

Capturing More Value from Summer Pastures Improves Beef Profit Margins

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Taking into account the biological requirements of range plants in grazing systems can increase the value captured from land and reduce forage feed costs during summer, says a North Dakota State University range scientist. In NDSU studies, twice-over grazing boosted returns by up to 20 times over seasonlong grazing strategies.

“Reducing forage feed costs is essential to improving profit margin because they constitute the greatest portion of the total production costs for a beef cow and calf,” says Lee Manske, range scientist at NDSU’s Dickinson Research Extension Center. “Land area costs, which include the costs for forage dry matter and nutrients, are 70 to 90 percent of livestock forage feed costs. Reducing land area costs during summer depends on increasing herbage and nutrient production and on improving nutrient capture efficiency. Producers can realize these benefits by implementing biologically effective grazing management strategies.”

A study conducted at the Dickinson facility evaluated three grazing strategies on native rangeland--6-month seasonlong, 4.5-month seasonlong, and a twice-over rotation. The study was based on costs of livestock feed for 1,200-pound range cows between June 1 and October 15, costs per pound of calf gain, and returns after pasture costs. The study also evaluated the costs of livestock feed from two harvested-forage types--forage barley hay cut at the milk stage and pea forage hay cut at a late plant stage. Feed cost evaluations included land rent values, production costs per acre (including equipment and labor), forage dry matter costs per ton, and total feed costs per day and per period.

The twice-over rotation strategy was the most economically efficient grazing practice. Livestock feed costs per day on the twice-over strategy were 28 percent lower than those on the 4.5-month seasonlong and 50 percent lower than those on the 6-month seasonlong strategies. Cost per pound of calf gain on the twice-over strategy was 33 percent lower than that on the 4.5-month seasonlong and 59 percent lower than that on the 6-month seasonlong strategies. Returns per acre after pasture costs from the twice-over rotation strategy were double those from the 4.5-month seasonlong strategy and almost 20 times those from the 6-month seasonlong strategy.

The twice-over rotation strategy produces the greatest calf gain per acre at the lowest cost per pound of gain because the system is biologically effective, Manske explains. It coordinates grazing periods with plant growth stages. As a result, the strategy sustains grass health, increases herbage and nutrient production, and improves the efficient conversion of nutrients from the land base into saleable calf weight. The twice-over strategy enhances productivity of grasslands and leads to reductions in the cost per pound of nutrient, which in turn lead to reductions in the cost of livestock feed and calf accumulated weight. The seasonlong strategies offer neither ecological benefit nor economic advantage, he says.

Harvested forage is believed to be expensive feed, but when forage plants are cut at the optimum time, greater amounts of nutrients can be captured per acre, Manske points out. As a result, harvested forages can be a source of low-cost livestock feed because the cost per pound of nutrient will be low even with high production costs per acre. Livestock feed costs were 47 cents per day for forage barley hay and 55 cents for pea forage hay. Harvested at the plant growth stage when maximum crude protein per acre could be captured, these hays cost less than forage grazed on the twice-over system.

Traditional pasture and forage management practices were developed to capture maximum dry matter weight per acre. However, livestock feed costs depend less on the cost of dry matter weight than on the cost per pound of nutrients captured in the forages, he says. Evaluating livestock feed costs from the cost of nutrients will allow producers to determine which pasture-forage management practices reduce beef costs by efficiently capturing value from the land resources.

Summer native range forage on the 6-month seasonlong strategy had production costs of \$8.76 per acre and forage dry matter costs of \$77.50 per ton. During the 137-day summer lactation period, a grazing cow-calf pair required 18.10 acres, at a cost of \$158.55 for the period, or \$1.16 per day. Calves gained 1.80 pounds per day, or 13.59 pounds per acre, at a cost of 64 cents per pound of gain. When calf weight was assumed to have a value of 70 cents per pound, returns after pasture costs were \$13.63 per cow-calf pair and 75 cents per acre.

Summer native range forage on the 4.5-month seasonlong strategy had production costs of \$8.76 per acre and forage dry matter costs of \$54.75 per ton. During the 137-day summer lactation period, a grazing cow-calf pair required 12.70 acres, at a cost of \$111.25 for the period, or 81 cents per day. Calves gained 2.09 pounds per day, or 22.55 pounds per acre, at a cost of 39 cents per pound of gain. When calf weight was assumed to have a value of 70 cents per pound, returns after pasture costs were \$89.18 per cow-calf pair and \$7.02 per acre.

Summer native range forage on the twice-over rotation strategy had production costs of \$8.76 per acre and forage dry matter costs of \$39.02 per ton. During the 137-day summer lactation period, a grazing cow-calf pair required 9 acres, at a cost of \$78.84 for the period, or 58 cents per day. Calves gained 2.21 pounds per day, or 33.64 pounds per acre, at a cost of 26 cents per pound of gain. When calf weight was assumed to have a value of 70 cents per pound, returns after pasture costs were \$133.10 per cow-calf pair and \$14.70 per acre.

Forage barley hay cut early, at the milk stage, had a crude protein content of around 13 percent, 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. During the 137-day summer lactation period, early cut forage barley hay would be fed at 19.3 pounds of dry matter per day to provide 2.5 pounds of crude protein per day. An additional 10.7 pounds of roughage per day would need to be provided, at a cost of \$25.65 per period. Production of early cut forage barley hay would require 0.56 acres and would cost \$38.36 for the period. Total forage and supplement costs would be \$64.01 for the period, or 47 cents per day.

Pea forage hay cut at a late plant stage had a crude protein content of around 14.4 percent, 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. During the 137-day summer lactation period, late-cut pea forage hay would be fed at 17.4 pounds of dry matter per day to provide 2.5 pounds of crude protein per day. An additional 12.6 pounds of roughage per day would need to be provided, at a cost of \$30.21 per period. Production of late-cut pea forage hay would require 0.51 acres and would cost \$45.21 for the period. Total forage and supplement costs would be \$75.42 for the period, or 55 cents per day.

“It’s clear that coordinating grazing and haying with optimum plant growth stages of forage plants increases the value captured from land resources, reduces livestock feed costs, and improves profit margin from beef production,” Manske says.