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Lamb Feeding and Marketing Decisions Can Influence Flock Profitability

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Summary

Lamb receipts are the main source of flock income in most farm and range flocks. Whether lambs are finished for market or sold as feeders there are feeding and marketing options which could increase net flock income.

Feeding lambs to finished weights beyond the point where the cost of gain exceeds market value will reduce profit potential. Average daily gain is the key factor in the cost of gain. Sharp increases in cost of gain would be expected during the latter phase of a finishing period since body growth efficiency declines due to increasing fat deposition associated with maturity. Sort and sell based on the amount of fat cover rather than a rigid minimum market weight.

Whether to background feed all or a portion of a feeder lamb crop would depend on lamb weights, lamb growth potential, feed resources and costs, facilities, market conditions, and available capital. In most cases producers have control over these variables except for market conditions. Break-even projections can be made to assess whether backgrounding is a viable economic opportunity or a risk for the current lamb crop based on feeder lamb supply-demand information and subsequent projected price levels.

Introduction

Sheep production is currently a bright spot in the livestock business. Both lamb and wool prices are higher than a year ago and significantly better when compared to the average for those commodities over the past 5 years. With a U.S. sheep inventory down 9% over last year, the competition for fewer pounds of lamb and wool should mean strong commodity prices in the upcoming marketing cycle. Compared to last year, wool prices have risen by 10 to 100%, depending on the quality and grade. In the first quarter of 1995 the price for lambs sold at finished weights (115-135 lb) increased steadily. By April 1 the prices for finished lambs reached the mid to upper $70's per cwt, almost $20 higher than on the same date a year ago. Feeder lamb prices have kept pace with finished lambs, generally in the upper $70's to low-80's.

Favorable commodity price levels can give sheep producers an opportunity to generate profit although certainly not a guarantee. Decisions controlled by the producer can greatly influence the economic outcome. Flock feeding practices, ewe productivity, genetics, health, wool production, and marketing decisions are management keys which will influence net flock return. It is up to producers to identify profit opportunities in their operation.

The main source of revenue in commercial sheep operations is the sale of feeder and finished lambs. Lamb receipts usually account for 60 to 90% of flock income. Farm flocks derive a higher proportion of income from lamb compared to range operations. The production and marketing opportunities for high quality wool offer the range flock a competitive advantage for wool and subsequently a higher proportion of income from wool. In both types of operations there are lamb feeding and marketing management options which could improve the profit margin.

Prepared for Sheep Day, June 8, 1995.

Lamb Feeding and Marketing Decisions

Lamb feeding and marketing decisions for a lamb crop are often dependent on the type of management system. Sheep operations can be categorized as winter or spring lambing management systems. Generally, farm flocks feature winter lambing management and range flocks follow a spring lambing system, although a significant proportion of farm flock producers have shifted to spring lambing systems over the past few years to reduce input costs. In a typical midwest winter lambing flock the lambs are offered high grain diets from birth until they reach finished weights (115-135 lb) or sold as feeder lambs in late-spring or early-summer. In spring lambing systems, most lambs are marketed in the fall as feeders. Usually feeder lambs receive no supplemental feed and come off pasture in the fall weighing 50 to 90 lb. Under any type of flock management system a common goal should be to increase the net return from the current lamb crop.

Finishing Lambs

The profit or loss in a finishing lamb feeding operation is determined by taking the difference between market value and total costs. The major cost in finishing lambs is for feed, the balance from other direct and indirect costs which include interest, facilities depreciation, health, and management inputs. Calculating the economic outcome by subtracting total costs from animal value will determine profit or loss yet it lends little information on whether profit was maximized or losses minimized. Using the cost of gain over the entire feeding period and/or examining specific increments of the feeding period could offer valuable insight into lamb feeding economics.

Lamb Feeding Economics Using Cost of Gain

The profit in finishing lambs is the accumulative sum of the difference (margin) between the cost of gain and the market value of each added pound of lamb body weight. A simple equation to calculate the cost of gain from feed for a specified period of time is:

$$\text{cost of gain} = \frac{\text{daily feed intake x feed cost/lb}}{\text{average daily gain (lb)}}$$

In Figure 1, on the Y-axis the live animal value per pound is plotted along with two different cost of gain curves for lambs over a wide range of live body weights (X-axis). As shown in Figure 1, the profit margin (the difference between two lines) decreases as the animal becomes heavier. Theoretically producers should increase lamb weight up to the point where the return from each added pound is equal to the cost of gain. Once a cost of gain curve crosses the live animal value curve added weight gains result in an economic loss. Why does the margin decline as lamb weight increases? The answer lies with parameters which determine the cost of gain, namely daily feed intake and average daily gain.

