

BST SOIL CONSERVATION ASSOCIATION

Forage Seed Production Research Project
Phase 4+5 Deliverable (Final Report)

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The responsibility for the report as written, its findings, conclusions and recommendations herein are the author's alone. The report does not necessarily reflect the opinions of the Foundation and the Fund who partially funded this project.

I would like to thank the members of our association who set land aside for the plots and for their generous co-operation which allowed the plots to be successfully harvested. I would also like to acknowledge Claire F. Langlois and the B.C. Grain Producers Association for the use of various pieces of equipment.

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Executive Summary

Due to a late cold snap at the beginning of spring our post harvest management trials on tall fescue winterkilled together with the underseeding trials of perennial ryegrass. This left as trials to harvest only the postharvest management trials on sheep's fescue and creeping red fescue, the sodknifing trials on creeping red fescue and meadow brome and the native grass trials.

Reporting Period: April 1, 2001 - March 31, 2002

1. Post harvest management

Monitoring of plots, harvesting, thrashing and cleaning and weighing of samples.

2. Sod knifing of creeping red fescue and meadow brome

Monitoring of plots, harvesting, thrashing and cleaning and weighing of samples.

3. Underseeding of perennial ryegrass

No activities

4. Production trials of native grasses

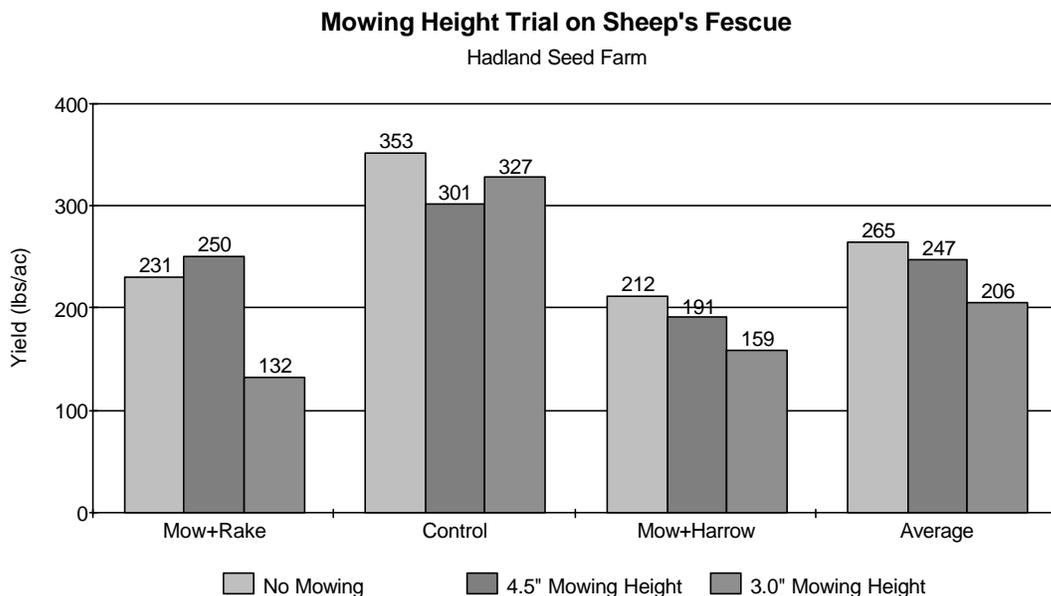
Monitored and harvested Canada Wild Rye plot, thrashed, cleaned and weighed sample.

Post Harvest Management Trials

Post harvest management is considered an important part of growing grass seed crops to ensure optimum yield for the next season. The main components of post harvest management are mowing after harvest and removal of residue. We intended to evaluate the effect of post-harvest mowing and post-harvest residue removal for sheep's fescue, creeping red fescue and tall fescue. For sheep's fescue we also included an evaluation of heavy duty harrowing in the trial. The trials were established in the summer of 2000 as soon as possible after harvest. The timing of soon after harvest is said to be critical in order to produce optimum results. The trials established on tall fescue winterkilled so we were left only with the trials on sheep's and creeping red fescue.

Mowing of grass seed crops at some point after harvest is the most common post harvest management practice. Since there is not much data available on its effects for our growing area we included mowing trials in our post harvest management trials. A rotary mower was used on all plots.

In the fall of 1998 we began leasing a needle-nose-rake to evaluate the effect of thorough straw removal after harvest on the seed yield the following year. The rake is 40 feet long with 17 raking wheels of approximately 6 feet diameter. Each wheel has 124 straight tines and the downpressure and height of the wheels can be adjusted between just touching the top of the grass to aggressively penetrating the ground to a depth of 1/2 inch. In the Pacific Northwest of the USA the rake is used to remove harvest residue and we wanted to find out whether it would provide any benefit under our growing conditions.

