

Reducing Forage Feed Costs for Third-Trimester Range Cows

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Northern Plains beef producers who follow traditional pasture-forage management strategies can reduce production costs by feeding range cows in their third trimester of pregnancy harvested annual cereal or annual legume forage, says a North Dakota State University range scientist.

"Commonly used methods of evaluating feed costs for third-trimester range cows compare production costs per acre, labor costs per acre, or cost per bale of feed. These traditional comparisons are the basis for the long-held belief that grazed native range forage is a less costly feed source than harvested forages. But, improving the profit margin of beef production requires an understanding of the factors that contribute to livestock feed costs," states Lee Manske, a range scientist at NDSU's Dickinson Research Extension Center.

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 were evaluated for five forage feed types for 1,200-pound range cows during the 90-day third trimester production period. The forage types evaluated were native range supplemented with range cake, mature crested wheatgrass hay, crested wheatgrass hay cut early, forage barley hay cut early and forage lentil hay cut late.

Native range pasture during the winter dormancy period has a crude protein content of around 4.8 percent. Late-season native range forage has production costs of \$8.76 per acre, forage dry matter costs of \$120.83 per ton, and crude protein costs of \$1.26 per pound. A cow grazing during the third trimester requires 4.97 acres of winter native range pasture per month, at a cost of \$1.45 per day. The nutrient content of winter native range forage is below the 7.8 percent required by livestock, and 0.72 pounds of crude protein per cow per day would need to be provided, at a cost of 22 cents per day. The forage from native range pasture and the supplementation to feed a range cow in the third trimester cost \$1.67 per day, or \$149.94 for the 90-day production period.

Crested wheatgrass hay cut late, at a mature plant stage, has a crude protein content of around 6.4 percent. This low-quality hay has production costs of \$28.11 per acre, forage dry matter costs of \$34.80 per ton, and crude protein costs of 28 cents per pound. Production of mature crested wheatgrass hay to feed a range cow in the third trimester requires 0.57 acres per month, at a cost of 52 cents per day. The nutrient content of this forage is below livestock requirements, and 0.33 lbs of crude protein per cow per day would need to be provided, at a cost of 10 cents per day. Mature crested wheatgrass hay and supplementation to feed a range cow in the third trimester cost 62 cents per day, or \$56.04 for the 90-day production period.

Crested wheatgrass hay cut early, at the boot stage, has a crude protein content of around 14.5 percent. This high-quality hay has production costs of \$26.50 per acre, forage dry matter costs of \$40.80 per ton, and crude protein costs of 14 cents per pound. Production of early cut crested wheatgrass hay to feed a range cow in the third trimester requires 0.30 acres per month and costs 27 cents per day. The additional 11 pounds of roughage needed per animal per day would cost 19 cents per day. Crested wheatgrass hay cut early and supplemental roughage to feed a range cow in the third trimester cost 46 cents per day, or \$41.30 for the 90-day production period.

Forage lentil hay cut at a late plant stage has a crude protein content of around 14.7 percent. This forage lentil hay has production costs of \$71.48 per acre, forage dry matter costs of \$37 per ton, and crude protein costs of 13 cents per pound. Production of fully developed forage lentil hay to feed a range cow in the third trimester requires 0.10 acres per month and costs 24 cents per day. The additional 11 pounds of roughage needed per animal per day would cost 19 cents per day. Forage lentil hay cut late and supplemental roughage to feed a range cow in the third trimester cost 43 cents per day, or \$38.70 for the 90-day production period.

Forage barley hay cut early, at the milk stage, has a crude protein content of around 13 percent. This 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.

Production of early cut forage barley hay to feed a range cow in the third trimester requires 0.09 acres per month and costs 21 cents per day. An additional 9.5 pounds of roughage needed per animal per day would cost 17 cents per day. Forage barley hay and supplemental roughage to feed a range cow in the third trimester cost 38 cents per day, or \$34.21 for the 90-day production period.

"To select a management strategy that is most profitable, producers need to compare feeding alternatives in a way that accurately reflects the cost of those feeds," Manske states. A common practice is to compare production costs per acre. The production costs per acre for the five forage types are \$8.76 for winter-grazed native range, \$26.50 for early cut crested wheatgrass, \$28.11 for mature-cut crested wheatgrass, \$68.21 for early cut forage barley, and \$71.48 for late forage lentil hay.

"An interpretation of livestock feed costs that is based only on production costs per acre indicates that winter-grazed native range is the least costly feed for range cows in the third trimester and late forage lentil hay is the most costly," Manske says. "Comparisons of cost of crude protein and 90-day forage feed costs, however, indicate that winter-grazed native range forage is the most costly feed source, followed by mature crested wheatgrass hay."

The lowest-cost feeds are forage barley cut early, forage lentil hay cut late, and early cut crested wheatgrass hay. The crude protein costs per pound are 11 cents for forage barley, 13 cents for forage lentil hay, 14 cents for early cut crested wheatgrass, 28 cents for mature crested wheatgrass, and \$1.26 for winter-grazed native range. The 90-day forage feed costs for range cows in the third trimester are \$34.21 for forage barley, \$38.70 for forage lentil hay, \$41.30 for early cut crested wheatgrass, \$56.04 for mature crested wheatgrass, and \$149.94 for winter-grazed native range. The ranking of third-trimester production forage feed costs follows the same order as that of crude protein costs.

"Land rent values, production costs per acre, and forage dry matter costs per ton are important but do not accurately reflect livestock feed costs because the nutrient weight per acre captured through grazing or haying varies with forage type and plant growth stage and the variations are not proportional to these production costs," Manske notes. Cost per pound of nutrient (crude protein) is a more reliable indicator of livestock feed costs: a 1,200-pound range cow in the third trimester requires 168 pounds of crude protein during the 90-day production period, and the cost per pound of crude protein directly affects the feed costs for that cow. "Few beef producers compare feed costs based on cost per pound of nutrient, in this case, crude protein," he says.

Comparison of cost of crude protein provides an assessment of a component of forage costs that accurately reflects livestock feed costs, stresses Manske. Implementation of management strategies that provide forages at lower 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 Third Trimester Cows
NDSU Dickinson Research Extension Center**

	Native Range	Crested Wheatgrass cut late	Crested Wheatgrass cut early	Forage Lentil Hay cut late	Forage Barley Hay cut early
% Crude protein content	4.8	6.4	14.5	14.7	13
Production cost/acre	\$8.76	\$28.11	\$26.50	\$71.48	\$68.21
Forage dry matter cost/ton	\$120.83	\$34.80	\$40.80	\$37.00	\$28.80
Crude protein cost/lb	\$1.26	\$0.28	\$0.14	\$0.13	\$0.11
Cost Per Cow					
Acres/month	4.97	.57	.30	.10	.09
	\$1.45/day	\$0.52/day	\$0.27/day	\$0.24/day	\$0.21/day
Supplemented crude protein	0.72 lbs/day \$0.22/day	0.33 lbs/day \$0.10/day	0.0	0.0	0.0
Supplemented roughage	0.0	0.0.	11 lbs/day \$0.19/day	11 lbs/day \$0.19/day	9.5 lbs/day \$0.17/day
Total feed cost per day	\$1.67	\$0.62	\$0.46	\$0.43	\$0.38
Cost for third trimester	\$149.94	\$56.04	\$41.30	\$38.70	\$34.21