

Characterising pasture dieback: analysis of the current situation in northern Australia

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Pasture dieback is a poorly understood condition currently affecting mainly productive improved sown grass pastures across eastern Queensland. Many species are affected, including Buffel grass (*Chenchrus ciliaris*), Creeping Bluegrass (*Bothriochloa insculpta*), and Rhodes grass (*Chloris gayana*). Similar conditions have been reported previously in specific pasture species within localised areas of Queensland (i.e. Buffel grass in central Queensland during the 1990's and 2000's). Previous research was unable to identify a causal agent (Graham and Conway 1998). Since 2012, graziers have increasingly reported productive pastures failing to respond to rainfall; with yellowing and/or reddening of leaves; poor growth; and plants dying with no discernible cause. Reports have been received from far north, central and southern Queensland. The area has expanded from an estimated area of least 35,000 hectares (Buck 2017) to potentially over 4 million hectares at the end of 2018 (Agforce 2019). The Queensland Department of Agriculture and Fisheries has instigated a characterisation program aiming to define how dieback is presenting across the state, and to guide diagnostic research into potential causal agents.

At the time of writing, 51 graziers have been surveyed, the majority are in the heavily affected region of central Queensland. These surveys collect information regarding the graziers experience and recollection as to the occurrence of dieback across all properties under their management.

Questions include:

- when dieback was first noticed
- any significant weather events in the lead-up to noticing pasture die-back
- area affected and impacts on stocking rates/animal production/business practices
- whether any animals/insects been noticed in the affected areas
- if any other plants (e.g. weeds, legumes or grasses) growing in dieback affected areas

Paired affected/unaffected detailed geo-referenced paddock surveys are also being completed, collecting site-specific information regarding land type, pasture composition, and land condition (as it was prior to being affected by pasture dieback). Because affected sites have been specifically selected, the only selection criteria for the paired unaffected site is that it be as close as possible to the affected site, and to have never been known to be affected by dieback. Data collected from these paired site surveys is yet to be analysed.

This program is still being conducted hence results presented here are preliminary. The collection of survey data was hindered by dry conditions across the affected regions of Queensland in 2019. Many graziers found it difficult to distinguish impacts of drought or pasture dieback on their business activities. Even experienced operators had difficulty in some situations distinguishing if pastures were dead due to drought, or pasture dieback. Following widespread, but patchy, rain in early 2020, characterisation and diagnostic work increased due to favourable conditions for pasture growth and the expression of pasture die-back symptoms.

Results to date indicate that pasture dieback is still spreading, with current responses indicating new cases noticed from 2014 through to 2018. The lack of new reported cases between late 2018 and the end of 2019 may be due to dry conditions during this time. In the 6 months prior to noticing dieback, 22 respondents (44%) indicated receiving an above average amount of rain, of which only 5 responses (10%) indicated extreme weather events (e.g. cyclone/floods). Only 9 producers (18%) reported drier than average conditions. 46 respondents (90%) indicated prior to being affected by dieback, they aimed to have a moderate - high residual pasture yield (2000kg/ha or greater) at the end of the dry season.

Impacts on property performance and management are substantial. 36 respondents (71%) indicated they have reduced stocking rates due to dieback, though this has been compounded by drought. Where producers could provide estimates, stocking rate reductions ranged between 10% and 100%, with small properties generally having a higher reduction. Producers who reported no change to stocking rate indicated they usually stocked conservatively, but are now stocked closer to their long-term carrying capacity.

The main outcome of the survey responses so far, confirms previous observations that pasture dieback is primarily affecting highly productive pastures located in higher rainfall areas, in areas conservatively grazed with substantial residual (after-grazing) biomass. Additional results will be available once surveys have been completed and data analysed.

References

- AgForce (2019) Pasture dieback survey 2019. AgForce, Brisbane.
- Graham G and Conway M (1998) *Some sick buffel. TGS news and views. Tropical Grassland Society of Australia*. **14**, 6.
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