

Desert alfalfa grazing— it's the leaf that counts

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Lambs turned into desert valley alfalfa fields during winter will make profitable gains if they are moved to another pasture after 10 days of grazing, when the alfalfa is nearly devoid of leaves.

A combination of factors makes winter lamb grazing in the Imperial Valley economically attractive. At that time of year, alfalfa grows slowly, making harvesting it for hay less profitable; late-born lambs from the mountain states are available for fattening, and desert lambs can be finished in time for the potentially lucrative Easter lamb market.

As a result, every winter from early October through Thanksgiving, about 120,000 lambs, averaging 60 to 80 pounds, are moved into Imperial Valley alfalfa fields. Shortly after arrival, the lambs are treated for internal parasites, vaccinated against overeating disease (*Clostridium perfringens*), and those showing signs of respiratory diseases are treated. Depending on lamb size and the rate of growth of the alfalfa stand, bands of 1,600 lambs are turned into 40-acre alfalfa fields to graze for about 10 to 15 days, until the alfalfa is exhausted. Lambs start being shipped out of the Valley at the end of January when they weigh about 125 pounds. Almost no lambs remain by the end of February. This grazing management schedule has been the traditional desert winter grazing system for many years. Lamb gains during the grazing period are on the order of 8 to 12 pounds per head per month.

In the winter of 1985-86 we undertook a 2-year lamb grazing trial at the Imperial Valley Agricultural Center (IVAC), near El Centro, to determine the best time to move lambs from one pasture to another.

Two-year study

The trial was conducted on a 3-year-old stand of CUF-101 alfalfa, on a Meloland fine sandy loam soil. Each year in mid-November, 48 lambs, averaging about 83 pounds, were chosen at random from a local commercial flock. The lambs were randomly placed in three groups of 16 (A, B, and C), which were then randomly divided into four replicated groups of four each. Lambs grazed each experimental area in sequence for a total of 15 days, being moved to a new plot every 5 days (group A was moved to fresh pasture every 5 days; group B moved into paddocks previously grazed by group A; and C moved to paddocks abandoned by B, i.e., to paddocks that had been grazed previously for 10 days). The same relationship of 1,600 lambs per 40 acres as in the traditional desert grazing system was maintained in the 4,356-square-foot experimental paddocks.

The grazing cycle lasted for 28 days and lambs were then weighed. After approximately 2 weeks, another 28-day grazing cycle was initiated to provide data for evaluating lamb weight gain in relation to available alfalfa forage.

We used the experimental data to compare lamb gain in pounds per day with grazing pressure (pounds of alfalfa forage or pounds of alfalfa leaf per pound of grazing lambs).

Results and discussion

Figure 1 shows lamb weight gain in relation to total alfalfa forage. December gains were less than January gains (table 1). The lamb grazer should attempt to decrease the December feed-cost-of-gain figure to maintain profitability. Since the most important factors affecting cost of gain are average daily gain and feed costs, and since graziers pay farmers a grazing fee on a head-per-day basis, the grazer should strive to reduce feed costs early in the season without seriously decreasing gains. These trials also showed that lambs must have 8% to 12% of their body weight as total available alfalfa forage for maximum weight gains.

To develop a more accurate representation of the desert grazing system, we separated clipped alfalfa samples by hand into leaf and stem portions. Lamb weight gain was then related to available alfalfa leaf (fig. 1). Gain was fairly constant until the point when leaf material was depleted, and then gain dropped. These tests demonstrated that at least 7% of lambs' body weight must be available as leaf for maximum gain.

Lambs may consume 2.5% to 4% of their body weight as feed on a dry matter basis; the 7% of alfalfa leaf at maximum weight gain indicates the extent to which lambs selectively graze the leaf portion of alfalfa rather than eating the whole plant in a "lawn-mower" fashion. Lambs eat 10 times more

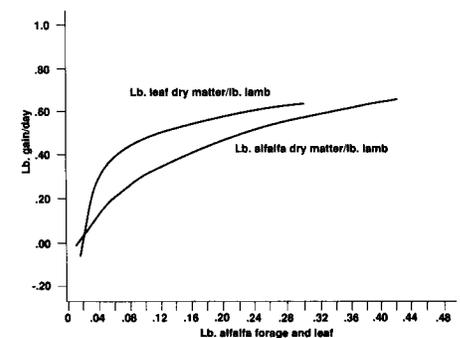


Fig. 1. Lamb gain in relation to total alfalfa forage and total alfalfa leaf.

