

Novel options to manage pimelea toxicity in cattle

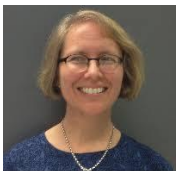
Funding: MLA, Queensland Government, UQ QAAFI

Project partners: AgForce, Redox

Project team

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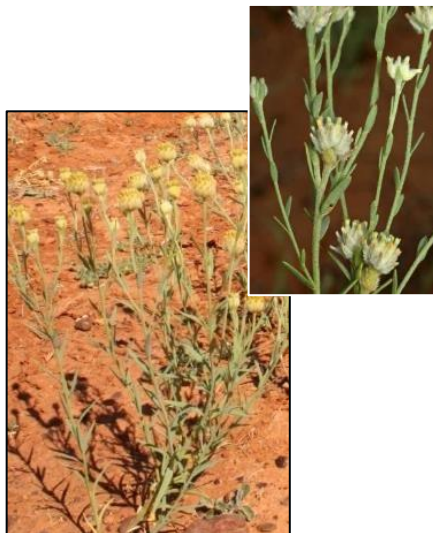
Dr Natasha Hungerford



Pimelea – rice flowers



Pimelea trichostachya



Pimelea simplex



Pimelea elongata

Pimelea - distribution

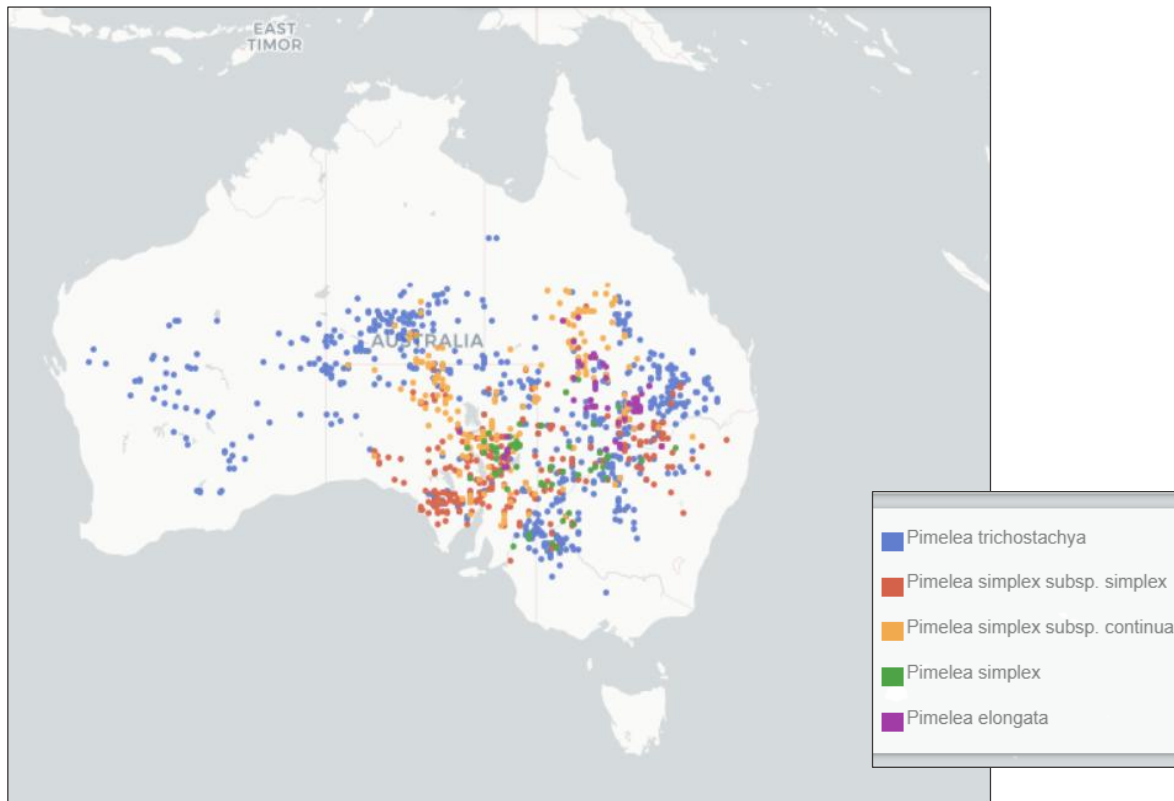


Image from: The Australian Virtual Herbarium <https://avh.chah.org.au/> (accessed 11/06/2026)

Occurrence of poisoning

Seasonally variable depending on climatic conditions:

- low summer rain in the previous year
- “good” autumn and early winter rain
- low spring/summer rain with a feed shortage



Pimelea trichostachya,
St George (2018)

- Toxin: unusual
daphnane orthoester
(late 1970s)



Simplexin toxin interacts with an enzyme protein kinase C causing:

- contraction of the smooth muscles in the walls of blood vessels, notably those connecting the heart to the lungs (pulmonary)
- intestinal irritation and diarrhoea

Symptoms:

- distended pulsing jugular veins
- oedema of the head, neck, brisket
- loss of condition (potentially fatal).



