Article for Forage Seed News

You Have Got to Think Like a Fescue Plant

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Wildlife Damage on Fescue Study

Objectives of the Study

1. To determine the level of wildlife impact on creeping red fescue seed production.
2. Work with BC Ministry of Agriculture and Lands to integrate our findings into the Agriculture Wildlife Program.
3. Carry out a literature review on published research to use for supporting information on the effects of wildlife grazing on grass seed yield.
4. Develop methodologies for assessing elk damage in forage seed fields and develop a training package to be utilized by BCMAL staff in identifying and assessing the damage.

Background

There are over 200 fine seed producers in BC utilizing more than 36,000 ha (90,000 ac) for grass seed production. As a program is being developed within BC to compensate producers for losses to grain crops and forage stands caused by wildlife, research needs to be initiated to provide similar options to effectively compensate forage seed (or fine seed) producers for their losses. The first steps needed to provide an effective wildlife compensation program for forage seed producers in BC is to identify and quantify the severity of the loss and then develop a method of assessing the wildlife damage effectively and efficiently.

Since creeping red fescue is the major grass grown for seed (12,000 ha) within the BC Peace, it was selected as the grass to be used in this project. W.L. Pringle et al at Beaverlodge, Alberta (1969) used yearling steers to graze creeping red fescue and found that moderate fall grazing reduced creeping red fescue seed yields by 8%, heavy fall grazing reduced creeping red fescue seed yields by 16% and spring grazing reduced creeping red fescue seed yields by 35%. These yields may vary considerably when grazed by elk which have a different grazing method and intensity than cattle. Creeping red fescue fields grazed hard by elk have been observed to be grazed right down to the crowns with very little green material left showing in these grazed areas. Seed yield losses and variability in maturity and stand density caused by elk may be higher than the yield losses found in Pringle's research using steers, which do not tend to graze as close.

Photo Pair 1: Fescue plants indicating seed yield losses and variability in maturity from spring grazed to ungrazed (left), and from ungrazed to fall winter grazed(right).

In 1999, Nigel Fairey at Beaverlodge used sheep to graze creeping red fescue plots in the fall after seed harvest and found almost a 50% decrease in seed yield the following year. Sheep may have a grazing method that is closer to grazing patterns of elk.

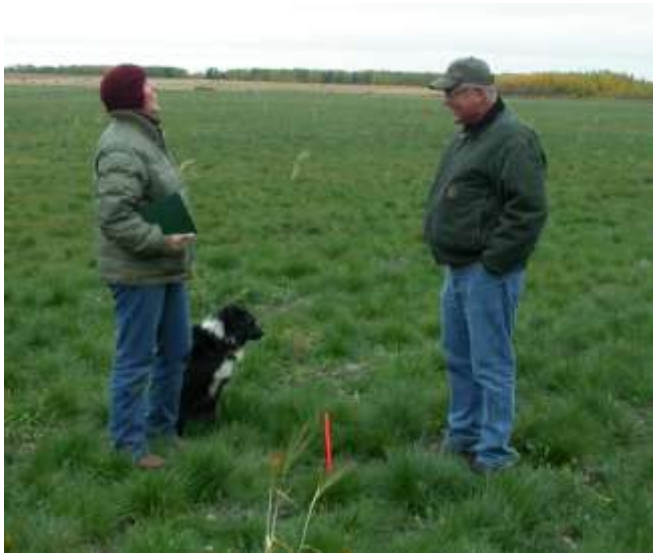

Photo 2: Julie Robinson & Arvid Aasen selecting sites potential wildlife damage in fall 2009.

Photo 3: Sandra Burton checking on wildlife activity *for* near exclosures at Rick Gies site.

This study will run for 3 years to determine potential seed yield losses in creeping red fescue fields in B.C. The Peace Region Forage Seed Association has committed $15,000 in funding to this project for 3 years. The first year will be a preliminary study to determine the methodology to assess the damage done by elk on forage seed yields. The Agriculture Environment & Wildlife Fund committed $12,500 to this project for each year as well. (To

be reviewed after current approval for 2 years). The research team will review the protocol and results after year 1 to determine the feasibility of collecting meaningful data which can be used to meet our objectives. Currently, the Peace Region Forage Seed Association and the Agriculture Environment & Wildlife Fund are committed to funding the study for year 1 and 2, if the information collected meets the objectives of this research.

Cooperators & Sites

1. Reuben Loewen, Prespatou
2. Dan Peters, Prespatou
3. Rick Gies, North Rolla
4. Bruno Osterwalder, Cecil Lake

Methodology & Monitoring

Four 1st year creeping red fescue fields were identified as potential elk grazing sites in the Peace Region of B.C. Fields were selected where the first seed production crop was to be harvested the following year. Four sets of corral panels to form four 10' x 10' exclosures were set out at each site in the fall as grazing exclosures prior to the elk grazing. The panels were placed in the fields after the fields have been fertilized in late fall.

The exclosures were set up in the fall in a randomized block with 4 replicates. Soil fertility samples were taken to measure available organic matter, pH, nitrogen, phosphorous, potassium and sulphur. Clippings were taken to assess the amount of dry matter before grazing. The sites were monitored over the winter for elk, moose or deer tracks and droppings.

