


EH GRAHAM CENTRE for Agricultural Innovation
an alliance between Charles Sturt University & NSW Department of Primary Industries

Serrated tussock; it's rabbits

Dr Aaron Simmons
 Research Fellow
 Charles Sturt University



Serrated tussock management

- 3 key factors for successful management of serrated tussock
 - Disturbance
 - Diligence
 - Deliberation


EH GRAHAM CENTRE for Agricultural Innovation

Disturbance

- Any activity that alters interactions between grass species
 - Any activity that reduces *competition* against serrated tussock seedlings
 - Any activity that increases bare ground where seedlings can emerge

EH GRAHAM CENTRE for Agricultural Innovation

Evidence for the role of disturbance in invasion by serrated tussock



EH GRAHAM CENTRE for Agricultural Innovation

Bare ground and seedlings

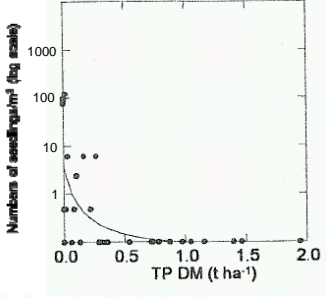
DISTURBANCE!

```

    graph TD
      A[4.20 seedlings m²] --> B[Bare ground < 84.44%]
      A --> C[Bare ground > 84.44%]
      B --> D[3.25 seedlings m²]
      B --> E[7.42 seedlings m²]
      C --> E
      C --> F[Broadleaf biomass > 0.17 t ha⁻¹]
      E --> G[Broadleaf biomass < 0.17 t ha⁻¹]
      E --> F
      G --> H[4.10 seedlings m²]
      G --> I[17.7 seedlings m²]
      F --> I
      F --> J[Serrated tussock biomass > 0.66 t ha⁻¹]
      I --> K[10.6 seedlings m²]
      I --> L[24.8 seedlings m²]
      J --> L
  
```

EH GRAHAM CENTRE for Agricultural Innovation

Perennial grass biomass and seedlings



As the biomass of perennial grasses (TP DM) declined the numbers of seedlings increased.

EH GRAHAM CENTRE for Agricultural Innovation

Herbicides and seedlings

Herbicide treatment	Seedlings per m ²	Estimated seedlings per ha ⁻¹
Fluproponate	1.52	6 000
Glyphosate	2.74	12 000
Nil	0.76	3 000

You remove competition and create bare ground with herbicides you end up with seedlings!

EH GRAHAM CENTRE for Agricultural Innovation

Recommendations

- Maintain a minimum of 1.5 t/ha of perennial grass herbage mass
- Maintain less than 30% bare ground

EH GRAHAM CENTRE for Agricultural Innovation

Diligence

- A continued and proactive approach to control.

EH GRAHAM CENTRE for Agricultural Innovation

Farmers know it!

Why did serrated tussock establish?	Density	
	Low	High
Seed already present in paddock	2	1
Disturbance	8	10
Absence of persistent control	3	9
Plant characteristics	2	1
Seed from neighbouring properties	9	4

EH GRAHAM CENTRE for Agricultural Innovation

Recommendation

- Cover all ground every year to ensure all plants are sprayed/chipped.
- Spray before seed is set.

EH GRAHAM CENTRE for Agricultural Innovation

Deliberation

- Thinking about the effects of control on things other than the serrated tussock
 - Will my actions create bare ground?
 - Will my actions reduce competition from perennial grasses?

EH GRAHAM CENTRE for Agricultural Innovation

Recommendation

- Understand how your management decisions will affect your pastures (and your production, and your returns, and your workload).

Food for thought.....

Herbicides - what do they kill?

Grass species	Fluproponate (Taskforce)	Glyphosate (RoundUp)
Wallaby	y	Y
Poa	n	Y
Redgrass	n	Y
Elymus	y	Y
Kangaroo	n	Y
Microlaena	Y	N
Spear grass	y	y

Long term consideration

- It looks like next year will drier than this year.....which option is better economically in the medium-term for paddocks susceptible to invasion
 - Destock (lost production – cost dependent on many factors)
 - Keep stock, place in sacrifice paddock and hand feed (cost dependent on many factors)
 - Keep stock and overgraze pastures
 - Spot spray entire paddock (~\$125 - \$200/ha)
 - Resow paddock (~\$300/ha)
 - Do nothing (little production until either of the above is done)

Change?

- Enterprise?
- Management of property?

- “If you do what you’ve always done, you’re gonna get what you’ve always got.”

The future???

- Social research – understand limitations
- Community groups - Footrot