

Spring-Seeded Winter Cereals Can Extend the Northern Plains Grazing Season

Llewellyn L. Manske PhD, Range Scientist
Amy M. Kraus, Composition Assistant
Rich Mattern, Agriculture Communication Editor
North Dakota State University
Dickinson Research Extension Center

Northern Plains beef producers should consider using spring-seeded winter cereal pastures as an alternative to native rangeland as a source of late-season forage, says a North Dakota State University range scientist.

"Beef cows grazing native rangeland pastures after mid October have negative weight performance, and the pasture and forage costs per day for grazing native rangeland during the fall are extremely high. Pastures of spring-seeded winter cereals such as winter rye provide forages that extend the grazing season economically and improve animal performance from mid November to mid December," says Lee Manske, a range scientist at NDSU's Dickinson Research Extension Center.

A decline in performance of animals grazing native rangeland begins in midsummer, because the crude protein levels of native grass lead tillers drop below a lactating cow's dietary requirements in mid to late July. However, secondary tillers can remain at or near lactating cow crude protein requirements until late September or mid October. Defoliation management that stimulates vegetative reproduction of secondary tillers can minimize the late-summer decline in animal performance and extend by two to two and one-half months the length of time that native rangeland grasses meet beef cow dietary requirements.

Because of biological limitations of native grasses in the Northern Plains, these species cannot be manipulated to maintain adequate crude protein levels to meet beef cow requirements after mid October. Wildryes like Altai and Russian, which retain aboveground crude protein levels near cow requirements until about mid November, can be used to extend the grazing period another month, but no perennial grass species in the Northern Plains has nutritional quality that consistently meets beef cow dietary requirements later than this.

Further extending the grazing period requires evaluating and finding annual-plant pasture forages that meet beef cow dietary requirements economically from mid November to mid December. A recent study

compared two late-fall pasture treatments: spring-seeded winter cereal and fall-grazed reserved native range pasture.

"An interpretation of livestock feed costs that is based only on production costs per acre indicates that at an average rent value of \$8.76 per acre, fall-grazed reserved native rangeland has lower costs than spring-seeded winter rye, which has average per-acre production costs of \$42.84 for land rent, seed costs and custom costs for labor and equipment," Manske says. "However, the land area required to produce adequate forage for a 1200-pound range cow on spring-seeded winter rye was 0.54 acres, only 12.6 percent of the 4.27 acres required on reserved native rangeland pastures during the late fall. Supplementation of 0.34 pounds of crude protein per day to meet the nutritional requirements of the cow grazing fall native rangeland would add 10 cents per day, or \$3.26 per period, to the expense."

The costs to feed a 1200-pound range cow for the 32-day period of mid November to mid December are \$40.70 for native rangeland forage and supplementation and \$23.13 for spring-seeded winter rye, a 43 percent reduction in fall pasture costs for the winter rye. Daily pasture-forage costs per cow were 72 cents on spring-seeded winter rye, compared to \$1.27 on reserved native rangeland.

"In addition to being less expensive, winter cereals also improve animal performance. Cows that grazed native rangeland and did not receive crude protein supplements lost an average of 1.1 pounds per day during the fall period," Manske says. "In contrast, cows grazing winter rye gained an average of 1.05 pounds per day during mid November to mid December. After 32 days of grazing, average cow weight between animals grazing native rangeland and those grazing spring-seeded winter rye would differ by 69 pounds."

Spring-seeded winter cereals have a greater chance of providing sufficient forage during late fall than traditional summer-seeded winter cereals because in western North Dakota water deficiency conditions are

likely to occur sometime during the period from August through October. As a result, summer-seeded winter cereals are likely to be subjected to water stress while the seedlings are small and have limited root systems with which to absorb water. Because of the low amount of precipitation received from the beginning of June to the end of October in 2003, a midsummer seeding of a winter cereal last year would not have provided forage for fall grazing. The spring-seeded winter rye, however, provided fall forage in 2003 at a fairly high stocking rate of 0.51 acres/AUEM.

Spring seeding winter cereals for fall forage pasture has generally been perceived as losing a growing season for crop production. To address this concern, an attempt to produce a summer hay crop on the same land used to produce a forage crop for fall grazing was made with a mixed oat-winter rye treatment. Double cropping with a spring cereal and a winter cereal should be biologically possible during May, June, and early July, when soil water is usually at its highest levels and water deficiency conditions occur relatively infrequently. However, the data for the mixed oat-winter rye treatments indicate that this double cropping has two major problems that diminish its attractiveness as a practice for producing late fall annual cereal pastures.

First, when the spring oats on the mixed treatment were swathed and baled for hay, at the late milk to early dough stage, the cutting and removal of some leaf material of the winter rye plants caused a measurable reduction in the leaf height and herbage weight of the winter rye. The growth was not regained during the remainder of the season.

Second, the oat plants senesced during the middle portion of the growing season and were dry during October through December, and the dry oat stubble

restricted the availability and utilization of a substantial quantity of winter rye forage.

"Both factors affected the amount of herbage grazing cows removed from the mixed treatment," Manske says. "During the 32 days of the grazing period, an average of 1779.54 pounds per acre of herbage was removed from the winter rye treatments, and an average of 390.25 pounds per acre of herbage was removed from the oat-winter rye treatments. The herbage removed from the oat-winter rye treatments was only about one-third of that available for grazing. The 637.11 pounds per acre of available herbage that was not grazed was primarily winter rye that was shorter than the stiff oat stubble. About 0.70 AUM's of forage per acre remained ungrazed on the oat-winter rye treatments."

A basic strategy for providing both late fall pasture and harvested hay on the same cropland area is to spring plant a portion of a field with winter cereal separately and to spring plant another portion of the field with spring cereal. The spring cereal is mechanically harvested for hay at an early stage in summer, stored nearby, and delivered as feed to cows on the cropland acres during winter. The spring-seeded winter cereal is grazed during the late fall. About 0.5 to 1.0 acres of winter cereal will be needed per cow for a month of grazing. Dividing the cropland area into four pastures permits opening successive segments with ungrazed forage at a rate of about one pasture per week.

"Spring-seeded winter rye planted separately provides an economical late-fall annual cereal pasture forage that meets beef cow nutritional requirements and allows grazing dry cows to gain weight from mid November to mid December," Manske says.