

Fertility conditions do not greatly affect mature serrated tussock but may impact on seedlings. This will be investigated in the Rowsley Valley. Already soil tests taken on areas in a paddock with and without serrated tussock have shown a clear difference in the fertility levels. Deficiencies in nitrogen, phosphorous and potassium all occurred where serrated tussock grew but where nutrients were adequate it was absent.

#### Spraying

Stopping viable seed set of serrated tussock could buy time until long-term control plans can be undertaken. Spraying uses low rates of glyphosate (450 g L<sup>-1</sup> at 500 mL ha<sup>-1</sup>) plus wetter applied in spring to stop seedhead emergence and sterilize any seeds which form (Miller and Boyle 1997). The effectiveness of spraying is dependent upon application timing and rate. It is most effective when the stems of serrated tussock have thickened from the formation of seedheads within them, but before emergence. This occurs from mid September to early October depending on season and district.

#### Conclusion

To have a chance at eradicating serrated tussock or even minimizing its impact on productivity, a plan to limit seed re-invasion must be in place. Spraying, strategic use of Frenock and tree barriers are all necessary to achieve this. On arable land, cropping followed by establishment of improved pastures will remain the best method. On non-arable land, Frenock can

be used to selectively remove the weed with minimal damage to the existing pasture. Where serrated tussock can not be selectively removed without it impacting heavily on non-target species then establishment of pasture or trees will be necessary.

After removal, seedlings will germinate. Encouraging existing pasture to compete with serrated tussock using appropriate grazing management and fertilizers will kill the majority of seedlings and spot spraying will be required to remove the remainder. However, if the pasture is weak, further opportunities may exist to selectively remove seedlings using low rates of Frenock.

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## The transmission of serrated tussock (*Nassella trichotoma*) seeds through the sheep rumen and their viability after ingestion

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This study examined the possibility of animals and hay acting as dispersal agents for *Nassella trichotoma*. Nine, eighteen month old, merino wethers were separated into two groups and housed in metabolism cages. The first five sheep were fed a diet (1) of 800 g lucerne chaff and 200 g barley, the other four were fed on a diet (2) of 800 g oaten chaff and 400 g Barastock pellets. After nine days on the diet, each sheep was fed 5 g of *N. trichotoma* seeds. Faecal collections were taken at approximately the same time each day for 21 days. Samples were taken to measure dry matter, faecal extraction, and faecal germination. Most seed extracted was recovered in the first seven days for both diets. All seeds extracted were germinated at 25°C

(12 h light/dark). Faecal germination samples were crushed and covered in sand and placed in the glasshouse to germinate.

There was no significant difference between the rate of passage of the two diets, however, the mean number of seeds recovered was higher for diet 1 (921 ± 169) than diet 2 (699 ± 103). Peak recovery occurred on days three and four with the peak number for any sheep being 1131 seeds on day three. Recovery of seeds from 50 g fleece samples averaged 10 seeds of *N. trichotoma* per sample for high and two seeds per sample for low *N. trichotoma* infestation properties.

Results from this study may be used in the development of management

strategies for the movement of stock and fodder from *N. trichotoma* infested regions. Farmers must be made aware of the possibility of spreading seed via stock or fodder.

Guidelines on the transport of animals and hay should be considered. These guidelines would require farmers in infested regions to:

- quarantine stock either before or after sale,
- shear animals before sale,
- restrict sale of animals with muddy hooves (not examined here, but highly likely to be a cause of seed dispersal),
- restrict sale of unshorn stock in the flowering period,
- restrict hay and fodder sales from contaminated properties.

In addition, it should become a requirement for the Department of Natural Resources and Environment to notify stock agents of properties and farmers who have been served with notices regarding *N. trichotoma* infestations. The stock agents would then be required to notify potential purchasers that the stock for sale originated from a property infested with *N. trichotoma*.