Grazing Native Rangeland in May Reduces Ranch Income

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Using native rangeland as early season pastures reduces beef producers' profit margins, says a North Dakota State University range scientist.

"Turning livestock onto native pastures before grasses have reached the third-leaf stage damages plants, limits herbage production, increases forage costs, and decreases livestock production and profits. Delaying grazing on native rangeland until early June, when grasses have three new leaves, can improve grass plant health and boost producers' incomes," says Lee Manske, a range scientist at NDSU's Dickinson Research Extension Center.

Native range grasses grazed too soon after winter dormancy cannot produce adequate leaf area to support plant growth at normal rates, and herbage production falls far below potential while plants recover from the stress of early defoliation, Manske explains. "The earlier defoliation begins, the greater the loss of herbage production and the longer the recovery time will be."

Starting grazing on native rangeland in early May results in a loss of 75 percent of that season's potential herbage production. Starting grazing in mid May results in a loss of 45 to 60 percent. These herbage reductions lead to decreased stocking rate, calf average daily gain and net returns per acre, and the reduced production can persist beyond a single growing season.

"Grasses are able to withstand grazing pressure when they have produced three to three and a half new leaves in the spring," Manske says. Cool-season grasses at the third new leaf stage will have more than three leaves on a tiller. Lower portions of the one to four fall leaves that overwinter will have intact cell walls and will regreen early in the spring. This leaf area provides nourishment for new leaf growth. The cell walls in the top portions of the fall leaves rupture during the winter and these leaf portions remain brown.

The date on which grasses reach the third-leaf stage varies with plant type, Manske notes. Most native range cool-season grasses are ready for grazing in early June and warm-season species are ready for grazing in mid-June. A recent study at the NDSU Dickinson Research Extension Center found that several forage sources offer economical alternatives to grazing native range during May.

Native Rangeland Grazed in May

"Grazing native range pastures in May is not the low-cost practice it is commonly assumed to be," Manske says.

Forage on native rangeland managed with a one-pasture seasonlong treatment that started grazing in early May, before the third-leaf stage, had production costs of $8.76 per acre and pasture-forage costs of $1.35 per day. Calves gained an estimated 1.8 pounds per day at a cost of 75 cents per pound of gain. When calf weight was assumed to have a value of 70 cents per pound, returns after pasture costs were a loss of 58 cents per acre.

Forage on native rangeland managed with a one-pasture seasonlong treatment that started grazing in mid May, before the third-leaf stage, had production costs of $8.76 per acre and pasture-forage costs of $1.15 per day. Calves gained 1.8 pounds per day 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 83 cents per acre.

Crested Wheatgrass Hay

Mature crested wheatgrass hay is expensive livestock feed because the amount of crude protein captured per acre is low, but this hay is less expensive than pasture forage from native rangelands grazed before grasses reach the third-leaf stage, Manske notes.

Crested wheatgrass hay cut at a mature plant stage and fed during May had production costs of $28.11 per acre and harvested-forage costs of 93 cents per day. Calves gained an estimated 1.8 pounds per day at a cost of 52 cents per pound of gain. When calf weight was assumed to have a value of 70 cents per pound, returns after harvested-forage costs were $17.40 per acre.

Domesticated Grass Pastures

Cool-season domesticated grass pastures can serve as a less expensive source of early season forage than mature harvested hay. Grazing on complementary spring domesticated grass pastures should begin only after plants have arrived at the third-leaf stage. Crested wheatgrass and smooth bromegrass reach this stage three to five weeks earlier than cool-season native species and can support grazing livestock from early May until grazing on native range can begin safely in early June.

Forage on unfertilized crested wheatgrass pastures with grazing starting in early May, after the third-leaf stage, had production costs of $8.76 per acre and pasture-forage costs of 52 cents per day. Calves on these pastures gained 1.91 pounds per day at a cost of 27 cents per pound of gain. When calf weight was assumed to have a value of 70 cents per pound, returns after pasture costs were $13.29 per acre.

Forage on fertilized crested wheatgrass pastures with grazing starting in early May, after the third-leaf stage, had production costs of $21.26 per acre and pasture-forage costs of 51 cents per day. Calves on these pastures gained 2.18 pounds per day at a cost of 24 cents per pound of gain. When calf weight was assumed to have a value of 70 cents per pound, returns after pasture costs were $41.82 per acre.

Native Rangeland Grazed in June

“Using alternative forage sources and delaying the start of grazing on native range until early June, after grasses have reached the third-leaf stage, not only reduces forage costs in May but also promotes growth of adequate leaf area and so leads to greater herbage biomass production on the native range pastures,” Manske says. “This improvement increases livestock performance and, in turn, income per acre.”

Forage on properly stocked native rangeland managed with a one-pasture seasonlong treatment with grazing starting in early June, after the third-leaf stage, had production costs of $8.76 per acre and pasture-forage costs of 81 cents per day. Calves on this treatment gained 2.09 pounds per day 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 $7.02 per acre.

Forage on properly stocked native rangeland managed with a multiple-pasture twice-over rotation system with grazing starting in early June, after the third-leaf stage, had production costs of $8.76 per acre and pasture-forage costs of 58 cents per day. Calves on these pastures gained 2.21 pounds per day 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 $14.79 per acre.

Reducing Costs in May

“Turning cows with calves onto native rangeland pastures during May has lower production costs per acre and requires less labor than feeding hay does,” Manske admits. “However, delaying the start of grazing on native rangeland until early June, when grasses have reached the third-leaf stage, allows for greater growth of potential herbage production, lower pasture-forage costs and increased net returns per acre.”

The value of the lost herbage and nutrients on native range grazed in May is greater than the cost of feeding mature hay during that month and far greater than the cost of an alternative such as grazing domesticated grass pastures like crested wheatgrass or smooth bromegrass, which has lower costs than feeding mature hay, he says. These alternative complementary domesticated grass spring pastures can potentially yield greater per-acre economic returns than any other grazing scenario during May.

"The high costs of starting spring grazing before grasses have reached the third-leaf stage are an unnecessary financial burden for beef producers," Manske says. "With today's competitive market, using lower-cost alternatives to early season grazing is essential to reduce pasture-forage costs and increase profit margins for cow-calf operations."