In a finishing animal as body weight increases, it becomes physiologically more mature. With maturity the average daily gain declines (Figure 2), thus, the cost of gain increases. The biological explanation for lower average daily gain with maturity is muscle and bone growth slows and fat deposition increases. The amount of feed required to generate 1 lb of fat is much higher than for 1 lb of muscle. In addition to lower efficiency of growth, the voluntary daily feed intake increases as lambs reach heavier and heavier weights. The combination of higher feed intake and lower average daily gain drive up the cost of gain. Yet the variable with the greatest impact on cost of gain is average daily gain.

Example on the Impact of Average Daily Gain on the Cost of Gain

To illustrate the impact of average daily gain on the cost of gain let's use an example where in a feedlot finishing program Group A has ADG = 1.0 lb and Group B has ADG = .5 lb. In both groups the average lamb is 120 lb and daily feed intake is 5 lb, the diet cost is $.07 per pound ($140 per ton). For Group A the cost of gain for the last pound gained is 5 lb of diet x $.07 per pound of diet divided by the an ADG of 1.0 lb. Therefore, the cost of gain associated with the feed is $.35/1 or $.35 per pound of gain. In comparison, Group B would have a cost of gain associated with the feed equal to $.70 per pound of gain. Typically the portion of cost of gain for nonfeed expenses is about $.10 per pound. Therefore, the lambs in Group B actually

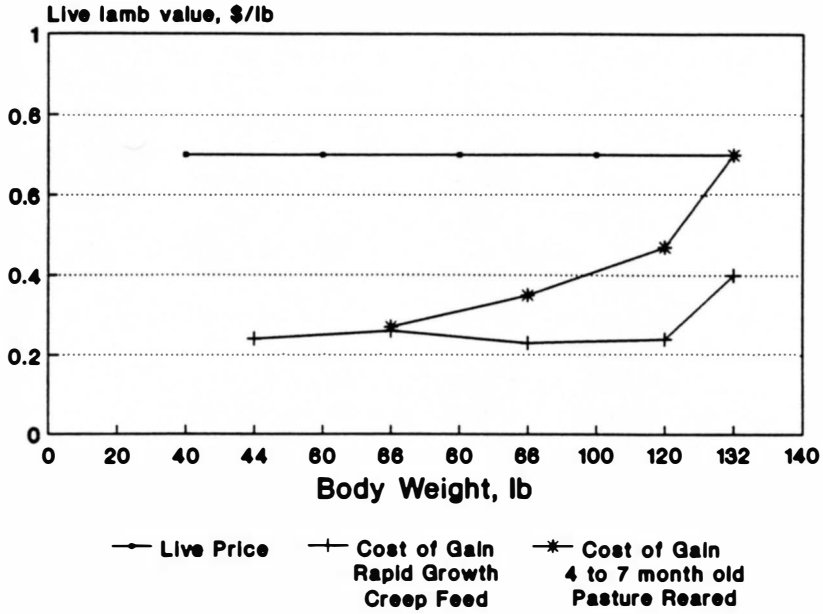

Figure 1. Lamb profit potential.

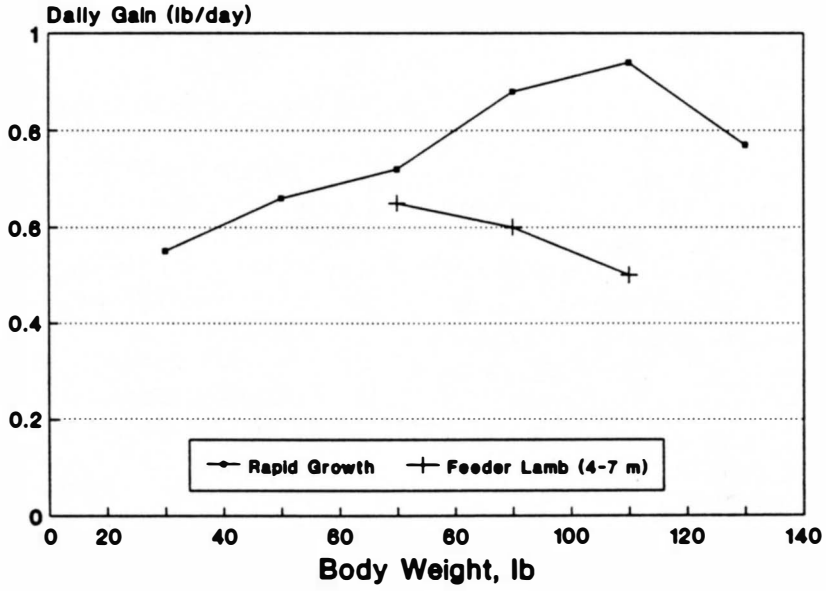

Figure 2. Average daily gain.

have a cost of gain at $.80 per pound. Only under strong market conditions would it be economically justified to feed these lambs to a higher weight.

