

Coordinated Rotational Grazing Can Minimize Late-Season Drop in Animal Performance

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Rotational grazing strategies coordinated with grass growth stages can help producers avoid the drop in livestock performance typically seen late in the grazing season with traditional grazing systems, says a North Dakota State University range scientist.

"Late-summer cow-weight loss and decreased calf gains common in animals on traditional native-rangeland management strategies cause substantial reductions in economic returns," states Lee Manske, range scientist at NDSU's Dickinson Research Extension Center. "Improved rotation strategies can activate secondary tiller growth in grasses and improve animal performance during the later portion of the grazing season. Those strategies start grazing after the third-leaf stage and have two grazing periods in each of three to six pastures."

Reduced animal performance under grazing strategies such as seasonlong, repeat seasonal, deferred, or rest grazing systems is a result of nutritional changes in forage late in the season, Manske explains. As lead tillers of grasses age, cell components move from aboveground structures to belowground structures, and the nutritional quality of the tillers decreases substantially.

Secondary tillers are less mature and have greater nutritional quality than older lead tillers during the later portion of the grazing season, but traditional grazing systems do not stimulate growth of increased numbers of secondary tillers. As a result, herbage production and nutritional quality of the existing herbage decline.

During late July the crude protein content of the herbage on traditional systems drops below the 9.6 percent required by lactating cows, Manske notes. Cows draw on stored body fat to provide for a portion of their milk production. Reductions in cow weight and milk production follow. The decrease in milk production results in reduced calf average daily gain.

Research data demonstrate the diminished late-season performance of animals on a seasonlong strategy, Manske reports. Cows gain an average of 1.5 pounds daily during the early portion of the grazing season but lose an average of 0.3 pounds daily during the later portion. Calf average daily gain is 2.3 pounds during the early portion of the grazing season but decreases to 1.9 pounds during the later portion.

Animal performance on a deferred grazing strategy follows a similar pattern, Manske observes. Cows gain an average of 1.2 pounds daily during the early portion of the grazing season but lose an average of 0.4 pounds daily during the later portion. Calf average daily gain is 2.3 pounds during the early portion of the grazing season but decreases to 1.4 pounds during the later portion.

Grassland managers can change their grazing strategies to activate the growth of secondary tillers in perennial grasses, Manske notes. The process of stimulating secondary tillering in grasses is similar to the strategy of using steers to graze portions of leaves on young winter wheat plants during the fall to stimulate the growth of wheat tillers. Removing a small amount of leaf material from perennial grasses during the early portion of the grazing season, when the lead tillers are between the third-leaf stage and the flowering stage, can activate secondary tiller growth. Native grasses on the Northern Plains reach this stimulation period between early June and mid July.

Multi-pasture systems that move livestock rapidly in an arbitrary sequence not coordinated with grass growth stages do not produce satisfactory stimulation of secondary tiller growth, Manske emphasizes. He explains that to activate secondary tillering on summer pastures, grazing pressure should be shared among three to six pastures during the stimulation period. The first grazing period on each pasture should last no fewer than seven and no more than 17 days. A second grazing period lasting twice as long as the first should occur during the later portion of the grazing season, before mid-October.

A successful grazing strategy for three pastures of equal size allows livestock to graze each pasture for 15 days during the stimulation period of June 1 to July 15, when lead tillers are between the third-leaf and flowering stage, and to graze each pasture again for 30 days between July 15 and Oct. 15. The grazing sequence should be the same for both periods each year. The first pasture grazed each season should be the last pasture grazed the previous year.

The increase in secondary tiller growth stimulated during the first grazing period improves production and nutritional quality of the herbage and delays by two to two and a half months the period during which cows lose weight, Manske reports. Cow milk production is greater and calf average daily gain is higher during the later portion of the grazing season because stimulated secondary tillers have greater nutritional quality than lead tillers during the second grazing period.

Average daily gain for cows on rotation strategies with two grazing periods coordinated with grass growth stages is 2.0 pounds during the early part of the grazing season and 0.7 pounds during the later portion. Average daily gain for calves on rotation strategies is 2.3 pounds during the early and late portions of the grazing season.

Manipulation of secondary tiller growth can improve livestock performance until late September or mid October, but the biology of native grass plants does not permit extending this improved performance longer, Manske says. Nutritional quality of herbage on native rangeland grazed after mid October is below the requirements of lactating cows. Forages that meet the nutritional requirements of lactating cows after mid October include Altai and Russian wildryes, which retain their aboveground nutritional quality until about mid November, and spring-seeded winter cereals.