“The dose makes the poison”

- High levels of toxin in plant material doesn't necessarily translate to animal poisoning if **they don't consume it**
- Cattle avoid large patches of Pimelea (smell, learned behaviours)



Toxin levels – dry *Pimelea*

140 mg/kg



31 mg/kg



Simplexin concentrations in standing “dead/dry” *Pimelea simplex* samples



12 mg/kg



None detected

Less seed ⇒ Less toxin

Chemistry:

- Improved toxin detection technology
- Toxin breakdown - difficult

Microbial toxin breakdown:

- Rumen bacteria (drench)

Absorbents/binders:

- Bentonite, biochar

Animal trial:

Insufficient for prevention of toxicity at doses used.



New project - science

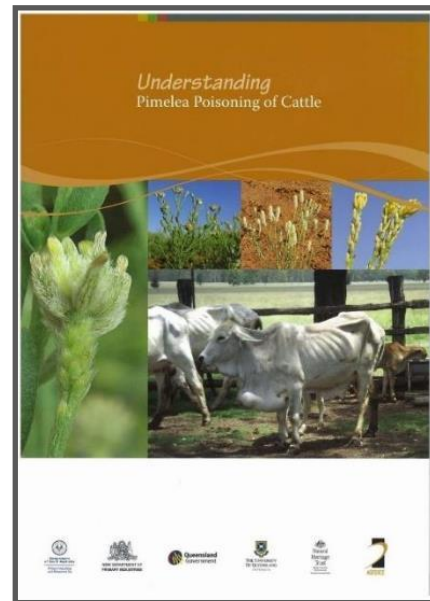
Approach:

- Next generation absorbents - testing
- Microbial breakdown in soil
- Plant management – test herbicides to prevent germination

Capacity to test alternative solutions

New project - extension

- Update of extension guidelines
- Communication activities
- FutureBeef project page
<https://futurebeef.com.au/>
- Capacity for input - survey



Project contacts:

DPI Extension team

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Thank you for your interest in this project.



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QAAFI
Queensland Alliance for
Agriculture and Food Innovation

July 2026

“Practical Pimelea” experience from the paddock

Bec Brayley
Senior Extension Officer - Charleville
QLD Department of Primary Industries



Plant ID - Don't get lost in the detail, learn to recognise the seedlings



- DPI can help you with plant ID
- The easiest way is to take a **decent** photo and text to us
- Different species have different toxin levels

Plant ID - Don't get lost memorising plant names, learn to recognise areas pimelea likes to grow



- Pimelea is easy to spot in the early morning and late afternoon sun- even when driving

