

Lupine Bean Meal As a Protein Source For Backgrounding Steers

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Surplus commodity crops have focused more attention on alternative or specialty enterprises. Many producers are also conscious of sustainable agriculture methods which combine legume production with livestock. Specialty crop production methods and market potential are currently being explored in the northern plains. If agronomically adapted, the primary use of specialty crops (oil, seed, etc.) may make the crop economically viable by itself. Additional uses of crop by-products will enhance the potential for acceptance.

Lupine beans, a specialty legume, have market potential for human consumption of their oil and bran leaving a relatively high protein meal for livestock feed. Some studies have been reported on feeding lupine meal to lambs, dairy cows and poultry with apparent success. No studies have been reported to date on feeding lupine meal to growing feedlot steers. Lupine bean meal must be palatable and cost effective to support its use as a protein supplement. A pilot study was conducted at the Carrington Research Extension Center to make observations on the value of lupine bean meal compared to soybean meal as a protein supplement for growing beef steers. This was a cooperative project involving the Carrington Research Extension Center, Central Grasslands Research Station, the Garrison Diversion Conservancy District and International Nutrition and Genetics Corp.

MATERIALS AND METHODS

Thirty head of crossbred black Angus steers from the Central Grasslands Research Station were transported to the Carrington Research Extension Center Livestock Unit after a 30-day post weaning preconditioning period. The steers were weighed and randomly allotted to a soybean meal (control) or lupine meal protein supplement after a 10-day ration acclimation period. The trial started on Dec. 1, 1987. The lupine bean meal averaged 38.8 percent protein while soybean meal analysis was 44.2 percent. Corn silage and corn grain are low in protein (7.8 percent and 8.3 percent) and require supplementation when fed to growing calves. The ration consisted of 72 percent rolled corn grain and 18

percent corn silage on a dry matter basis. Trace mineral salt and a high calcium mineral (2 ounces per head per day) were mixed in the ration. Calves were fed free choice once daily in adjoining pens with fenceline bunks. Supplemental protein was top dressed at 1.76 pounds per head per day of lupine meal and 1.44 pounds per head per day of soybean meal. Wind fences and bedding provided the only winter protection. Animals were observed daily for general health and well being.

RESULTS AND DISCUSSION

Both sets of calves maintained good health and performed satisfactorily on the diets offered. Table 1 presents data for the 73-day trial. Average daily gain was 2.80 pounds per day for lupine bean meal steers compared to 2.93 for soybean meal steers. Steers on the lupine bean meal supplement consumed 17.88 pounds of dry matter daily compared to 18.58 pounds for steers on the soybean meal supplement. Feed conversion was 6.39 for lupine bean meal steers vs 6.34 for soybean steers. No feed consumption problems were observed during the trial. At less than 2 pounds per head per day, lupine meal was a satisfactory protein supplement for growing calves and should be considered on a cost per pound of protein basis with other supplements.

Table 1. Lupine bean meal vs soybean meal as a protein supplement for growing steer calves.

	Lupine Meal	Soybean Meal
Number of Head	15	15
Starting Weight (lbs.)	586	588
Ending Weight (lbs.)	883	899
Avg. Daily Gain (lbs.)	2.80	2.93
Feed Consumption (DM, lbs./day)	17.88	18.58
Feed Conversion (DM/lb. gain)	6.39	6.34

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