



Box 1448, 5039 – 45 Street
Rocky Mountain House AB T4T 1B1
Ph: (403) 844-2645 email: gwfa1@telus.net

Forage Species Evaluation for Extended Grazing

Project #: 1994-A

Cooperator: Carey Pearman, Rimbey

Sponsor: Grey Wooded Forage Association

Funded: PID

Objective:

To evaluate eight different forage species by yield and quality analysis to determine which are suitable for stockpiling for fall, winter and spring grazing. As well, there will observations made as cattle graze these plots in the fall, winter and spring to determine preference and palatability.

Cultivars used:

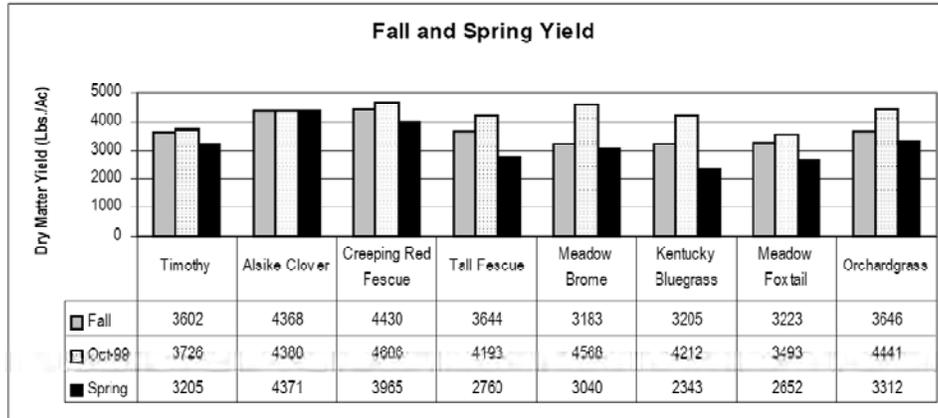
Climax Timothy
Alsike Clover Common #1
Boreal Creeping Red Fescue
Courtenay Tall Fescue
Fleet Meadow Bromegrass
Troy Kentucky Bluegrass
Dan Meadow Foxtail
Kay Orchardgrass

Method:

The replicated plots will be silaged or hayed in early July to allow for reasonable regrowth to occur. Yield clips will be taken in the fall on each of the plots, and a feed analysis will be done on each species. Cattle will then be turned out in to the plots where observations will be recorded at each seasonal grazing.

Results:

1. Yield Results from 1999 and cumulative from 1996.

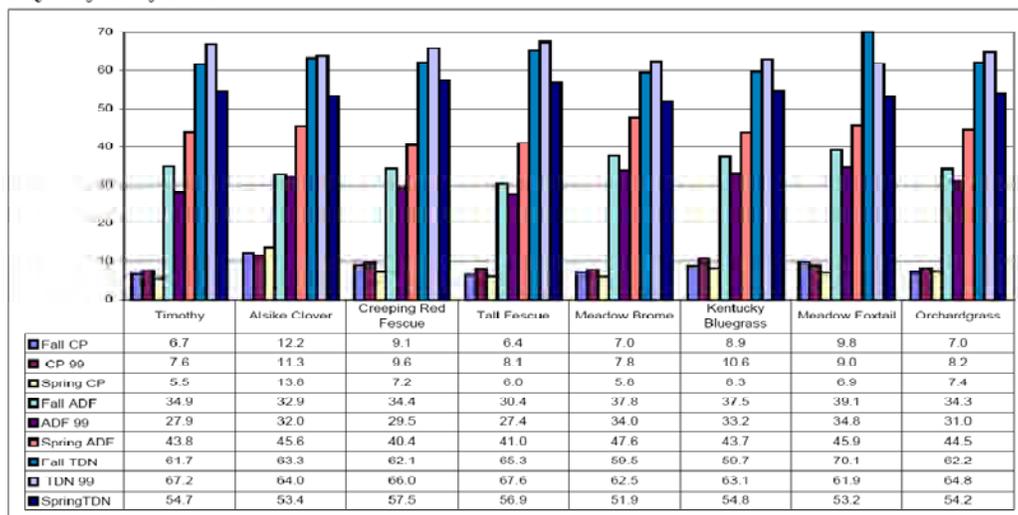


The fall columns are cumulative results from the past four years (1996, 1997, 1998, 1999), but the spring columns are only cumulative data from 1997 and 1998. Due to unforeseen circumstances spring yield clips were not conducted in the spring of 1999. It is our goal to have this completed in 2000 with a complete years worth of data (both fall and spring). Notice the Yield increase in the Meadow Bromegrass, Kentucky Bluegrass, Orchardgrass and Tall Fescue.

The reason for this change is that we increased the Nitrogen fertilizer rate by 40 pounds/acre in total we applied 100 pounds/acre of Nitrogen, 20 pounds/acre of Phosphorous, 20, pounds/acre of Potassium and 10 pounds of Sulphur (elemental). This was split applied with 50-20-20-10 being applied in June and the 50 pounds/acre applied after the first cut in late July. Just looking at previous years yield data compared to this years yield data we have been nitrogen starving some of the species in the plots, which require more nitrogen to achieve the yields that they are capable of (Meadow Bromegrass, Kentucky Bluegrass, Orchardgrass and Tall Fescue).

Notice that we did not get the yield increase on the Creeping Red Fescue unlike the other species- we may have reached the yield potential for Creeping Red Fescue at this particular site on this particular soil. As well as yield we also took quality analysis.

