

Conquering serrated tussock at 'Yellangalo'

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Introduction

In 1989 we bought a serrated tussock infested farm on the Southern Tablelands of NSW. The farm lies in 640 mm (average year) rainfall area at an altitude 600–640 m. Serrated tussock infested almost 100% of the farm when we bought it and is now almost down to spot spraying levels. Persistence and experimentation have been needed as we developed methods of control and eradication that suited the property and contributed towards our goals of protecting the soils and pasture. When we bought our farm everyone told us that Frenock* (fluproponate) would get rid of serrated tussock, so we started on a spraying program at the then recommended rate of 2 L/ha.

Effect of our early spraying program

Fluproponate was very effective in killing the serrated tussock. However we were not prepared for the other results! All that grew back were thistles and dandelions. No grass remained to fill in the gaps left by the tussock. We had created what to me, was an environmental disaster. That very rapidly brought our spraying program to a halt as we reassessed our options.

From that time on we have tried various ways of overcoming our infestations.

Formulating a new plan of attack

To me it seemed sensible to start our control program on the western edge of the property as that was the direction of prevailing winds which carried tussock seed across our property. However, we were persuaded by department people to improve our best country first and thus generate a financial return more quickly. This tactic also saved, what has proved to be, a very useful native pasture.

The best country consisted of creek flats with shale ridges arising from them. We ploughed and planted triticale, rested (very lightly rotationally grazed) for a year then ploughed again and sowed the paddock to a mix of cocksfoot, phalaris and subterranean clover in the third year. In theory we had killed off three years of germination of the serrated tussock seed.....but we were hit with a mass germination the fourth year and so the entire area had to be sprayed out with Frenock*, but this time using 1 L/ha as all of the plants

were less than 10 cm high. The new pasture survived, the clovers were hit hard, but have recovered in subsequent years.

How successful has this approach been?

This paddock is now rotationally grazed and regularly supered. It has been very productive ever since and any further germination of serrated tussock has been of only individual plants (mostly along the fence lines) which are 'easily' controlled. We also endeavour to keep the grass (cocksfoot and phalaris) at above 800 kg DM/ha, a difficult task in the last five years of drought.

One section of the pasture was cut for hay and in doing this there was a considerable germination of tussock, but still at the spot spray rather than the boom spray level.

Our treatment of the area has been a great success, even though the westerly wind has brought in seeds on an annual basis. A tree lot on the western edge is now offering some protection in this regard. Regular annual spraying of the tree lot, fence lines, rocky outcrops, base of trees etc has paid off and is now taking less and less time to achieve.

Using tree lots to assist in controlling serrated tussock

Tree lots have been recommended to assist in the control of serrated tussock as they intercept the airborne seed heads. Tree lots are certainly effective in doing this, as are fence lines. The difficulty comes when the seeds fall to the ground! I have not found shade to be at all effective in suppressing the germination or growth of serrated tussock in these areas. True, many of the tussocks do not get to a large size under tree shade, but they do survive and there is some seeding so tree lots need to be included in the annual spot spraying program.

There is some evidence on 'Yellangalo' that *Acacia cardiophylla* in tree lots are exhibiting an allelopathic action on the serrated tussock under them, but they appear to be the only species that do.

Get your spraying technique right for effective control and reduced non-target damage

Spraying techniques need to be tightly controlled for maximum efficacy in controlling serrated tussock and minimising non-target damage. The amount of collateral damage needs to be minimised regardless of whether you are using glyphosate or fluproponate. Regardless of the spraying technique you use, unless there is adequate ground cover left around the dead tussock the end result is a large dead patch which is readily refilled with tussock seedlings. Following are some tips to maximise the effectiveness of spraying to remove serrated tussock using a variety of techniques.

Spot spraying

Always point the spray nozzle towards the centre of the tussock and walk around the plant if it is a large one. Squirting from a distance, may leave part of the plant unsprayed and will create a larger than necessary bare patch.....that is, get off the bike to spot spray.

When using glyphosate every section of the plant needs to be sprayed or those segments missed will regrow.

Ground boom spraying

When boom spraying it really shows up if one nozzle has been blocked and it takes a lot of enthusiasm to go back and respray the missed bits! However it is worth the effort as you don't want a strip in the middle of the paddock seeding prolifically and undoing your hard work.

Helicopter spraying

Spraying from a helicopter has had mixed success and depends on the proficiency of the pilot. Difficulties arise when they are unaware of the density of the fluproponate and they allow for drift which doesn't happen. The result is that distribution of the chemical is very uneven and the control erratic. One of the consequences of this is that in the areas that have received heavier concentration of the chemical the native grasses are particularly heavily hit with subsequent ground cover reduction, while in the light or no chemical areas there is no control of serrated tussock at all.

Pilots who are experienced in spraying with this chemical can do a great job in inaccessible areas and along creek lines. One word of warning, aerial spraying along creek lines results in quite a few angry brown snakes leaving the immediate area!

Non-chemical control

The 'organic' method of tussock control by mattock works well for isolated tussocks, but again depends on

the operator. The entire plant must be removed as if one tiny crown is left attached to roots it will regrow. I have found that a few pasture grass seeds scattered in the bare patch left will at least provide some competition for the tussock and thistle seeds that are invariably in the soil. The mattock in the ute or on the bike constantly is a good idea in isolated tussock control.