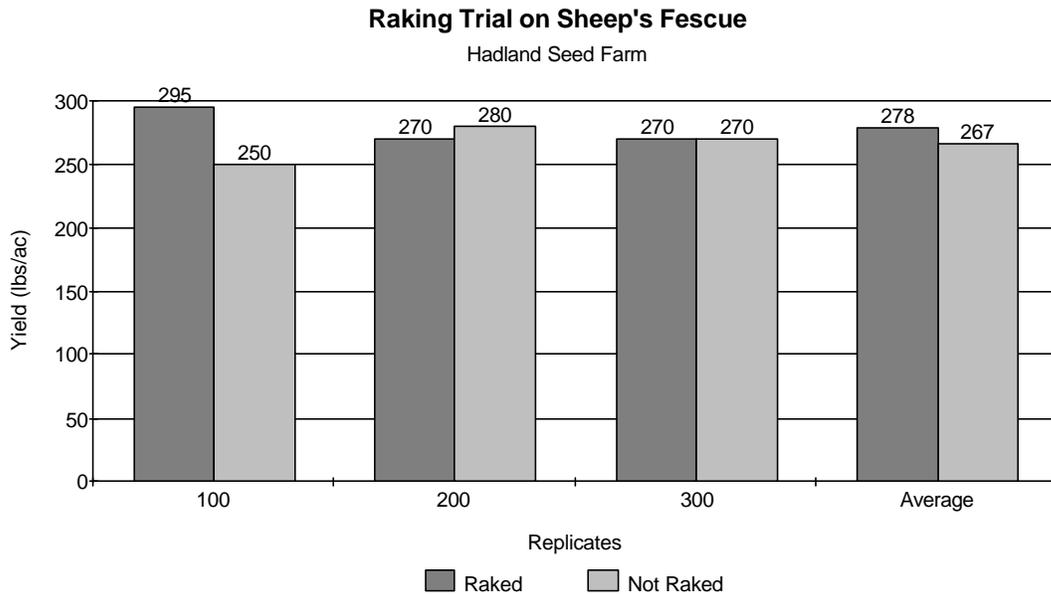


This is a trial where the mowing treatments were combined with a raking or a harrowing treatment. The raking removes the residue left from the mowing while the harrowing is intended to spread out the residue evenly. Within the raking, the harrowing and the control treatments the mowing height treatments were replicated 4 times.

Mowed right after baling August 20, 2000
 Raked September 11, 2000
 Harrowed September 12, 2000

In this trial there does not seem to be a significant difference between no mowing and the two different mowing heights. The raking and the harrowing seem to depress the yield of the next year's crop. One of the reasons could be the late application of the treatments.

In last year's trials on sheep's fescue the mowing and raking were done at approximately the same time as in the above trial and the mowing heights were 4.0" and 2.5". The raking did not seem to effect the yield for the 2.5" mowing height but it seemed to depress the yield for the 4.0" mowing height. This is opposite to this year's results. Unfortunately last year's treatments did not include a control that was not mowed.

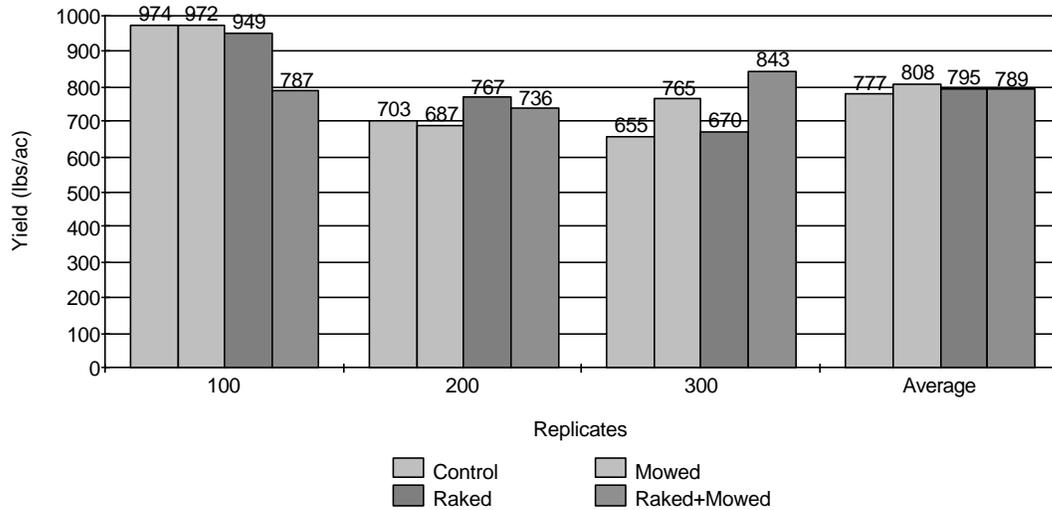


This trial focussed on the influence of raking only. The sheep's fescue was mowed on August 20, 2000 at a height of 4.5" and the raking treatment was applied on September 11, 2000.

