Stockpiling Smooth Bromegrass Pastures

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Stockpiling is managing pastures/hay land to accumulate forage produced during the growing season to be grazed at a later time. Maintaining livestock on pasture longer in the season reduces the need for stored feed, thereby reducing costs associated with storing feed. Extending the grazing season is a cost-effective way of redistributing manure rather than scraping lots, transporting and spreading manure back onto the pasture. The practice of stockpiling cool-season grass pastures is used extensively in the Midsouth where tall fescue is the predominant species. However, in the north-central states, smooth bromegrass is the predominant pasture species.

Although smooth bromegrass has a wider adaptation, winter hardiness and high palatability, its potential to maintain forage mass and forage quality under stockpiling is relatively unknown. The challenge with using smooth bromegrass for stockpiling is that it produces most of its growth in early spring, shows very slow growth in summer and regrows relatively slow after defoliation. Researchers at the University of Minnesota, led by Dr. Gregory Cuomo, investigated several options of initiation date and nitrogen rates for stockpiling smooth bromegrass pastures at Morris, MN.

Previous research had shown that earlier stockpiling initiation dates in summer resulted in greater forage yield but lower forage quality. Nitrogen (N) fertilization has also been shown to increase forage mass and crude protein. Both forage yield and forage quality of stockpiled grasses have been shown to decline as winter progresses. The primary cause of forage decline in winter is weathering.

The study at Morris, MN, showed that forage mass could be increased by adding fertilizer, but not all levels of fertilizer were profitable. When fertilizer was applied at the rate of 100 lbs N/acre, the value of forage measured in October was less than the cost of fertilizer application for every stockpile initiation date. Fertilizer applied to a predominantly smooth bromegrass pasture at 50 lbs N/acre was found to be profitable if stockpiling was initiated before July 15 and crude protein of the grass was higher than the cost of fertilizer. In calculating the expenses involved, it is assumed that fertilizer cost $0.38/lb. Using the fertilizer cost in the Morris study, applying 50 lbs N/acre results in a cost of $19/acre and 100 lbs N/acre is $38/acre. Assuming a hay auction price of $0.008/ lb, raising N rate to 100 lb N/acre will only result in a modest partial return of $10/acre if forage mass was 3 tons/acre. This study showed that it was possible to increase returns by fertilizing smooth bromegrass pasture at a rate of 50 lbs N/acre. Initiating stockpiling on July 1 instead of June 1 makes it possible to graze or cut the forage in June and have positive returns to stockpiling forage over fertilizer cost at 50 lbs N/acre. The forage nutritive value of stockpiled smooth bromegrass was found to be adequate for maintaining dry cows or ewes but not nutritionally adequate for growing or lactating animals.

Summarized and modified by permission from: Cuomo, G.J., M.V. Rudstrom, P.R. Peterson, D.G. Johnson, A. Singh, and C.C. Sheaffer. 2005. Initiation date and nitrogen rate for stockpiling smooth bromegrass in the north-central-USA. Agronomy Journal 97: 1194-1201.