

MAF Sustainable Farming Funding

For Further Study of Nassella Tussock

Newsletter 5, March 2010

Project background

In 2007 the Hurunui Nassella Tussock Pest Management Liaison Committee obtained funding from the Ministry of Agriculture and Forestry's Sustainable Farming Fund to undertake three experiments aimed at building on the results of an earlier ecology study done by AgResearch.

The main objective of the project is to give farmers the information they need to make the best decisions on nassella tussock control.

The Project Team includes four local farmers who are also members of the Pest Management Liaison Committee. The whole team comprises David Hyde (Project Supervisor), Stuart Gibb, Ross Little and Kerry Prenter, scientists Graeme Bourdôt (AgResearch) and Dave Saville (Saville Statistical Consulting Ltd), and Laurence Smith and Leanne Lye of the Environment Canterbury Biosecurity team.

The experiments are practical projects with lots of farmer involvement. The Pest Management Liaison Committee has contracted AgResearch to help them in selecting sites suitable for the experiments and also in analysing, interpreting and reporting the results annually to the committee. Environment Canterbury Biosecurity staff have also been contracted by the committee to carry out some of the fieldwork.

Each of the four progress reports produced to date has been published in the Hurunui News.



Amberley farmer, Hamish Gardiner about to tie down a plant after son, James has hammered in an identifying peg.

Progress so far

Experiment 1 aims to find out how the timing of grubbing in spring affects the number of new plants establishing from a grubbed plant left lying on the ground. Plants were grubbed in small plots and then pegged down to prevent them being blown away. Initially 10 farms took part in this experiment. Eight of these are still taking part, and overall 23 properties are now involved.

Grubbing was carried out at varying times from mid October to early December 2007 on the first eight farms involved in this experiment.

On the plots set up in 2007, six new nassella tussock seedlings were counted between May 2008 and May 2009. The pegged-down plants set up in 2008 and 2009 have not yet produced any nassella tussock large enough to be visible. Data need to be collected for at least one more year and then analysed before any conclusion on the best time to carry out grubbing can be reached.

Experiment 2 asks how different intensities of grubbing (in hectares per hour) in spring and in autumn affect nassella population change. This experiment required six blocks each of five hectares to be marked out on uniformly infested parts of four different farms.

The autumn and spring grubbing in 2008 removed over 27,000 plants across the total 120 hectares, averaging 225 plants per hectare. Many of these were mature plants.

In 2009 the autumn and spring grubbing removed over 24,500 plants, averaging 204 plants per hectare. Although the reduction in plant numbers between the two years is modest, at an average of 21 fewer plants per hectare, most of the plants grubbed in 2009 were young plants or seedlings. In three of the 24 five-hectare blocks, more than 2000 plants have been grubbed each year, averaging over 400 plants per hectare. It is expected that plant numbers will begin to decline dramatically in year three of the experiment, by which time the grubbing intensity and timing treatments should be showing some effects.

Experiment 3 was set up in spring 2007 to determine how soil fertility and applied fertiliser affect the growth rates of individual nassella tussock plants. Small nassella plants were marked and their initial diameters measured at each plant base. Fertiliser was then applied to some of the plots, with other plots left untreated for comparison. Soil samples have been taken from the area surrounding the plots. Initially, 10 farms took part in this experiment. Eight of these are still taking part, and overall 23 properties are now involved.



Nassella tussock plants on the first eight farms were left to grow after initial measurements were taken in 2007, and have been measured each year since then. Their initial basal diameter of 26mm almost doubled over the first year to an average of 51mm, increasing to an average basal diameter of 73mm by the end of the second year.

Plants on the six farms set up in 2008 had an initial basal diameter of 27mm, and 12 months later in 2009 had increased by 20mm to an average of 47mm.

So far there has been no noticeable difference in growth rates between plots with and without fertiliser applied.

Progress summary

All experiments are running according to plan, apart from the loss of experimental plots on two farms due to stock damage or removal of plants by grubbing contractors.

The loss of these sites does not compromise the project. Look out for the next nassella project update, due in June 2010.



Doug Fotheringham prepares a plot on his Greta Valley property