There are times of the year when the tussocks no matter how large can be 'weeded' by hand, but the soil must be moist. If the plant is attacked in small portions, about 2.5 cm in diameter, it is possible to remove all of it. This is a much better option than trying to remember where it was and come back to it. Here again every last little segment must be removed and it does only seem to be achievable when the soil is softer than during the present drought.

Choosing which chemical to use and using it effectively

Fluproponate in its many forms has proven to be very effective against serrated tussock. However we have had a total failure when it was diluted with creek water subsequently discovered to be pH 8.5. This chemical is very hard on native grasses, but that effect is variable depending on the weather in the few weeks following spraying. Heavy rain (25–50 mm) within a week after spraying on thin shaly soils saw the serrated tussock eventually die out and much of the native grass weeping grass (*Microlaena stipoides*) survive.

When using low rates of fluproponate the plants appear to take a long time to die, they may stay green until the following spring, but with the 'spring flush' when the rest of the paddock is growing strongly, they die.

The carry over effect (where germination of tussock seed is suppressed) with fluproponate is soil type dependant varying from 5 years on deeper alluvial loams to 1–2 years on the shallow red podsolics.

Glyphosate has been successful at 2 L/ha on most soils, and is also very effective in stopping flowering when sprayed in early October, even though the plant may not die immediately, it will not send up flower spikes. Glyphosphate does not have the carry over effect that fluproponate has so there will always be germination of any tussock seeds in the soil the following season.

Glean 25 g/ha has been observed to be successful in removing tussock seedlings in a cropping situation, but is not a registered chemical for the removal of tussock.

After spraying, grazing management of the area needs to be carefully monitored to avoid the removal

of vegetative cover. We have found that resting the pasture through the following spring to be an effective way of reducing reinfestation of serrated tussock seedlings. The 'mulch' left by the annual grasses appears adequate to prevent the seedlings which do germinate from taking hold.

Some common pitfalls and problems encountered in controlling serrated tussock

'Beware of year three!'

This is the time after the initial spraying that the reinvasion appears to be at its worst and this is the time to go back in with a light spray to remove the small seedlings. This spray should be included in the budget when contemplating broad acre spraying. If it is omitted, by year five you are back to square one.

Drought

Serrated tussock loves bare ground and with the present climatic conditions there is a lot around so it is likely that there will be a massive increase in the amount of serrated tussock germinating in places it has never been seen before when rainfall returns to average.

It was interesting to note that tussock on 'Yellangalo' had an extremely reduced flowering in 2004 when we had a very dry August and September.

Serrated tussock control in native perennial grass pastures

Native pastures do not appear to have the ability to out compete serrated tussock and are badly damaged by the sprays which are effective. We have found that in a predominantly kangaroo grass (*Themeda australis*) paddock that spot spraying is the most gentle way of treating serrated tussock, but is very time consuming when there are large areas to be covered.

One of the difficulties encountered when removing serrated tussock is that they always seem to be replaced by thistles, even in areas where thistles are not obvious, this probably has to do with the tussock nature of the plant being a collection point for these wind dispersed seeds. The slow nature of decay of the dead plants does provide mulch for the germination of other grasses and protection from the extremes of the weather which can be helpful in establishment of new pasture plants.

One of the disadvantages of the removal of all tussocks from a pasture is the loss of protection for lambing ewes. Without the large tussock plants to protect new born lambs from wind and cold this must now be provided by other means!

The five year plan for effective serrated tussock control

This is the program we have found to be the most successful on arable land and wish we had been told about it when we started.

- i) Plough the paddock and plant a crop. We have found triticale is the most successful for our enterprise. The crop will provide some grazing and grain so is not a total cost!
- ii) Rest the paddock. We do this by not grazing through spring and only lightly grazing and maintaining a very high level of ground cover. Again not a total loss of production, but certainly reduced.
- iii) Plough again and plant pasture. This is the year of cost as the pasture is left ungrazed.
- iv) Rest the paddock. By allowing the pasture to thicken up fewer tussocks germinate, but some grazing is possible.
- v) Spray with 1 L/ha fluprofonate. This step may or may not be necessary, depending on the germination of tussock seedlings, but mostly it is required.

We are at present experimenting with dispensing with the ploughing, scarifying routine and attempting spraying (glyphosate 2 L/ha) followed by direct drilling of the crop. Hopefully this will allow a better outcome for the soil and allow a greater build up of organic matter.

Final comments

The economics of controlling tussock on 'Yellangalo' do not bear thinking about and had we realised to costs we were exposing ourselves to we probably wouldn't have taken it on. It is a very costly business, but it can be done. We have been amazed at the improvement in carrying capacity of restored improved pastures, from a carrying capacity of 2-3 DSE/ha to 7 even through these dry times. If only the market for wool would improve that much!

A final Tip!

Do not spot spray tussock in your front drive way until early October. That way you are reminded every time you drive in and out that the tussock are there lurking on the farm waiting for your attention! No one can afford to treat tussock as 'out of sight out of mind', or it will quickly spread again. 🍷