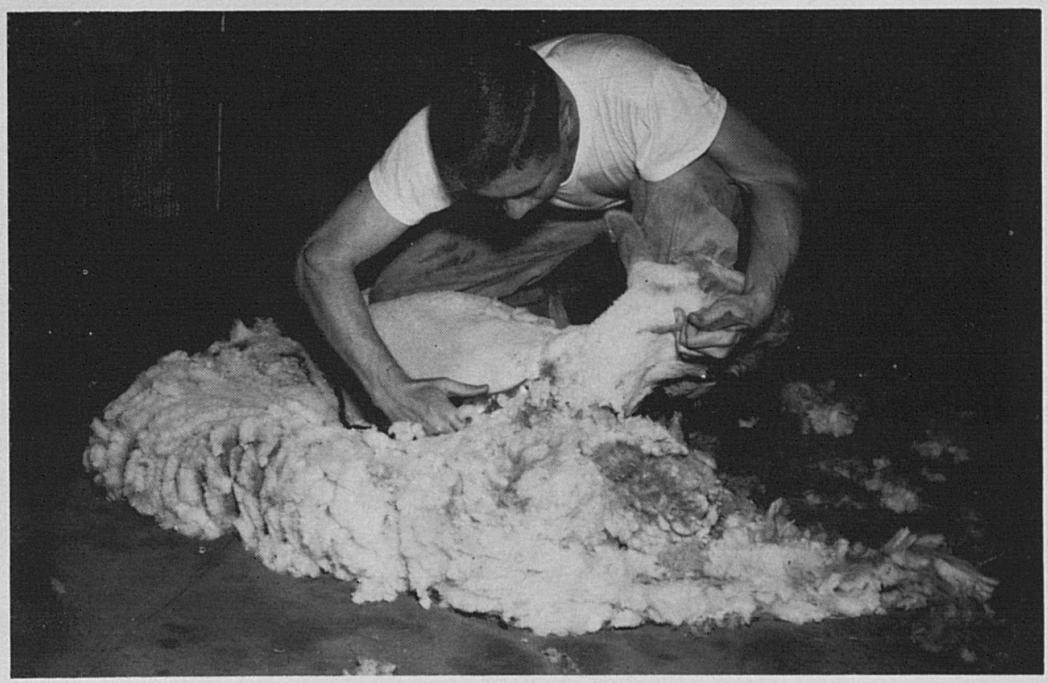

Fig. 5.—Fleeces of large size and high quality add to the profit of the sheep raiser.

Price variability is another measure of the stability of an enterprise. The predominant type of sheep enterprise in Kentucky—ewe flocks producing slaughter lambs and wool—has had relatively stable prices during the period analyzed (1946-64). Wool contributes stability to the enterprise. Variation of lamb prices and feed costs have the largest effects on net returns. With the exception of feed costs, the costs in sheep production vary little from year to year. From the standpoint of greater variation and higher percentage of income and costs, the levels of lamb and feed prices practically determine the level of net returns.

Supplementary enterprises are those that make better use of the farm resources, with little competition for the resources when they are needed by the main enterprises. The sheep enterprise fits this description well in Kentucky, particularly Central Kentucky, where tobacco is the main enterprise on most farms. Most of the labor requirement for sheep is at lambing time—January, February, and March. Tobacco barns can be used for housing sheep with only minor alterrations to provide adequate facilities for lambing. Sheep provide a means of marketing pasture that might otherwise go unused and may actually improve pastures by cleaning up weeds and bushes.

The sheep enterprise has advantages for farms with limited investment and operating capital. The use of off-season labor, home-pro-

duced feed, and pasture by sheep reduce the requirement for operating capital compared with some other livestock enterprise. Use of the tobacco barn, the relatively low cost of equipment, and relatively low investment cost of breeding stock lower the requirements for investment capital.

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