Plant ID - Not the usual suspects



Shrubby form - *Pimelea microcephala*

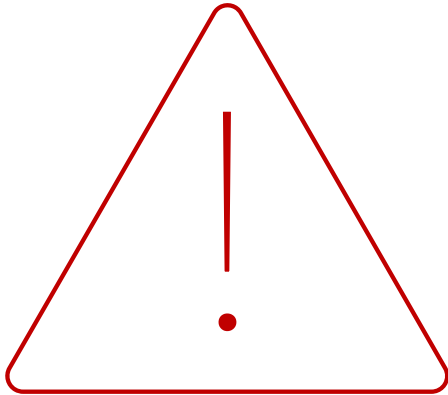


Red flowering form- *Pimelea decora*

- 17 species recorded as being poisonous

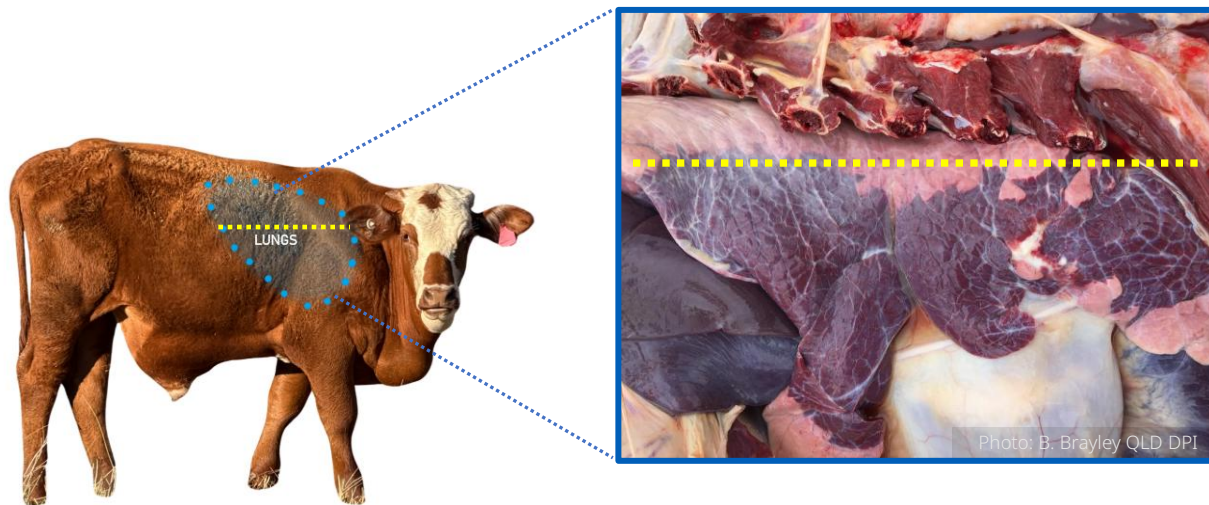
Warning:

**Graphic photos ahead.
Skip if you don't want to
see these.**



Pimelea – Myth Busting

- 'Breathing in the fibres' does **not** cause Pimelea Poisoning
- Toxin 'simplexin' was isolated in 1975
- Micron testing on the fibres proved they were too big to breathe into the lungs

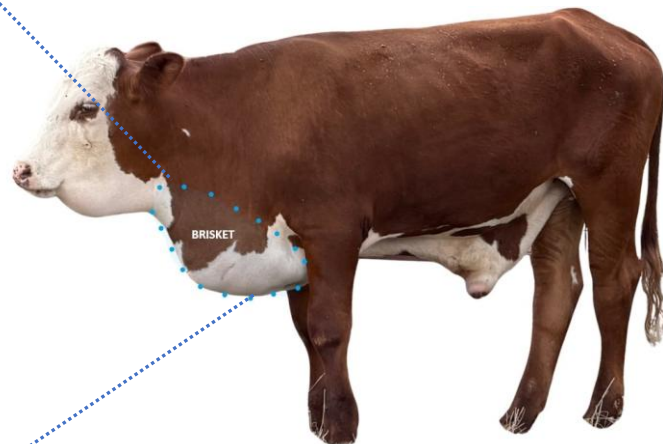


Post mortem observations

- Brisket with watery oedema



Photo: B. Brayley QLD DPI



Post mortem observations

Liver of adult cow

- Toxins cause significant damage to the liver- note mottled surface



Photo: B. Brayley QLD DPI

Post mortem observations

Heart of adult cow

- Toxins cause the right ventricle of the heart to enlarge and weaken.
- The pump becomes inefficient.

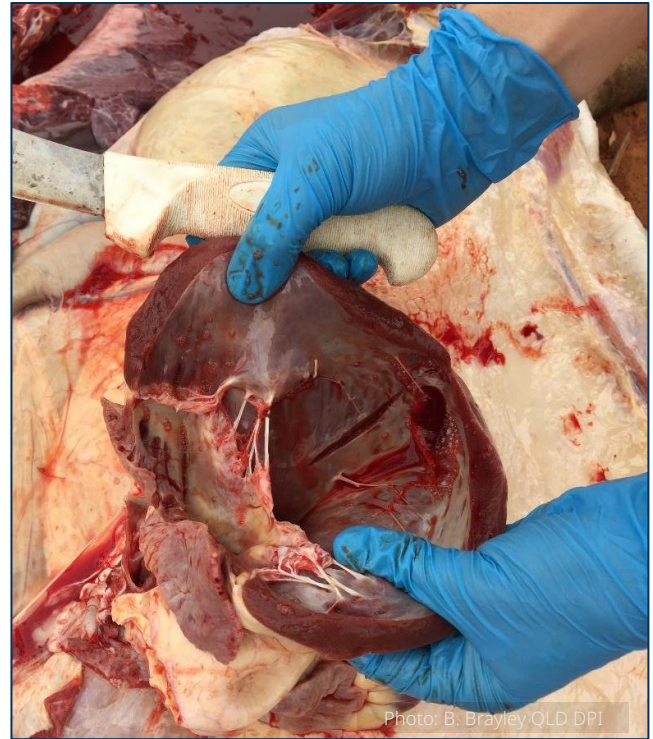


Photo: B. Brayley QLD DPI

Spot the signs early

- If you see scouring, don't watch and wait
- Look for Pimelea and if you're not sure, ask for our help- it's free!
- Delayed scouring is possible- damage could be happening before signs of sickness

