

Pimelea Poisoning – Still a Confusing Story

R.G. Silcock^A, S. Chow^A, M.T. Fletcher^A and M. Wingett^B

^A Qld Dept Primary Industries & Fisheries, LMB 4, Moorooka QLD 4005.

^B Qld Dept Primary Industries & Fisheries, Stockyard St, Cunnamulla QLD 4490.

Combating pimelea poisoning of cattle is no more predictably achieved today than it was 35 years ago. There seem to be documented exceptions to every suggestion made about ways to minimize the problem. A new research project aims to better quantify the relationship between abundance of poisonous *Pimelea* plants in the paddock and animal ill-health now that more sophisticated chemical analysis techniques are available.

Samples of the 3 main problem species, *P. elongata*, *P. simplex* and *P. trichostachya*, have been collected in Queensland, New South Wales and South Australia from plants in a range of growth stages, from a range of locations and soil types, and from the same site over time. They have been analysed for the concentration of simplexin and other related toxins using LCMSMS (Liquid Chromatography Mass Spectrometry Mass Spectrometry) techniques. Steps are underway to collect tissue from affected animals along with details about their history and the abundance of *Pimelea* in their paddocks.

These 3 species seem to have similar levels of simplexin at any given growth stage. Early results indicate that all parts of the plant, even dead stem, contain simplexin, the main suspected poison. However the concentration in dead stem is apparently lower (20mg/kg) compared to 150mg/kg in green shoots and 400mg/kg in seeds. As animals actively avoid eating the plant, it seems unlikely that remnants of dead stem from last season will deliver an acute dose to animals (the equivalent of 50mg of air-dry green foliage per kg of bodyweight over 3 days, Clark 1973) but inhaled seeds may. Fallen seeds quickly stick to the soil surface once moistened by rain or dew, so inhalation seems unlikely in the long term. However, simplexin is not easily leached out of the seeds by rain. There is also the possibility that freshly dropped seeds, which float freely on the surface of ponds or puddles, may be taken in by livestock while drinking.

Complexity is caused by the species having apparently quite different seed germination requirements. Late summer or autumn rains in 2007 around Cunnamulla and Bollon germinated plenty of *P. simplex* on heavy clays and *P. elongata* in ephemeral lakes but no *P. trichostachya* in adjacent sand dunes or sandy mulga country. *P. trichostachya* did not germinate widely until August 2007. *P. simplex* and *P. trichostachya* generally had only one recruitment event at a site during 2007 while *P. elongata* had several from small falls, especially where the area received run-on water. There is also circumstantial evidence to suggest that germination can occur from mid-summer rain. This has not been reported before and the plants are normally regarded as winter/spring annuals but we commonly found scattered populations of large, healthy *P. trichostachya* plants in the 2006-07 and 2007-08 summers in the Maranoa. Instances of near-dead *Pimelea* plants reshooting from the stem base after good rain have also been recorded in late 2007.

Another complexity is that stock grazing pastures heavily infested with *P. elongata* in winter west of Bollon showed no signs of the disease and grazer experience has them most worried about *P. trichostachya* in that region. Sheep were often seen grazing amongst dense populations of all species without obvious ill-effects and without eating the *Pimelea*. Kangaroos and emus likewise seemed unaffected by grazing amongst these plants. The only insect found to preferentially chew or suck the plants or visit the flowers in the daytime was the exotic sorghum head caterpillar (*Cryptoblabes adoceta*).

Our conclusions from these data are that there are still no simple solutions when *Pimelea*, also called riceflower or flaxweed, infests pastures. The old Maranoa response of moving affected stock from red soil country to 'black' clay soil country does not hold where *P. simplex* is the problem species on clay soil. The reverse could be required. In the central west of Queensland, many graziers have reduced movement options where *P. simplex* can be abundant on gidgee country and *P. trichostachya* common on desert country at the same time. Nonetheless, these *Pimeleas* have not been seen in 2007 on brigalow country but were recorded on most other types of vegetation. Some producers have gone to the extent of hand-weeding young *Pimelea* plants to reduce its incidence in critical locations. Some producers and vets firmly believe that feeding protein-rich supplements such as lucerne and cotton-seed, along with removal to pimelea-free pasture, is a practical way to treat cattle affected by pimelea poisoning.

Funds for this project come principally from the Natural Heritage Trust, round 2. We thank Jenny Milson, Trent Scholz and Sue Cottam for collecting plant specimens.

Clark, I.A. (1973). *Res. Vet. Sci.* **14**: 341.

Email: richard.silcock@dpi.qld.gov.au