The removal of all harvest and mowing residue with the rake did not improve the yield over the mowing only treatment.

Mowing/Raking Trial-Creeping Red Fescue

Martin Odermatt



The mowing treatment was applied on August 30, 2000 at a mowing height of 2.0".
The raking treatment was applied on September 11, 2000.

The treatments have very similar yields and none has a significant yield difference from the control.

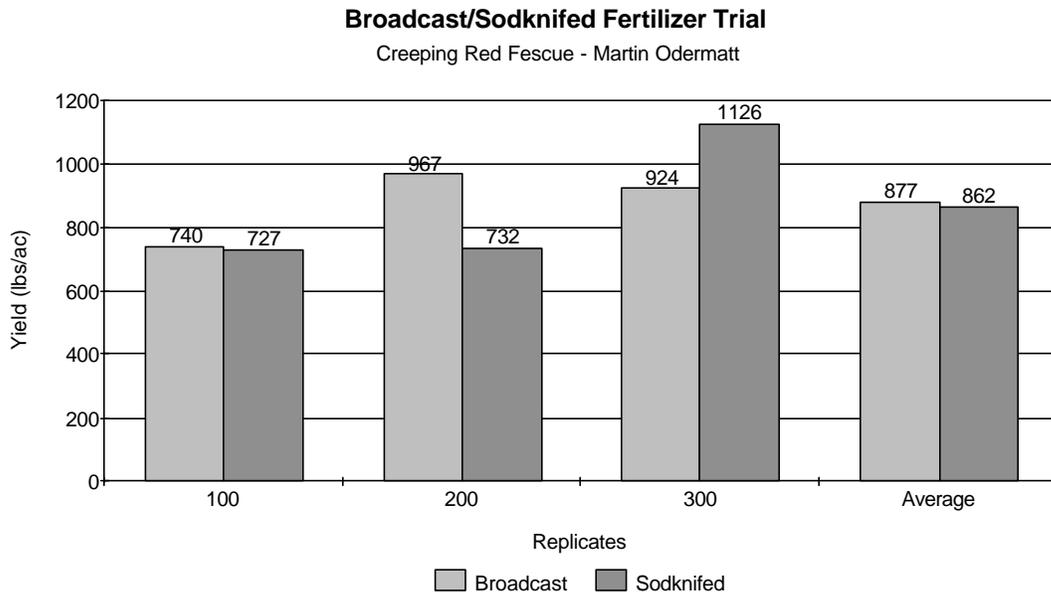
It is important to note that on last year's mowing trials on creeping red fescue, which were mowed at approximately the same time of the year, there was a positive effect of the mowing treatment.

The raking in these trials did not positively affect the yield in the following year; this is consistent with last year's results.

Fertilization Trials

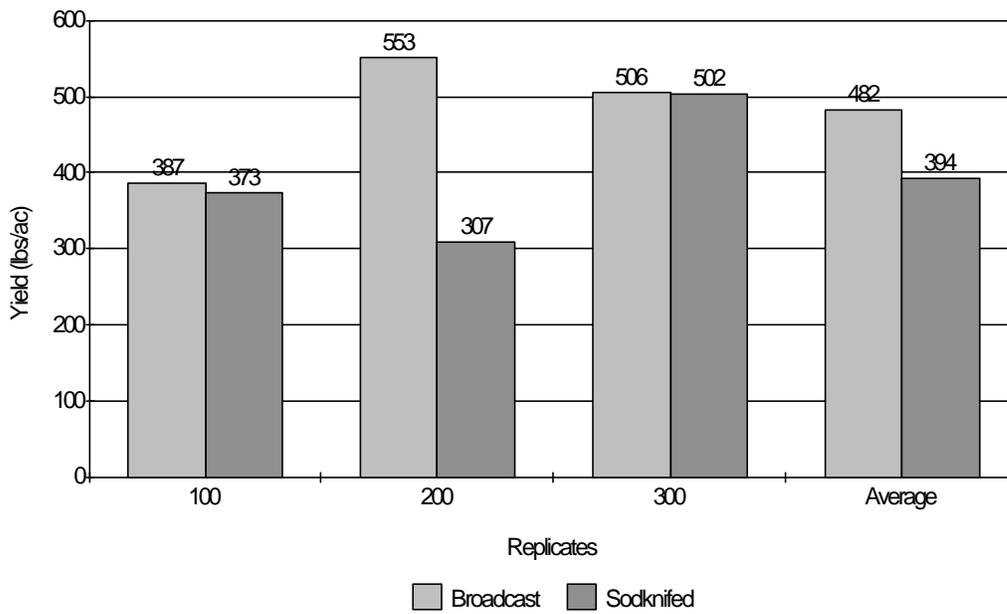
The standard method for applying fertilizer on grass seed crops is broadcasting. This is generally done in late fall. Usually the only nutrient applied is nitrogen. This method works very well for nitrogen and many other nutrients but it is not very effective for applying phosphate. Phosphate becomes easily fixed in the soil and unavailable to plants when broadcast. Its availability to plants is improved when banded into the soil. Phosphorus is important for seed development and we wanted to find out whether banding a blend of nitrogen and phosphorus would improve the yield over the standard broadcasting method. We further thought that the light cultivation of the banding operation could have an additional positive effect.

