

Feeding Harvested Forages Cuts Costs

Llewellyn L. Manske PhD, Range Scientist
Amy M. Kraus, Composition Assistant
Thomas C. Jirik, Agriculture Communication Editor
North Dakota State University
Dickinson Research Extension Center

Beef producers can reduce forage costs by feeding livestock economical harvested forages rather than extending the grazing period on native rangeland or cropland aftermath pastures after the calves are weaned, says a North Dakota State University range scientist.

"Extending the grazing season on native rangeland pastures or cropland aftermath pastures is often assumed to be a low-cost strategy because production costs per acre for these grazed forages are relatively low. In fact, these are not inexpensive forages. The nutrient weight captured per acre in them is very low and, as a result, the feed cost per day and the cost per ingested pound of nutrient are high. A study at the NDSU Dickinson Research Extension Center indicates that for dry gestating cows, harvested forages with low costs per pound of nutrient provide a more economical feed source than the traditional forages producers use to extend grazing," says Lee Manske, a range scientist at the Dickinson facility.

The amount of new wealth generated from land resources is related to the quantity of forage nutrients captured per acre, not to the quantity of dry matter weight, so increasing economic wealth from livestock agriculture requires the use of efficient pasture-forage management strategies that focus on capturing nutrients, Manske says. Forages grazed or harvested at plant stages that yield high amounts of dry matter and low amounts of crude protein per acre, like traditional late-season pastures and late-cut crested wheatgrass hay, have high costs per pound of nutrient and are generally expensive forages for livestock. However, forages grazed or harvested at plant stages that yield great amounts of crude protein per acre have lower costs per pound of nutrient and are relatively low-cost forages for livestock.

Forage barley hay cut at the milk stage and pea forage hay cut at a late plant stage yield great amounts of crude protein per acre, about 606 pounds per acre and 685 pounds per acre, respectively. Even though the production costs per acre for these harvested-forage types are relatively high, the cost per pound of nutrient and the feed cost per day are low. In contrast, forage from reserved native range pastures grazed between mid-November and mid-December is expensive because animals capture only about 8.6 pounds of crude protein per acre.

"The results of the study illustrate the relationship between cost of nutrient and total feed cost," Manske says. The study evaluated feed costs of reserved native rangeland pasture forage, cropland aftermath pasture forage, forage barley hay, and pea forage hay for 1,200-pound cows during the dry gestation period. An average 1,200-pound cow requires 768 pounds of dry matter, 353 pounds of energy (total digestible nutrients), and 48 pounds of crude protein during the 32-day production period.

Reserved native rangeland pasture has production costs of \$8.76 per acre, forage dry matter costs of \$97.33 per ton, and crude protein costs of \$1.01 per pound. A cow grazing properly stocked reserved native rangeland would require 4.27 acres during the 32-day dry gestation production period, and the forage to feed the animal would cost \$37.44 per production period. The animal would require supplementation of an additional 0.34 pounds of crude protein per day, at a cost of \$3.26 per period. Total forage and supplement costs would be \$40.70 for the period, or \$1.27 per day.

Cropland aftermath pasture of annual cereal stubble has production costs of \$2.00 per acre and forage dry matter costs of \$29.63 per ton. The forage has very low crude protein content. A cow grazing cropland aftermath pasture would require 7.10 acres during the dry gestation production period, and the forage to feed the animal would cost \$14.20 for the period. Additional crude protein was not supplemented, even though the crude protein content of the forage was below the requirements of a dry gestating cow. The animals lost an average of 1.14 pounds per day and an average of 4.82 pounds per acre; accumulated weight loss was 36.48 pounds per period, which is about half of one body condition score. Total forage and supplement costs would be \$14.20 for the period, or 44 cents per day.

Heavy cows can lose weight during the dry gestation period without detrimental future effects on reproduction and production performance. However, loss of weight during the dry gestation period should be considered an additional cost for thin cows and cows with moderate body condition score because replacement of lost weight costs more during other production periods, Manske notes.

Forage barley hay has production costs of \$68.21 per acre, forage dry matter costs of \$28.80 per ton, and crude protein costs of 11 cents per pound. A cow would be fed 11.5 pounds dry matter of forage barley hay per day. Production of forage barley hay to feed a cow during the dry gestation period would require 0.07 acres, and the forage would cost \$5.12. The animal would require an additional 12.5 pounds of roughage per day, at a cost of \$7.00 per period. Total forage and supplement costs would be \$12.12 for the period, or 38 cents per day.

Pea forage hay has production costs of \$86.87 per acre, forage dry matter costs of \$37.40 per ton, and crude protein costs of 13 cents per pound. A cow would be fed 10.3 pounds dry matter of pea forage hay per day. Production of pea forage hay to feed a cow during the dry gestation period would require 0.07 acres, and the forage would cost \$6.08. The animal would require an additional 13.7 pounds of roughage per day, at a cost of \$7.67 per period. Total forage and supplement costs would be \$13.75 for the period, or 43 cents per day.

"Managing pastures and harvested-forage hayfields as a source of dry matter feed for animals results in inefficient capture of nutrients from the land resource. Producers can generate greater new wealth from the land by replacing traditional management practices with strategies that capture greater weight of nutrients per acre and efficiently convert them into saleable commodities like calf weight," Manske says.