Integrated Crop/Livestock Systems in the Northern Plains: WINTERING BEEF COWS ON SWATHED FORAGES.

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INTRODUCTION

Ranchers in the Northern Great Plains generally winter beef cows on relatively expensive baled hay, at a time in the cows life cycle when her nutrient requirements are the least. Allowing cows to do more of the harvesting themselves should lower winter feed costs. The objective of this research was to determine if dry gestating beef cows could be wintered on swathed annual or perennial forages.

METHODS

Swathed annual crops were produced in a 3-year crop rotation consisting of oat/pea, triticale/sweet clover, and drilled corn. Crops were first seeded in 1999, and all crops were available for swath grazing each year. Oat/pea and triticale crops were harvested for grain with the residue left in swaths. Drilled corn was swathed in September. Dry gestating Hereford cows, bred to calve in late March, were rotationally grazed on the annual crops (CROPS). Their performance was compared to cows grazing swathed western wheatgrass forage (WW swath), and cows fed baled hay in a drylot (HAY). Winter feeding began in November and was terminated in mid-February during 3 years. Each of the 3 treatments contained 2 replicates of 10 cows, for a total of 60 cows. Cows on the CROPS treatment grazed the crop residue in early winter and the corn in late winter. Cows on the CROPS treatment also received a supplement of oat/pea and triticale grain averaging 1.5, 1.8 and 0.45 kg/cow/day in 1999-2000, 2000-2001, and 2001-2002, respectively. Cows were weighed and condition scored following an overnight stand without feed or water at the beginning and end of each trial. Intermediate weights were taken following grazing periods on triticale and oat/pea residue. Fresh forage was provided to swath grazing cows each day by moving a portable electric fence. Core samples from hay bales and grab samples of swathed forages were collected each week and analyzed for crude protein (CP), and phosphorus (P).

Fig. 1. Corn and triticale in August after seeding into crested wheatgrass sod.

Fig. 2. Oat/pea in late July of 2000, the second year after seeding into crested wheatgrass sod. Drilled corn in background.

Fig. 3. Combining triticale with the under-seeded sweet clover showing between swaths.

Fig. 4. Swathing drilled corn with a haybine in late September.

Fig. 5. Cows grazing snow covered triticale residue swaths.. Note electric fence post and wire in the foreground.

Fig. 6. Cows grazing swaths of Oat/pea residue through snow.

Fig. 7. Cows grazing swathed drilled corn through snow.

Fig. 8. Cows grazing swathed corn, with pheasants in the background looking for grain.

Fig. 9. Cows grazing swathed western wheatgrass. Note the polywire electric fence in the foreground.

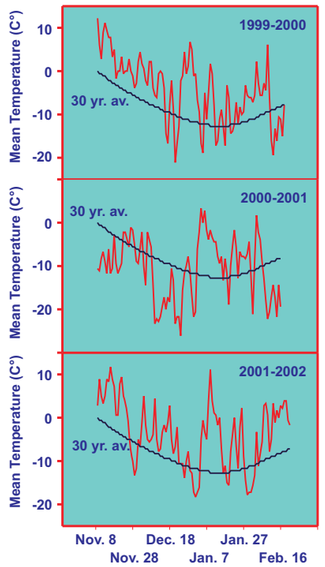

Fig. 10. Average winter temperatures for 1999-2000, 2000-2001, and 2001-2002 compared to long term (30-year) averages. Average temperatures were above normal in 1999-2000 and 2000-2001 and below average in early and late 2001-2002.

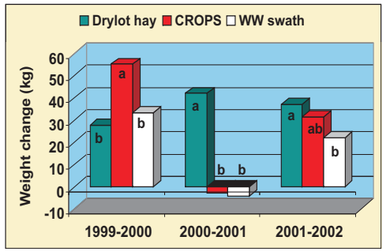

Fig. 11. Weight gain for the CROPS cows was greatest in 1999-2000, but drylot cows fed hay had the greatest gains the next 2 years.

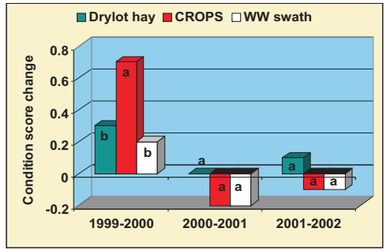

Fig. 12. Cow condition score changes in 1999-2000 followed weigh changes, but condition scores differed little among treatments during the last 2 years.

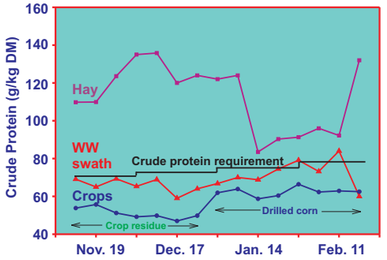

Fig. 13. Crude protein levels averaged over 3 years. Crude protein was marginal in swathed western wheatgrass and clearly deficient for the crops treatment.

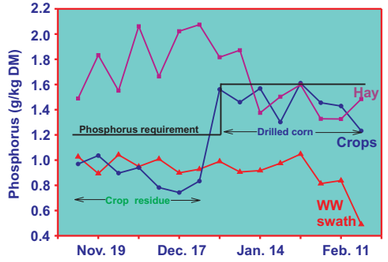

Fig. 14. Forage phosphorus (P) levels averaged over 3 years. WW swathed grass was below NRC (1996) P requirement all winter. P was deficient in crop residue and marginal in drilled corn. Hay was marginal in P late in the winter

RESULTS AND CONCLUSIONS

Weight gains and condition scores were significantly higher for cows grazing the CROPS treatment in 1999-2000, but in the other 2 years hay fed cows had the highest weight gains. Our goal was for cows grazing swathed forages to have weight and condition score changes comparable to drylot cows. Condition scores differed little among treatments and years. Weight gain differences were mainly in 2000-2001 when temperatures were below average. Weight and condition score changes did not appear to affect calving performance (data not shown).

Crude protein in the crop residues and swathed corn was below cow requirements and swathed WW grass was marginal.

According to the NRC (1996), phosphorus levels in WW swath forage and crop residue were below requirements and drilled corn was marginal.

After 3 years our results suggest dry bred cows can be successfully wintered on swathed forages if they are properly supplemented. In 2000-2001 it was necessary to supplement cows grazing swathed forages at a higher level than the other 2 years because of cold weather. Hay fed cows gained weight in 2000-2001, while CROPS and WW swath cows lost some weight, but weight changes did not appear to affect reproductive performance.

Cows will graze swaths through snow, but crusting and icing can be a problem which may necessitate mechanical treatment to break the crust. Advantages of swath grazing include lower winter feed costs and minimal manure concentration and handling problems.

REFERENCE

NRC. 1996. Nutrient Requirements of Domestic Animals. Nutrient Requirements of BEEF Cattle. 7th Edition. National Academy Press, Washington,DC.

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