Profit From Pastures

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Pasture lands are an under utilized and under managed resource in Minnesota. Rotational grazing systems, when combined with adequate fertilizer use, will improve pasture productivity and animal performance; yet, there is still a high percentage of cow/calf producers who use continuous grazing systems. Some think that slow adoption of fertilization and rotational grazing is partly due to a lack of demonstrated evidence that this management combination is an improvement over continuous grazing. To respond to this educational challenge, a demonstration project was cooperatively planned for 2005 by: 1) a group of beef cow/calf operators, 2) extension and research faculty from the University of Minnesota and 3) field staff from the Natural Resources and Conservation Service. The purpose of the project was to conduct a demonstration that would compare animal performance in a continuous grazing system using no inputs to animal performance on a pasture that was fertilized and rotationally grazed.

The demonstration was conducted with a cow/calf producer in Cass County, MN. One pasture was divided into four fenced paddocks that were fertilized according to University of Minnesota guidelines. Electric fencing and a watering system were installed so that rotational grazing could be used. This pasture consisted of 41.5 acres. For comparison, a non-fertilized continuous 400 acre pasture without fertilization was used. This pasture was located across the road from the rotationally grazed paddocks.

The rotationally grazed paddocks were fertilized with 60 lbs nitrogen (N), 30 lbs phosphorus pentoxide (P_2O_5) and 90 lbs potassium oxide (K_2O) per acre at a cost of $40 per acre.

All cows were weighed on May 23 and the entire herd was rotated through the four paddocks. On June 13, cattle were sorted at random and 20 cow/calf pairs were randomly chosen to graze the rotational paddocks. Eighty cow/calf pairs were selected for the continuous pasture.

On August 18, 20 randomly selected cows were weighed and all cow/calf pairs were moved off the 400 acre continuously grazed pasture, due to lack of available forage, and moved to an alternate pasture. Cows on the four paddocks were weighed on August 18, but were not removed from this pasture system until October 13, when they were weighed for the last time.

As a result of fertilization on the four paddocks, hay was harvested in late June from selected paddocks and stored for feed due to excellent forage production.

The table gives a summary of animal gains and body condition scores. Comparing the two grazing systems, there were several obvious differences in pasture carrying capacity and animal performance. The rotationally grazed paddocks were able to support one cow/calf pair per 2.1 acres of land for 143 days. The pasture that was continuously grazed provided support for one cow/calf pair per five acres for 87 days before these cattle were moved because of lack of available forage.

The measure of animal performance was important. During the same 87 day grazing period, cows on the rotationally grazed paddocks gained 0.38 lbs per head per day more than cows on the continuously grazed pasture. While performance data on the calves grazing the continuous pasture were not obtained, it is estimated that suckling calves gained approximately 60 lbs per head more on the rotationally grazed paddocks. This added weight translates to more profit from the weaned calves.

The additional weight of the cows and calves was not the only advantage. Cows on the rotationally grazed paddocks had a greater body condition score after 87 days. This increase in body condition helps to stimulate efficiency of forage utilization and allows cows to breed earlier in the breeding season. This translates to older and heavier calves at weaning. Cows from the rotationally grazed system will go into winter in better body condition, which ultimately can reduce winter feed cost.

The economics of this demonstration are difficult to quantify in one year. The value of the estimated added weight of calves on the rotationally grazed paddocks was $38.57 per acre. This would nearly pay for the cost of the fertilizer. The added weight and body condition of the cows and the hay harvested from the paddocks are additional income that can be attributed to the management practices of fertilization and rotational grazing.

The results of this demonstration from the summer of 2005 show the positive value of combining fertilization with rotational grazing. There are many pastures where the use of these management practices could improve forage production, reduce feed cost and ultimately increase profits.

Item	87 days continuous pasture	87 days rotational pasture	143 days rotational pasture
Cow/Calf Pair #	80	20	20
Pasture Acres	400	41.5	41.5
Acres per Cow/Calf Pair	5	2.1	2.1
Days on Pasture	87	87	143
Beginning Weight per Cow, lb.	1212	1208	1208
Ending Weight per Cow, lb.	1282	1312	1392
Average Weight Gain, lb.	70.50	103.20	182.90
Average Daily Gain, lb./day	0.81	1.19	1.28
Beginning Body Condition Score	5.1	5.2	5.2
Ending Body Condition Score	5.3	5.6	5.9

Table 1. *Useful information from the Cass County pasture demonstration.*