Forage Fact # 94

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Revegetation Project: More Lessons Learned

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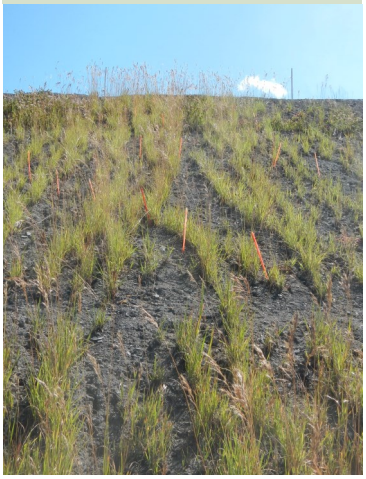
Overview

This forage fact is to summarize findings we have made during the course of this project, that have not been included in other factsheets. These findings are based on demo sites, where data was collected, but there were not enough trial reps for statistical analysis.

These demos have given us useful knowledge and ideas for the future. In the next pages, we share what we learned about:

1. plant stage and vigour,
2. seed mixes,
3. use of fertilizers, and
4. species observations.



Meadow bromegrass plot where plant stage & vigour data was collected.

Monitoring Methods

Plant Stage Ratings:
Based on maturity, height, leaves, seed heads
1 = 1 leaf seedling … to
7 = mature plant

Plant Vigour Ratings:
Based on colour, # of leaves, width of leaves
1 = lowest vigour … to
7 = highest vigour

1. Plant Stage and Vigour

As a small side project, we wanted to take a closer look at how plants develop over the course of the season. We did this by using a set of categories for plant stages and plant vigour based on points *(see detail in side bar)*. We did this at one site with research plots, collecting data every 2 weeks for 2 months. Overall, we found that the **stage of plants** increased throughout the summer. This comes as no surprise as a plant can't go back in stages unless it dies and would no longer be included. The rate at which stages increased in different parts of the season differed slightly between different species.

Plant vigour, on the other hand, decreased over the course of the season, which was opposite of what we expected. This could be because of the lack of rain we had during this summer. Without summer rainfall, plants could not absorb enough nutrients to maintain the vigour they acquired in spring, when there had been more moisture available.

2. Seed Mixes

A Ducks Unlimited mix in first year of growth, shows alfalfa and several grasses.

We used some mixes on demos, both at the beginning and at the end of the project. Collecting emergence and % cover on these was rather challenging but still gave us some indication of how they did. For the most part, the mixes acted much as expected in relation to the "**AllStar**" performers that they contained. The mixes that contained 1 or more species that did well in single species plots performed better as mixes. A clear advantage of mixes is that if a few species in the mix establish well, it compensates for the ones that are slow to establish. The mixes provide ground cover and some erosion control, which is important in all aspects of plant growth.

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Comparison between side by side plots of slender wheatgrass plots: with fertilizer (top photo) & without fertilizer (bottom photo).

3. Fertilizer Observations

We conducted several fertilizer demos (some already discussed in FF#81). We observed that fertilizer has more potential if there is a certain amount of plant growth when applied. On a site near Farmington, we did replicated trials with fertilizer on 5 different species *(see graph below)*. We found that the different species with fertilizer grew better and had more similar % cover values between species. In contrast, the non-fertilized plots, were much more variable with % cover values. It is also worth noting that the fertilizer response of **sheep fescue** and **slender wheatgrass** were statistically significant (i.e. narrower error bars).

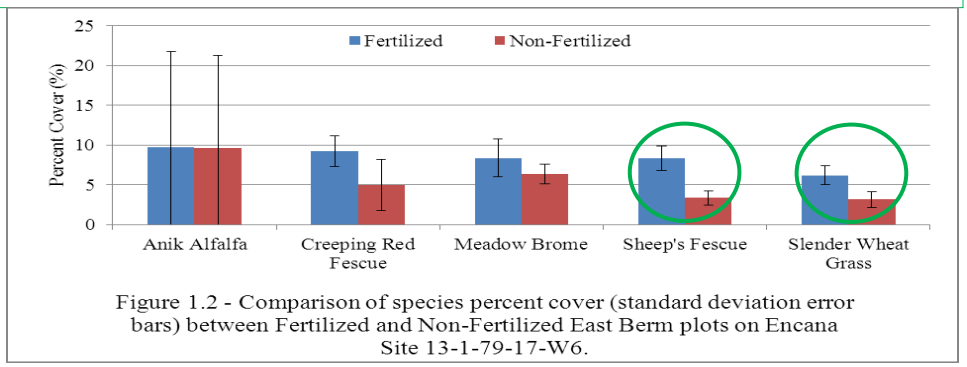

Figure 1.2 - Comparison of species percent cover (standard deviation error bars) between Fertilized and Non-Fertilized East Berm plots on Encana Site 13-1-79-17-W6.

Slender wheatgrass (top) & meadow bromegrass (bottom) on sandy droughty soil sites.

4. Species Observations

Throughout our various sites we had some observations other than the "superstars" we have talked about in other factsheets. Some species performed well in tough conditions, such as dry or sandy sites. Two of these were **slender wheatgrass** and **crested wheatgrass**. This makes both species very good options in poor soils where grasses are hard to establish.

Another species that should be mentioned is **hybrid bromegrass**. This is a genetic cross between meadow bromegrass and smooth bromegrass, both of which have done well in our trials. Hybrid bromegrass did very well in one of our pipeline sites with dry soils and poor growing conditions. It did considerably better than all species seeded, including smooth and meadow bromegrass.

Conclusion

This project has taught us many different things about re-vegetation, but it has also raised many more questions. The main lesson we learned is that it takes a combination of many factors to have successful re-vegetation. Fertilizer, species/mix selection, timing of seeding, construction of berm/ pipeline and also Mother Nature all have to work together to achieve good re-vegetation.

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