10.1071/ANv61n3abs

ANIMAL PRODUCTION IN AUSTRALIA

Proceedings of the 33rd Biennial Conference of the
Australian Association of Animal Sciences

Volume 33

The new face of Animal Science in Australia

Editor: Dianne Mayberry

Esplanade Hotel, Fremantle, Western Australia, and online

1–3 February 2021

The resurgence of pasture dieback in northern Australia

S. Buck[A,B], *N. Brazier*[A], *T. Beutel*[A] *and L. Landsberg*[A]

[A]Department of Agriculture and Fisheries, Rockhampton, Qld 4701, Australia.
[B]Email: stuart.buck@daf.qld.gov.au

Pasture dieback is a poorly understood condition affecting the productivity of extensive tropical and sub-tropical grass based grazing systems in many countries. Grass production is reduced leading to a substantial reduction in productivity, which in many cases has appeared to be irreversible.

In north-eastern Australia, sub-tropical sown grass-pasture species are mainly affected on a wide range of soil types and landscapes where average annual rainfall is greater than 600mm. In Brazil, Argentina and Paraguay dieback has been reported in small areas of tropical pastures with higher rainfall zones than Australia (Ribeiro-Junior *et al.* 2017; A. Radrizzani, personal communication 2018). Symptom expression of yellowing and/or reddening of leaves, unthrifty plant growth, and eventual death in varying sized patches is universal. After pasture loss broadleaf plants, including legumes, often colonise affected areas. Regeneration of grass in affected areas has occurred but is mostly inconsistent. Little to no grazing occurs once dieback takes hold in grass dominant pastures, rendering affected areas unproductive resulting in substantial economic losses.

While pasture dieback is a relatively recent occurrence in South America (Ribeiro-Junior *et al.* 2017), multiple events have been reported in Australian pastures. During the 1990 and 2000's, an extensive dieback event, mainly in buffel grass (*Pennisetum ciliare*), occurred across central Queensland (Graham and Conway, 1998). An earlier dieback-like incidence occurred in paspalum (*Paspalum dilatatum*) during the mid 1920s at Cooroy (Summerville, 1928). This was similar to another example reported in a range of sub-tropical grasses in New Caledonia during 1998 (Brinon *et al.* 2004). A resurgence of pasture dieback is currently occurring in Queensland affecting multiple grass species across larger areas of pasture and additional geographical locations. The exact area impacted across Queensland is estimated to be at least 200,000 hectares; however, AgForce (2019) estimated that it could be up to 4.4M hectares. This is approximately between 1 and 17% of the total area of susceptible pastures in eastern Queensland. Obtaining an accurate measurement of the affected area has been problematic. The impacted area is continually changing over time due to additional areas becoming affected, while simultaneously some impacted areas are recovering. Additionally, some graziers are unaware of the presence of dieback because they do not know what to look for or are confused with other conditions that cause similar symptoms. Anecdotal reports also indicate some graziers may not be informing authorities due to the perception of biosecurity restrictions, or bank equity concerns.

Despite some research efforts, there is no definitive diagnosis of the cause(s) of the current pasture dieback outbreak in Australia. Currently, a range of anecdotal and potential causal agents are espoused, of which many are being investigated by multiple organisations. Pathogenic soil fungi are implied in Brazil due to stress from waterlogging (Dias-Filho 2006), whereas in Argentina or Paraguay there is no understanding of the cause of dieback (A. Radrizzani personal communication 2018).

In Australia there has been limited field research to identify successful management practices to restore pasture productivity. Preliminary results from on-going research by the Queensland Department of Agriculture and Fisheries are indicating a positive restoration of pasture productivity through the sowing of annual forages and/or perennial legumes. These forages appear to grow in affected pastures and are recommended until other reliable management options are determined. Other management practices such as burning, slashing, cultivating, fertilising, spraying insecticides or fungicides, have not overcome the productivity losses this condition can generate.

Further research is required to define and characterise this condition across the range of environments where dieback is occurring. There is also a crucial need to gain a definitive understanding of the causal agents of this condition, the interaction between environmental and management attributes, and knowledge of successful and economical management solutions to restore productivity.

References

AgForce (2019) Pasture dieback survey 2019. AgForce, Brisbane.
Brinon L, Matile-Ferrero D, Chazeau J (2004) *Bulletin of the Entomological Society of France* **109**, 425–428.
Dias-Filho M (2006) *Death of Brachiaria pastures. Campo Grande: Embrapa Beef Cattle* 83–101.
Graham G, Conway M (1998) *Tropical Grassland Society of Australia* **14**, 6.
Ribeiro-Junior N, Ariano A, Silva I (2017) *Brazilian Journal of Biology* **77**, 97–107.
Summerville W (1928) Mealy bug attacking paspalum grass in the Cooroy district. *Queensland Agricultural Journal* **30**, 201–209.