In the fall of 2000 we established three trials. Two on creeping red fescue and one on meadow brome. We equipped an airseeder with narrow knives and applied a blend of 46-0-0 and 11-51 at 100 lbs N + 25 lbs P/ac. This was done on October 2, 2000. The broadcast treatments without the phosphorus were applied approximately two weeks later.



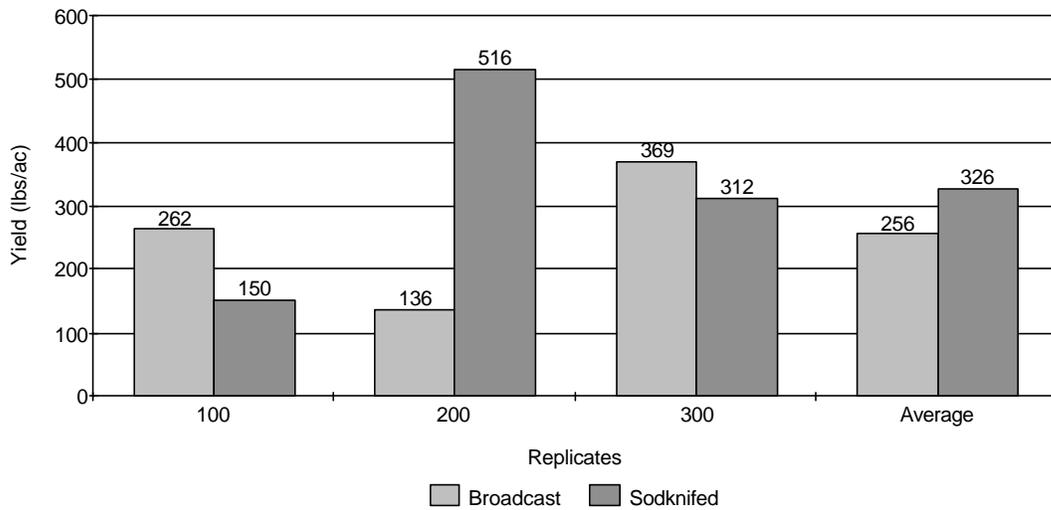
Broadcast/Sodknifed Fertilizer Trial

Creeping Red Fescue - Ouellette Farm



Broadcast/Sodknifed Fertilizer Trial

Meadow Brome - Ouellette Farm



On creeping red fescue the banding of the fertilizer with the additional phosphate did not improve the yield over the broadcast treatment.

The results on meadow brome are too variable to be able to say that the average yield for the banding treatment is significantly higher than the average yield for the broadcasting treatment.

Underseeding of Perennial Ryegrass

In the spring of 2000 we established a trial with 5 different perennial ryegrass varieties underseeded into wheat to find out whether we can successfully establish perennial ryegrass this way. This trial was lost due to winterkill.

Production Trials of Native Grasses

In the fall of 1999 we seeded four plots with the following native grass species: Green Needle Grass, Blue Grama, Rough Fescue and Canada Wild Rye. Of these four two established more or less successfully: Green Needle Grass and Canada Wild Rye. The stands were not great in 2000 and the Green Needle Grass did not produce a significant yield in 2001.

The Canada Wild Rye though produced a significant crop of 247 lbs/ac. This has led to one of our members seeding a smaller field to this species. The seed has very long awns and does not flow at all which might provide some difficulties at harvesting time but a good crop at the right price can be very lucrative. In the past the price has fluctuated between \$5-10/lbs.

Disseminating the Results of the Project

The results of our work are being disseminated to our members and will also be made available to the members of the Peace Region Forage Seed Association.

Summary of the Results of the Last Two Years

- We were able to show that the thorough removal of residue after harvest with a needlenose rake does not provide a benefit under our growing conditions.

- We also established that the use of heavy tine harrows to spread the residue left after harvest and mowing can have negative effects on the following year's seed crop.

- Mowing of grass seed crops after harvest can have a positive effect on the following year's seed crop but the results vary from year to year, with no clear indication why.

- Banding of fertilizer into the sod does not provide a benefit over the standard broadcasting method.

- Canada Wild Rye can be grown successfully in our area.