

Reducing Pasture-Forage Costs for Cow-Calf Pairs during the Fall

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Permitting cow-calf pairs to graze native rangeland during late October and November is not as cost efficient as it is often assumed to be, says a North Dakota State University range scientist.

“Grazing cow-calf pairs on fall native range pastures may seem economical because it requires no expenditure for harvested hay, but the practice results in loss of cow weight, low calf weight gain, and low or negative net return,” states Lee Manske, range scientist at the NDSU Dickinson Research Extension Center. Strategies such as turning livestock onto fall domesticated grass pastures or providing harvested forage during the fall may seem more costly, but ultimately result in lower pasture-forage costs.

Manske says western North Dakota native range pastures have an average rent value of \$8.76 per acre. The land area required to provide adequate herbage for a cow and calf for the 30 days between mid-October and mid-November is 4.4 acres. On fall-grazed native range pasture, the forage portion of the herbage dry matter available for livestock intake costs \$97.33 per ton, and the forage portion of the crude protein available for livestock intake costs \$1.01 per pound. Pasture-forage costs for the 30-day period of mid-October to mid-November are \$38.54 per cow-calf pair on fall-grazed native rangeland.

In addition to high pasture-forage costs, low animal performance must be considered when the economic efficiency of fall grazing is evaluated, observes Manske. Lactating cows grazing native rangeland pastures at 2.5 acres per month during the fall lose an average of 0.8 pounds per day, which is a loss of 9.8 pounds per acre. Calves with these cows gain 0.9 pounds per day, which is only 10.9 pounds per acre.

The costs and livestock performance were determined from average custom farm work rates, average land rent values, and researched herbage yields and cattle weights.

When calf weight is assumed to have a value of 70 cents per pound, the gross value of the calf weight gained is \$7.63 per acre. With average pasture rent at \$8.76 per acre, the net return after pasture costs is a loss of \$1.13 per acre during the mid-October and November period. “The economic value of calf weight gained would need to be 80 cents per pound to pay just the average pasture rent,” Manske says.

The weight loss of cows grazing native rangeland during late October and November and the reduced performance of calves with these cows result from changes that occur naturally in maturing herbage. As lead tillers of grass plants age, cell components move from leaves to roots, and the nutritional quality of the herbage decreases substantially, Manske explains. To produce adequate amounts of milk and maintain body weight, lactating cows require about 9.6 percent crude protein from the forage they consume. The nutritional quality of native rangeland herbage during late October and November is around 4.8 percent crude protein, with a portion of this protein tied to the supporting tissue of the plant and impossible for ruminants to digest.

The quantity of herbage also decreases as grass plants age. The weight of the herbage on fall pastures is only about 40 percent to 60 percent of the midsummer herbage weight on grasslands that have had no grazing all growing season, Manske states. The number of acres of native rangeland required to provide sufficient dry matter for each cow-calf pair during the fall is about double the number required during the summer.

Because of biological changes in maturing herbage, the cost of grazing native rangeland during the fall is considerably higher than the cost of grazing native rangeland during the summer, Manske emphasizes. When the rent value per acre is the same for both summer and fall pastures, the cost per ton of dry matter doubles and the cost per pound of crude protein quadruples on each acre of grassland grazed during the fall. The number of acres allotted per cow-calf pair on fall pastures should be twice the number allotted on summer pastures; as a result, pasture-forage costs for the 30-day fall-grazing period on native range are double the costs of 30-day periods of summer grazing. If

fall pasture is rented by the animal unit month (AUM) at the same rate as summer pasture, the amount paid per acre to the landowner is cut in half.

An alternative to relying on native rangeland pastures during the fall is turning livestock onto domesticated Altai wildrye pastures, notes Manske. The wildryes are a group of perennial grasses that do not translocate their aboveground cell contents belowground until late in the growing season. Wildrye pastures can be grazed by lactating cows until about mid-November.

The average rent value of Altai wildrye pastures grazed during the period of mid-October to mid-November is \$14.22 per acre. The land area required to provide adequate herbage for a cow and calf for 30 days is 1.39 acres. The forage portion of the herbage dry matter available for livestock intake costs \$36.46 per ton, and the forage portion of the crude protein available for livestock intake costs 29 cents per pound. Pasture-forage costs on fall Altai wildrye pastures grazed for the 30-day period of mid-October to mid-November are \$19.77 per cow-calf pair. Cows grazing Altai wildrye pastures gain an average of 0.55 pounds daily during the period of mid-October to mid-November. Calf average daily gain on Altai wildrye pastures is 1.73 pounds, which is 37.96 pounds per acre. When calf weight is assumed to have a value of 70 cents per pound, the net return after pasture costs is \$12.35 per acre.

Another cost-effective alternative to depending on native rangeland pastures is providing harvested forages during the fall period. Domesticated cool-season grasses and annual cereal grasses cut at the appropriate stages are good sources of harvested hay. Properly timed harvest is critical to ensure the quality of hay, Manske says. The greatest amount of crude protein per acre can be captured in forage when perennial and annual grasses are harvested at the flowering growth stage.

Crested wheatgrass cut at a mature plant stage has a crude protein content of around 6.4 percent. This low-quality hay has 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 lactating cow during mid-October to mid-November requires 0.73 acres and costs 70 cents per day, or \$21.00 for the 30-day period. Lactating cows could not acquire adequate quantities of crude protein from this mature hay, and animal performance would be unsatisfactory.

In contrast, crested wheatgrass cut early, at the boot stage, has a crude protein content of around 14.5 percent. This high-quality hay has 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 lactating cow during mid-October to mid-November requires 0.40 acres and costs 35 cents per day, or \$10.50 for the 30-day period.

Forage barley cut at the milk stage has a crude protein content of around 13 percent. This hay has dry matter costs of \$28.80 per ton and crude protein costs of 11 cents per pound. Production of forage barley hay to feed a lactating cow during mid-October to mid-November requires 0.12 acres and costs 28 cents per day, or \$8.25 for the 30-day period.

Pasture-forage costs for the 30-day period of mid-October to mid-November are \$38.54, \$19.77, \$10.50, and \$8.25 per cow-calf pair for native rangeland, Altai wildrye, early cut crested wheatgrass hay, and forage barley hay, respectively. Each of the alternative sources of forage for cows and calves from mid-October to mid-November costs less than permitting livestock to graze native rangeland, stresses Manske. These reductions in fall pasture-forage costs for a cow-calf pair range from 49 percent to 79 percent.