2. Quality Analysis for 1999



3. Palatability & Preference

| | | Timothy | Alsike Clover | Creeping Red Fescue | Tall Fescue | Meadow Brome | Kentucky Bluegrass | Meadow Foxtail | Orchardgrass |
|---------------------|-------------------|---------|------------------|------------------------|----------------|-----------------|-----------------------|-------------------|--------------|
| 05-May-97 | (all reps) | 2 | 7 | 5 | 3 | 6 | 1 | 8 | 4 |
| 13-May-97 | (all reps) | 8 | 6 | 4 | 3 | 2 | 1 | 7 | 4 |
| Average | | 5 | 6.5 | 4.5 | 3 | 4 | 1 | 7.5 | 4 |
| 27-Oct-97 | (rep 1) | 2 | | 5 | 2 | 3 | 4 | 5 | 3 |
| | (rep 2) | 2 | | 4 | 3 | 4 | 3 | 5 | 5 |
| Average | | 2 | | 4.5 | 2.5 | 3.5 | 3.5 | 5 | 4 |
| 27-Oct-97 | (rep 1) | 3 | | 5 | 3 | 3 | 4 | 5 | 3 |
| | (rep 2) | 3 | | 4 | 4 | 4 | 4 | 5 | 4 |
| Average | | 3 | | 4.5 | 3.5 | 3.5 | 4 | 5 | 3.5 |
| 29-Oct-97 | (rep 1) | 1 | | 2 | 1 | 2 | 1 | 5 | 1 |
| | (rep 2) | 2 | | 3 | 1 | 2 | 1 | 5 | 1 |
| Average | | 1.5 | | 2.5 | 1 | 2 | 1 | 5 | 1 |
| Overall Avg. | (Fall '97) | 2.2 | | 3.8 | 2.3 | 3.0 | 2.8 | 5.0 | 2.8 |
| 27-Apr-98 | (rep 1) | 3 | | 2 | 1 | 1 | 1 | 5 | 3 |
| | (rep 2) | 2 | | 2 | 1 | 1 | 1 | 4 | 1 |
| Average | | 3 | | 2 | 1 | 1 | 1 | 5 | 2 |
| 14-May-98 | (rep 1) | 4 | | 3 | 2 | 2 | 2 | 4 | 5 |
| | (rep 2) | 4 | | 2 | 2 | 1 | 1 | 4 | 4 |
| Average | | 4 | | 2.5 | 2 | 1.5 | 1.5 | 4 | 4.5 |
| 13-Nov-98 | (rep 1) | 2 | | 3 | 2 | 4 | 3 | 5 | 1 |
| | (rep 2) | 1 | | 3 | 2 | 4 | 2 | 5 | 2 |
| Average | | 1.5 | | 3 | 2 | 4 | 2.5 | 5 | 1.5 |
| 03-Nov-99 | (rep 1) | 2 | 2 | 3 | 2 | 3 | 3 | 5 | 3 |
| | (rep 2) | 3 | 3 | 5 | 2 | 3 | 3 | 5 | 3 |
| Average | | 2.5 | 2.5 | 4 | 2 | 3 | 3 | 5 | 3 |

You can see the addition fertility had both a positive effect on yield, but also on forage quality that on the average increased with all species except for Alsike Clover and Meadow Foxtail. ADF fractions in all species were lower, and TDN values were also higher except for the Meadow Foxtail. Again the fall and spring values are cumulative data from the past four years worth of data collecting (except for the spring which only has two years worth of data). Even though these values look low compared to some second cut hay values, it is because we used the yield clip sample as a feed quality sample. The cows are selecting a far better diet just judging the manure pats that are being deposited.

As for the Palatability and Preference data, as you can see Meadow Foxtail is not preferred in either the fall or the spring. However new spring growth will be grazed, but only down to where the old material is and the stockpiled material is left behind. Creeping Red Fescue is not well preferred in the fall compared to Tall Fescue, Meadow Brome or Orchardgrass or Timothy. But that does change for spring grazing, where Timothy is not so preferred in the spring and the Creeping Red Fescue is along with Meadow Brome, Tall Fescue, Kentucky Bluegrass and Orchardgrass.

As we get further in to spring (mid-May- early June) the preference for this older material declines as noticed in spring of 1998 as the percent utilization has declined in all species. The exception is the Meadow Foxtail because at about that time there is about 4-6. of new growth that is being grazed. As for recommendations as to what to seed in forage mixes has not been changed dramatically. The use of either Creeping Red Fescue or Kentucky Bluegrass is still a favored requirement in any pasture mix (see Building on Bluegrass Longevity on page 17).

Depending on management goals the use of Meadow Brome, Tall Fescue or Orchardgrass will aid in adding volume to the stockpiled sward, which for winter grazing is beneficial for the cows to find. As for legumes this is difficult because we lost the Alsike clover stand in the first year of the trial. However, in other demonstrations with stockpiled forage the sward is usually mixed with legume content between 40% and 25% of the canopy cover. Some information has suggested that Birdsfoot Trefoil or Cicer Milkvetch may favor stockpiling for winter and spring grazing due to their ability to retain most of their leaves. The use of alfalfa in any stockpiled forage management plan would have to be for early to mid fall grazing due to leaf loss by mid- to late October.

It would be interesting to develop a plot similar to this but include more of the different species of legumes in it and have them mixed with grasses to observe animal preference. Also, to evaluate what the forage quality would be in the spring for the legumes and the mixes. Longevity of the legume component should also be measured- could late fall grazing with snow cover (after grazing would be hard packed) be detrimental for legume survival? Also would it be more beneficial to swath high legume content swards to reduce this leaf loss?

This trial answered some questions on varieties in terms of forage production and quality, but we did not venture into the realm of economics. For this we would need to evaluate animal performance such as weight gain/loss, body condition, matching forage quality with proper animal class to maximize benefit of the pasture management.