TABLE 1. Lamb weight gain in relation to total available alfalfa forage

| Item | Inflection point* | Lamb gain | | Available forage at 0 gain [†] |
|----------------|-------------------|---------------------------------------|---------------------|---|
| | | At Infl. point [‡] lb/day | Per month lb/mo. | |
| All data | .0855 | .248 | 7.444 | .01596 |
| December lambs | .1235 | .221 | 6.642 | .05866 |
| January lambs | .0962 | .384 | 11.531 | .00665 |

* Amount of available alfalfa forage below which lambs start to gain less weight.

[†] Pounds alfalfa dry matter per pound grazing lambs.

[‡] Maximum lamb weight gain—gain when available alfalfa forage no longer limits lambs.

[§] Pounds alfalfa dry matter per pound grazing lambs.

TABLE 2. Lamb weight gain in relation to available alfalfa leaf

| Item | Inflection point* | Lamb gain | | Available leaf at 0 gain [†] |
|----------------|-------------------|---------------------------------------|---------------------|---------------------------------------|
| | | At Infl. point [‡] lb/day | Per month lb/mo. | |
| All data | .0705 | .394 | 11.812 | .00445 |
| December lambs | .0735 | .326 | 9.782 | .01356 |
| January lambs | .0719 | .493 | 14.803 | .00144 |

* Amount of available alfalfa leaf below which lambs start to gain less weight.

[†] Pounds alfalfa leaf dry matter per pound grazing lambs.

[‡] Maximum lamb weight gain—gain when available alfalfa forage no longer limits lambs.

[§] Pounds alfalfa leaf dry matter per pound grazing lambs.



The traditional Sonora Desert winter grazing system calls for large bands of lambs to be turned into 40-acre alfalfa fields for about 10 to 15 days, until the alfalfa is exhausted. A 2-year study suggested that the traditional system may not be the most appropriate for the Imperial Valley.

leaf at maximum weight gain than they do at the point when they start to lose weight in the paddock, i.e., when the leaf resource is almost zero. When the alfalfa stand is about 4 to 6 inches tall and almost devoid of leaf, lambs begin to eat the stem portion of the plant and gains begin to drop sharply. Relating lamb performance to alfalfa leaf availability rather than to total alfalfa resulted in gains of 11.8 pounds per head per month, comparable to those of the desert lamb grazing system.

Conclusions

Based on this 2-year lamb grazing trial on alfalfa, several conclusions may be inferred for the U.S. Sonoran Desert lamb grazer:

Under desert grazing conditions, after 10 days of grazing or when the alfalfa is 4 to 6 inches tall and practically devoid of leaves, lamb gains drop dramatically. Within a few days, lambs will start to lose weight. At this point, the grazer's profitability will also decrease.

December gains are less than January gains, possibly because December lambs are still recuperating from the transportation shock or shearing. Another possible reason is that December lambs are smaller and have less feed capacity. Since December lambs do gain less, to maximize per day profits, the grazer should move lambs to new grazing plots on a 10-day schedule or less depending on the remaining alfalfa resource.

If lamb prices appear to be rising or if profits per head appear to be higher than normal, the desert lamb grazer may find it profitable to pay a higher per head grazing fee for high-gain-potential, high-quality alfalfa fields that will permit grazing to be extended to 12 to 13 days before lambs start to lose weight.

If lamb prices appear to be going down and per head profits are expected to be lower than normal, the grazer should consider reducing days on feed and total costs by not holding lambs on alfalfa plots more than 10 days.

The traditional desert grazing system may not be the most appropriate for the Imperial Valley. Possibly the same number of lambs could be placed on a larger field and given the opportunity to selectively graze more leaf for a longer time, with better economic gains. The effect of moving lambs on shorter grazing schedules over a 4- to 5-mile trailing movement also merits investigation.

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