The live lamb weight at which the cost of gain intersects the live animal value will differ within and across flocks due to live animal price, feed cost, average daily gain, and direct and indirect management costs. With so many variables it's obvious that directly predicting the ideal market weight on every lamb based on the cost of gain is not practical. However, from this discussion on the cost of gain in finished lambs we can draw on a few relationships which should help you determine the ideal market weight for your lambs. We know that as lambs become heavier the cost of gain increases sharply due mainly to the impact of lower average daily gain. Visually we can indirectly detect lower levels of growth performance by monitoring the amount of fat cover. Once fat cover has reached levels at or above a high Yield Grade 2, .25 inches measured at the 12-13th rib, the expected growth performance moves sharply lower. Research has shown that frame-size has a tremendous influence on the market weight at which a high Yield Grade 2 level of fat cover is achieved.

Lamb feeding trials conducted at Colorado State University showed that the ideal finished weights for small, medium, and large framed lambs increased by nearly 10 lb between each frame-size when compared at the same degree of carcass leanness (109, 117, and 129 lb). With most producer owned lambs and in feedlots all three frame sizes are likely present. The key message in this entire discussion comes down to the point that feeding all lambs to a minimum target market weight of 120 or 130 lb may not be a wise decision. The practice of "sort and sell" based on fat cover should be exercised throughout the feeding period. Using this strategy has two key advantages, it allows producers to utilize the most economical lamb growth phase and provide our industry with a relatively lean product for the consumer.

Feeder Lambs

In contrast to finished lambs, feeders are in the most efficient stage of growth since most of the gain is lean rather than fat. High feed efficiency and lower cost of gain would be expected compared to finished lambs. Adding economical gain to feeder lambs, especially the lighter weight lambs, through a backgrounding feeding program could provide a significant economic boost to a feeder lamb operation.

Improving the Net Return from Feeder Lambs

Backgrounding feeder lambs to sell at heavier weights could be a key marketing practice used to increase the economic return on a lamb crop. Most feeder lambs produced in the Western Great Plains come off grass and move into feedlots in late summer through early winter months. Typically these lambs range in weight from 50 to 90 lb. In many instances selling lambs at weights less than 60-70 lb simply does not return enough dollars to cover annual ewe production costs. Feedlot operators are reluctant to place lighter weight feeders since they are more difficult to start on feedlot diets and can require a higher level of management. Adding weight to lighter weight feeder lambs could give a real boost to the bottom line for producers who market their lambs as feeders. An example on backgrounding light weight lambs is given below.

Adding Value to Light Weight Feeders

A feeder lamb producer may choose to evaluate the economic merit to background the lighter weight portion of the lamb crop until December 1. Selling a 60-lb lamb on September 1 at $70 per cwt would return $42 and a 90-lb lamb on December 1 at even money ($70/cwt) would return $63, thus a difference of $21. Clearly the decision whether to add 30 lb would depend on the cost effectiveness and level of financial risk accepted by the producer. Marketing a portion of the feeder lamb crop at heavier weights in December could be advantageous since historically feeder lamb prices move lower in the fall as the supply peaks but tends to rebound in early winter. Feed cost and growth performance play a significant role in whether this marketing option is cost effective. Fortunately, the conversion of feed to gain is excellent for lighter weight lambs.

The projected feed conversion for 4 to 7-month-old feeder lambs between 60 and 90 lb is 5 lb of feed per pound of gain if offered a nutrient balanced, high energy diet. For example, a lamb which consumes 3 lb of feed per day and average daily gain of .6 lb, the feed conversion is 5 lb of feed per pound of gain (3 divided by .6). In this case the cost of gain coming directly from feed costs would be $.30 per pound of gain (5 lb of feed x $.06 per pound of diet, $120/ton). Using the information in this example, the feed cost to add 30 lb of gain is $9. Other fixed and variable costs would be approximately $2 per lamb. With the total backgrounding cost at $11, the net profit potential using this marketing option is $10 per lamb. Other profit/loss projections are given in Table 1, where diet cost and/or the pounds of feed per pound of gain are altered.

Backgrounding feeder lambs offers several economic advantages. The key advantages are making use of the most efficient period in lamb growth and added marketing options. Facilities, feed costs, management skills, lamb growth potential, and market conditions are all important components and must be evaluated before moving into a backgrounding scheme.

Table 1. Profit opportunities marketing heavy feeders

Add 30 lb to 60-lb feeder lamb						
Case	Gain	Diet cost, ¢/lb	Feed to gain	Total feed cost	Cost of gain, ¢/lb	Net profit Profit/(loss)
1	30	6	6	$10.80	.36	$8.80
2	30	4	6	$7.20	.24	$11.80
3	30	4	12	$14.40	.48	$4.60
4	30	6	12	$21.60	.72	($2.60)