CONTROL OF TAUHINU

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Summary

The successful control of a dense infestation of tauhinu (*Cassinia leptophylla*) on hill country at French Pass, Marlborough, without the use of chemical weedicides or cultivation is described. The method used over an area of 25 acres was burning off followed by optimum economic application of seed and fertilizer. After this, judicious spelling and grazing management played an important part in providing a clover "umbrella smother" which is considered to have been a critical factor in preventing re-establishment of the tauhinu from seed lying in the soil.

INTRODUCTION

IN THE MARLBOROUGH SOUNDS the weed problem has long been the main factor hindering farming progress. Of the weeds, tauhinu (*Cassinia leptophylla*) has always been of major significance in determining whether land will stay in production or go out.

Stock do not eat the weed and in this respect it has a survival advantage over bracken fern. If allowed to reseed, it quickly increases in density till eventually it "takes over" and all useful grazing ceases when the tauhinu cover becomes strongly dominant.

For this reason good farmers in the Sounds have always regarded tauhinu as one of the major threats to their survival on this difficult country. Innumerable dreary hours have been spent every winter on all properties pulling young tauhinu plants by hand before they reseed. Most of the Sounds country is steep to very steep and this adds greatly to the difficulty of the problem as machinery cannot be used.

Fire has been used as a temporary control measure in densely infested areas but reinfestation from seed has always been very rapid. With no satisfactory chemical to use it was apparent that some other means of control had to be found if large areas were to be prevented from going out of production. This gave birth to the idea of a "blitz" on the weed from the pasture improvement angle.

THE OBJECTIVE

The objective was to devise an economic method of controlling tauhinu. What was being sought, in effect, was a means of controlling the weed while at the same time increasing production — a two-edged objective.

THE PROJECT AREA

It was therefore decided to endeavour to bring a densely reverted block back into production and maintain it by the use of optimum pasture improvement methods plus careful grazing control.

An area of 25 acres on the property of A. G. Young, French Pass, was selected for the project. This was part of a larger block of northerly facing hill country which had reverted to a dense cover of tauhinu over most of the area. In the worst parts of this block the tauhinu was up to 6 ft high and very dense and the grazing capacity was practically nil. The pasture cover on the more "open" parts of the block was dominant *danthonia* with no legumes. There appeared to be no useful future for this block and other similar large tracts of country in the Sounds unless the weed problem could be overcome by some more economical method than manual control or periodic burning.

TREATMENT

Basically, the treatment adopted was aimed at securing an umbrella of vigorous pasture to smother germinating tauhinu seeds followed by concentrated use of the grazing animal as an additional tool in combatting re-establishment of the weed.

Accordingly, the area was burned off in early April 1968. A good hot fire was secured over most of the block except on a small portion where the tauhinu was rather sparse. On April 29, seed and fertilizer were sown together from the air, the seed being inoculated and added to the fertilizer immediately before sowing. The fertilizer was molybdc-superphosphate at the rate of 3 cwt per acre. The seed mixture was perennial ryegrass (*Lolium perenne*), 20 lb, cocksfoot (*Dactylis glomerata*), 5 lb, crested dogtail (*Cynosurus cristatus*), 1 lb, white clover (*Trifolium repens*), 5 lb and subterranean clover (*T. subterraneum*), 5 lb per acre. All the seed used was of good quality, a feature being the heavy dressing of clover, particularly white clover at 5 lb per acre. This may have proved to be a key feature in the success of the project.

The weather following sowing was favourable for good seed germination and a good establishment was secured.

Typical cover before burning.

After burning and oversowing.

SUBSEQUENT TOPDRESSING

In August of this initial year a further 3 cwt of molybdo-superphosphate per acre was applied followed by 3 cwt aerial superphosphate in the autumn of 1969 and an additional 3 cwt the following autumn. After this Mr Young intended to apply 2 to 3 cwt of superphosphate annually in the autumn.

SPELLING AFTER SEEDING

A special feature of subsequent management was the regulation of grazing pressures from the outset. This involved, initially, a long spell of 7 months between seeding and the first grazing. This resulted in maximum ground coverage in the spring and provided an "umbrella smother" against the re-establishment of *tauhinu* from seed. Following this, grazing was carried out on a long spell rotation basis, this system permitting the retention of maximum ground cover and maximum benefit from short periods of concentrated grazing.

This grazing technique may have been another key factor in the successful control of the *tauhinu*.

PASTURE DEVELOPMENT

The pasture development under this treatment was exceptionally good. The long spell following initial establishment in early May permitted rapid and vigorous clover growth and by November a carpet of dense white and subterranean clover growth had formed over the majority of the block. This clover umbrella was up to 6 in. in height and formed a barrier

to seedling tauhinu establishment in the spring period. Ryegrass, cocksfoot and crested dogstail also established well but were very largely hidden by the clover cover at this stage. In the following year, however, the grasses showed up in increasing proportion and by the spring of 1969 a first-class pasture had developed. This was composed of a fairly well balanced mixture of ryegrass, cocksfoot, dogstail, white clover and subterranean clover. White clover was the dominant legume. The long initial spell followed by controlled grazing no doubt went a long way towards permitting more rapid pasture development than normal.

Some idea of the speed of pasture development is given by grazing records. For the calendar year following the establishment year (*i.e.*, for 1969) the carrying capacity was 7.0 ewe equivalents per acre. This is in contrast to the negligible grazing capacity before treatment and represents rapid development for an oversown area even in the absence of a weed problem.

WEED CONTROL RESULTS

The burning off of the tauhinu at the commencement of the project killed most of the established plants. This is normal when a good hot fire is secured. However, where the fire was less severe some plants showed basal regrowth and have now re-established. Also some plants escaped the fire altogether. These could be cut out at low cost to leave a perfectly clean paddock but they are being left to see if any harmful spread occurs from them.

The main interest, however, has been in studying the re-establishment from seed. Normally, following burning off with or without light sowings of seed and fertilizer, the re-establishment of tauhinu from seed in the soil is very rapid. Seedlings are usually quite obvious in the second year and regrowth begins to affect grazing after 3 years.

The gratifying factor about the project area is that no significant re-establishment of tauhinu seedlings has been apparent at any stage so far. It is now over 3 years since burning off and the paddock is still the most productive one on the farm.

Another result of the project which speaks for itself is that Mr Young was so impressed with this method of dealing with the problem that he subjected a further 70 acres of tauhinu infested country to the same treatment last year. This has progressed well to date.

CONCLUSIONS

- (1) The successful results from this project demonstrate the value of plant competition in weed control.
- (2) The methods adopted have had a two-edged benefit — weed control plus a huge increase in production.
- (3) Planned development is necessary to avoid tackling too much to treat properly and to ensure a good hot fire which gives a good initial kill.
- (4) Heavy application of seed with emphasis on high rates of clover plus optimum treatment with fertilizer is considered to be very important.
- (5) Grazing management incorporating a prolonged initial spell to permit the formation of a clover "umbrella smother" followed by long spell rotational grazing during the first two years appeared to be a major factor in the success of the project.