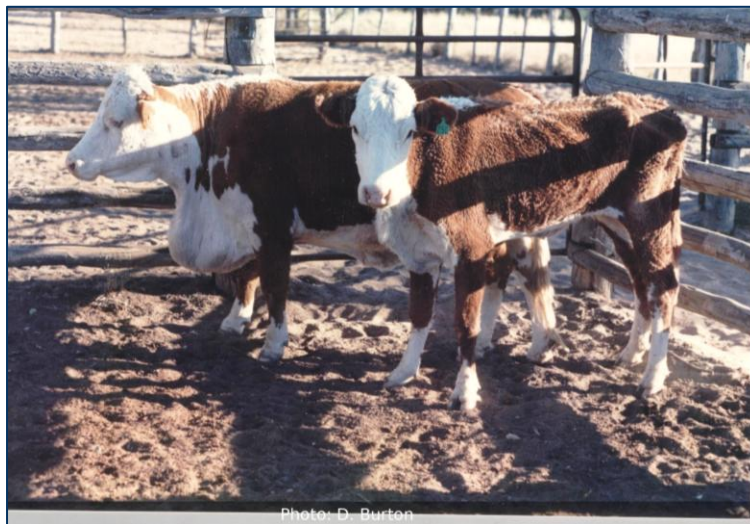


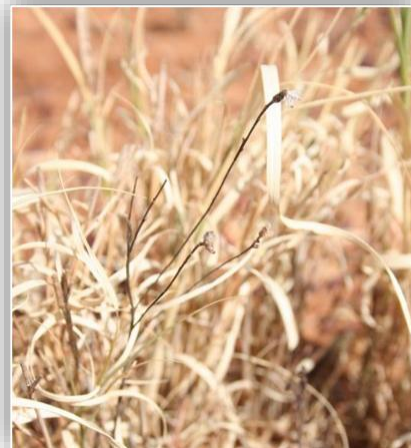
Photo: D. Burton

"The dose makes the poison"

- A toxic dose for a 150kg weaner is 1 dessert spoon daily for 35 days
- Animals can be affected before they start scouring
- Research at UQ showed animals in feeding trials scoured after the feeding trial finished

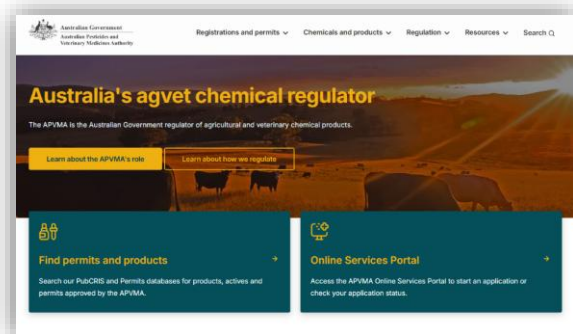
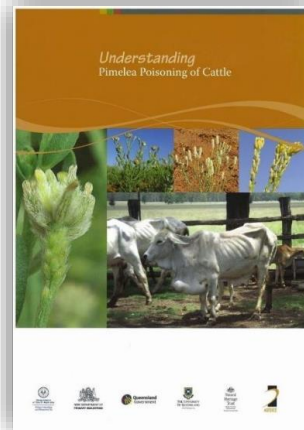


2g dried pimelea on dessert spoon



Chemical Control

- Herbicide trials were conducted with a permit
- Herbicides worked but not cost effective at the time
- Always read the label and apply to conditions set out on the label
- Grazing WHP, ESI & EGI apply



- New tech = new options, but you must check the legalities before you start
- Patch management has been successful for some people, targeting smaller areas or creating a 'clean' paddock.

Pimelea take aways

- Look for seedlings
 - take a decent photo and text it to ID it
- Learn where to look for plants
- Scouring? act now, confirm the cause
- Renovating pastures? seek free guidance from DPI pasture agronomists
- Plan ahead before disturbing soil
 - =avoid pimelea crops
- Curious about chemicals?
 - ASK for advice before you start
- “Breathing it in” = old bushy’s tale

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Find an extension officer near you:

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