

Reducing Pasture-Forage Costs for Range Cows during Early Lactation

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

Producers can reduce pasture and forage costs and improve profit margins by feeding harvested forages to range cows during the early lactation production period, says a North Dakota State University range scientist.

“Each year beef producers struggle to determine which forage type can be fed at the lowest cost during the early lactation period after the calves are on the ground and before spring domesticated grass pasture is ready for grazing,” notes Lee Manske, a range scientist at NDSU’s Dickinson Research Extension Center. “The forage types selected must meet livestock nutrient and dry matter requirements, and to ensure that comparisons offer a reliable assessment, the costs for forage types should be compared by the cost value of basic units like cost per pound of crude protein and total feed cost per day per cow.”

During the early lactation production period, a 1,200-pound range cow requires a daily intake of 27 pounds of dry matter at 10.1 percent crude protein (2.73 pounds of crude protein per day or 123 pounds of crude protein for a 45-day early lactation production period). Costs for five forage feed types for 1,200-pound range cows during a 45-day early lactation production period were evaluated by comparisons of land rent values, production costs per acre, forage dry matter costs per ton, crude protein costs per pound, and feed costs per day and per production period, Manske reports. The forage types evaluated were native range supplemented with range cake, mature crested wheatgrass hay, crested wheatgrass hay cut early, forage lentil hay cut late, and forage barley hay cut early.

Native range pastures during early spring have a crude protein content of around 9.2 percent. The forage dry matter consumed by animals costs \$140.16 per ton, and crude protein costs 76 cents per pound. Crude protein supplementation is required, at a cost of 8 cents per day. The forage from native range pasture and the supplementation to feed a range cow during early lactation cost \$1.97 per day in the evaluation, or \$88.43 for the 45-day production period.

Crested wheatgrass hay cut late, at a mature plant stage, has low nutritional quality, with a crude protein content of around 6.4 percent. Forage dry matter costs \$34.80 per ton, and crude protein costs 28 cents per pound. Crude protein supplementation is required, at a cost of 30 cents per day. Mature crested wheatgrass hay and the supplementation to feed a range cow during early lactation cost \$1.05 per day, or \$47.25 for the 45-day production period.

Crested wheatgrass hay cut early, at the boot stage, has a crude protein content of around 14.5 percent. Forage dry matter costs \$40.80 per ton, and crude protein costs 14 cents per pound. Roughage supplementation is required, at a cost of 14 cents per day. Early cut crested wheatgrass hay and supplemented roughage to feed a range cow during early lactation cost 52 cents per day, or \$23.40 for the 45-day production period.

Forage lentil hay cut at a late plant stage has a crude protein content of around 14.7 percent. Forage dry matter costs \$37.00 per ton, and crude protein costs 13 cents per pound. Roughage supplementation is required, at a cost of 15 cents per day. Forage lentil hay cut late and supplemented roughage to feed a range cow during early lactation cost 49 cents per day, or \$21.92 for the 45-day production period.

Forage barley hay cut early, at the milk stage, has a crude protein content of around 13.0 percent. Forage dry matter costs \$28.80 per ton, and crude protein costs 11 cents per pound. Roughage supplementation is required, at a cost of 11 cents per day. Forage barley hay and supplemented roughage to feed a range cow during early lactation cost 41 cents per day, or \$18.23 for the 45-day production period.

Production costs per acre for harvested forages are greater than pasture rent per acre, so traditional assumptions have often favored grazing native range over feeding harvested forages. In fact, comparisons based on cost per pound of crude protein indicate that a more economical strategy than grazing livestock on early spring

range is feeding forages harvested at the optimum growth stage to capture a great amount of crude protein per acre, Manske states.

“Grazing livestock on native rangeland during early spring is expensive because the forage dry matter and crude protein costs are high,” Manske explains. “Although the nutritional quality of early spring native range vegetation is increasing, the crude protein content remains below the level required by livestock during early lactation, and supplementation is required. In addition, the weight of the herbage on early spring pastures is only about one third of the mid summer herbage weight and livestock grazing native rangeland therefore require about three times as many acres per month in the early spring as they do during the summer.”

Comparisons of production costs per acre, pasture rent per acre, or cost per bale of feed do not accurately reflect forage feed costs because forage dry matter weight per acre and nutrient weight per acre captured through grazing or haying vary with forage type and plant growth stage, and the variations are not proportional to these per acre costs, Manske emphasizes. Comparisons of basic cost values accurately reflect livestock production costs. Two basic cost values are cost per pound of crude protein, which is related to the forage dry matter cost and the quantity of nutrients per unit of forage weight, and total feed cost per cow per day or per production period, which includes production costs per acre, costs of forage dry matter, and costs of crude protein.

Implementing management strategies that feed appropriate harvested forages to meet livestock requirements at low costs per pound of crude protein will reduce livestock feed costs, reduce livestock production costs, and help improve the profit margin of beef production.

Forage Feed Costs for Range Cows during Early Lactation

	Native Range	Crested Wheatgrass Hay cut late	Crested Wheatgrass Hay cut early	Forage Lentil Hay cut late	Forage Barley Hay cut early
% Crude protein content	9.2%	6.4%	14.5%	14.7%	13.0%
Production cost/acre	\$8.76	\$28.11	\$26.50	\$71.48	\$68.21
Forage dry matter cost/ton	\$140.16	\$34.80	\$40.80	\$37.00	\$28.80
Crude protein cost/lb	\$0.76	\$0.28	\$0.14	\$0.13	\$0.11
Cost Per Cow					
acres/month	6.48	0.80	0.43	0.14	0.13
cost/day	\$1.89	\$0.75	\$0.38	\$0.34	\$0.30
Supplemented crude protein					
lbs/day	0.25	1.00	0.0	0.0	0.0
cost/day	\$0.08	\$0.30			
Supplemented roughage					
lbs/day	0.0	0.0	8.2	8.4	6.0
cost/day			\$0.14	\$0.15	\$0.11
Total feed cost per day	\$1.97	\$1.05	\$0.52	\$0.49	\$0.41
Cost for Early Lactation	\$88.43	\$47.25	\$23.40	\$21.92	\$18.23