

BACKGROUND TO PIMELEA

Pimelea is a native, toxic, herbaceous plant from inland Australia. Pimelea causes seasonal cattle deaths (historically known as St George disease or Marree Disease), reduced weight gain in surviving cattle and lost productivity due to large pasture areas being too risky for grazing. Western graziers between Winton in Queensland to the Broken Hill region in New South Wales and arid zone of northern South Australia desperately want answers to reduce the financial, productivity, workload, mental welfare and animal welfare impacts of Pimelea. Industry-led research is required to suppress Pimelea impacts in productive pastures and develop rumen inoculum or absorption compounds to overcome toxicity symptoms in affected cattle.

Graziers, stock agents and agribusinesses united in a call for action to work towards solutions. Productivity, land values and land equity are at risk for affected regions in western Queensland and northern New South Wales. Pimelea-affected graziers have pledged a total of \$420,000 cash and in-kind (labour, access to livestock for rumen fluid samples, collection of plant material, cattle transport, field trials and field days) over three years to instigate research into possible solutions. AgForce Queensland facilitated collection of producer pledges and networked between industry, researchers and extension officers. Other producers and regional organisations are in total support of Pimelea research although not able to currently pledge cash. The collection of Year 1 cash pledges from graziers totalling \$100,000.00 enabled the application to Meat and Livestock Australia Donor Company for an additional \$75,000 grant and to engage rumen biology researchers from University of Queensland and Department of Agriculture and Fisheries. Research commenced in September 2017, whilst Pimelea plants and poisoned cattle were abundant for sampling. Ongoing research beyond the preliminary project period post-March 2018 has been secured through a MLA open grant with the University of Queensland. Additional Pimelea plant ecology / management work is being scoped with the seed funding from producer pledges of \$25,000.

The toxin in Pimelea is 'simplexin', a hydrocarbon fat, absorbed through the small intestine into the lymphatics and travels straight to the heart. The current research aims to degrade or block simplexin in the rumen, before passing to the small intestine. This preliminary project with UQ and DAF is investigating rumen bacteria populations from affected and unaffected animals grazing on Pimelea (including other ruminants). Rumen bacteria will be trickle-fed Pimelea plant material over an extended period in an artificial rumen in the laboratory. Isolates of bacteria showing potential to breakdown the simplexin toxin released from Pimelea will be studied further for a potential rumen inoculum. Rumen absorption compounds (e.g. bentonite, biochar and new compounds) will be lab-tested to check their activity in binding simplexin and preventing absorption by the animal.



Above: Bull showing typical swelling (oedema) in jaw and brisket from Pimelea poisoning



Left: Anaerobic, artificial rumen in the laboratory used to trickle-feed Pimelea to rumen fluid samples in pursuit of rumen bacteria that can breakdown the toxin.