Unfortunately wildlife grazing is truly a wild card. It is impossible to predict exactly which fields or which areas of the fields will be grazed by the elk when selecting creeping red fescue fields. The fields were monitored in the winter and spring to determine the presence of elk. Only at our study site with Rick Gies, were the elk, moose and deer consistent in grazing around the exclosures where the grazed sampling locations had been selected in

the fall. At the 2 study sites in Dan Peter's fields, elk failed to graze anywhere near the exclosures, so these fields were dropped from the study. At Reuben Loewen's site, there was evidence of mild grazing near the exclosures and more severe grazing in another portion of the field, so an extra 4 grazed sampling areas were added.

This spring, several farmers called the research team to investigate wildlife damage on their fescue crops. Thus, 2 good study sites were added in Bruno Osterwalder's fields. Visual inspections were made to determine the grazed and ungrazed areas of the field prior to setting up the ungrazed sampling areas. The same measurements and monitoring were done on these additional sites.

In the spring the grazed areas were visually rated as to the grazing intensity, plant vigour, plant heights and ground cover. At mid season, after heading, vigour assessments were done again. Three plants were randomly selected from each GPS located sample area. For each of these plants (i.e. 3 plants x 36 plots) data was collected on: head counts per plant, heights, seed volumes, plant circumference, maturity ratings were taken to compare the exclosures or ungrazed areas (controls) and from the grazed or crown damage areas (treatment).

Photo 4: Spring grazed compared to ungrazed fescue plants.

Photo 5: Crown damage in Bruno's Osterwalder' fescue field.

Seed yields were determined from within the ungrazed exclosures and from comparable sites that were grazed by elk outside these exclosures. At harvest, seed yields were taken by harvesting the areas within the exclosures and the grazed areas. These samples were bagged and dried and sent to Beaverlodge for threshing to determine seed yields. Later this fall, seed quality parameters such as 1000 kernel weights and germination will also be measured with the seed samples.

Background context information was also collected. The producers were interviewed to determine their management practices (rejuvenation method, timing of rejuvenation, weed control, fertility, seed yields, etc.) Fall soil fertility and harvest time soil moisture samples were taken.

What the Fescue & the Farmers Taught Us

The highlights for us, amidst long hours of fieldwork and foul weather, were definitely what the fescue plants and the farmers taught us.

Bruno added a whole new dimension to the study this spring, when he showed us an area that a herd of 15 to 20 elk had "hung out" for most of the winter. The plants had been pawed and trampled, so the fescue crowns were obviously damaged. Up until that point, we had been erroneously focussing on damage that we could assess above the ground from bite marks and clipped plants. Bruno also taught us about caryopsis and early seed formation, and some farmer friendly tricks to assessing maturity.

Reuben took the time to share his years of managing fescue seed crops with us. We learned how the overall potential for seed yield due to tillers and numbers of seed bearing stems is determined by factors in the fall (fertility, moisture, grazing pressure, freeze/thaw conditions, snow pack). How that potential is realized is

determined by all that happens to that plant between late fall and harvest. At one point Reuben enthused “You just have to get right down there and think like a fescue plant.”

Since we couldn’t be everywhere this summer and visit the research sites daily, we dug up plants from several fields to plant in pots and observe over the summer. It was very interesting how the fescue plants try to compensate and recover from some grazing or clipping, but it really depends on the timing and severity, how successful they are. We affectionately named one plant Doug, that we noted a GPS location for and monitored during each field visit over the summer. Doug had been dug and pawed out of the ground but it tenaciously clung to life supporting rooting in one corner (about 15% of the plant), greened up this spring, and actually produced seed heads on that small portion of the plant.

As well as naming our favourite study plants, our diligent research team even counts them. Alex Strasky had been recruited short notice mid summer to assist us to finish off the mid season monitoring and stay ahead of earlier-than-usual harvesters at the same time. Sandra and Alex finished up taking soil samples and joined the others to help with plant monitoring, just as Julie, said “Talon, can you hand me plant #5 please?” In the franticness of trying to get twice as much done during this field visit, there had not yet been time to describe our random numbers methodology for sampling plants for more detailed assessments. Alex got a very strange look on his face. And remember this practical farmer’s son had just recently heard Reuben’s impassioned plea for us to “think like a fescue plant’. As he gazed out over the quarter section, a wide eyed Alex asked “you mean to tell me that you actually count the fescue plants in this field?!”

Alex Strasky bagging harvest samples from Reuben Loewen’s field.

Where to Next

This project will run for 3 years to determine potential seed yield losses in creeping red fescue fields in B.C. Year 1 will be a preliminary study to determine the process and methods to assess the damage done by elk on forage seed yields. The field selection and potential grazing area in the field by elk is very unpredictable and changes in our protocol will be needed in years 2 and 3.

The data collected will be used by the B.C. Agriculture Wildlife Program to determine if growers’ losses can be measured and then what grower payouts for elk damage under this program could be. This trial will also be used to develop methodologies for assessing elk damage in forage seed fields and developing assessment methodologies to share with BCMAL staff to aid in identifying and assessing the damage. A literature review will be carried out to supply supporting evidence to the research findings. The information will be presented at producer meetings and a forage seed conference to extend the information to producers.

Thank Yous

BC Forage Seed Growers’ Levy & PRFSA for their early commitment to the study and 3 years of funding;
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Reuben Loewen for use of 4 wheeler and farm truck;
Robinson Family for use of trailers, ATVs & snow mobiles;
Peace River Forage Association for supplying corral panels for exclosures;
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Owen Lee, Pat Ganselves & Beaverlodge Research Farm for threshing harvest samples & processing seed quality.