

Since 2015 the occurrence of pasture dieback has accelerated however the phenomenon is not new; dieback in buffel grass pastures was reported in central Queensland in the early 1990s, and dieback-like events were noted in tropical pastures in other areas of the state almost 100 years ago. As of early 2020, pasture dieback has been confirmed in north-east New South Wales.

Known grass species affected

Most sown grass-pasture species commonly found in southern, central and northern Queensland have been affected by dieback. However, not every susceptible species is affected in every district, demonstrating the complexity of this condition. The sown grasses commonly reported or known to be affected are outlined below. Some native grass-pasture species such as Black speargrass *(Heteropogon contortus)*, Forest bluegrass *(Bothriochloa bladhii)* and Golden beard grass *(Chrysopogon fallax)* have also been reported as affected.

Scientific name	Common name	Cultivar(s)
Bothriochloa insculpta	Creeping bluegrass	Bisset
Cenchrus ciliaris	Buffel	USA (American), Gayndah
Chloris gayana	Rhodes	Multiple
Dichanthium aristatum	Angleton	Floren
Digitaria eriantha	Pangola	
Megathyrsus maximus	Panic	Petrie (Green); Gatton
Panicum coloratum	Bambatsi panic	Bambatsi
Paspalum dilatatum	Paspalum	
Paspalum mandiocanum	Broad leaf paspalum	
Setaria sphacelata	Setaria	Kazungula, Nandi
Urochloa decumbens	Signal	Basilisk
Urochloa mosambicensis	Sabi	Nixon



What is pasture dieback?

Fact sheet 1

What is pasture dieback?

Pasture dieback is a condition that causes unthrifty growth and premature death of otherwise productive tropical and subtropical grass pastures.

Impact

The condition causes losses in pasture production, which reduces carrying capacity and beef production per hectare.

Pasture dieback has been observed across a range of soil types, landscape locations (ridges, gullies, slopes, flats) and grass species. Stock avoid grazing affected areas.

Pasture dieback has been identified in a range of sown and native grasses across Queensland, including north Queensland, Mackay-Whitsunday, central Queensland, Wide Bay-Burnett and south-east Queensland regions.





Symptoms

Pasture dieback only affects tropical and sub-tropical grasses. The symptoms of dieback are similar across different grass species and affected plants generally display these characteristics:

- Yellowing and/or reddening of leaves, starting with the oldest leaves first
- Stunted, unthrifty plants with reduced leaf, tillers, height and seed-head size
- Reduced root system density
- Individual plants can be affected, though more commonly occurs as patches. Whole paddock(s) can eventually be affected
- Decreased grass density
- Death of plants in patches that are subsequently colonised by broadleaf weeds, legumes and occasionally annual grasses.

See Fact sheet 2: How to identify pasture dieback for more information on diagnosis.

Photos top to bottom:

- 1. Creeping bluegrass showing early symptoms of dieback, note the reddening of leaves in high biomass clumps.
- 2. Creeping bluegrass affected by dieback.
- 3. Buffel grass affected by dieback.

Map: General areas (East of the dotted lines) where pasture dieback has been observed and reported across Queensland and north-east New South Wales.

Where is pasture dieback occurring and what is the current area affected?

While the exact area affected by dieback is unknown, thousands of beef producers are estimated to have pastures affected by dieback covering hundreds of thousands of hectares. The area could potentially be millions of hectares. Dieback is affecting highly productive pasture systems across areas in eastern Queensland; pastures in higher rainfall locations that are conservatively grazed are most commonly (and severely) affected. The affected area is continually changing. New outbreaks are observed every year, while some fully affected (dead) pastures are regenerating. Because pasture dieback can be difficult to accurately identify early, many graziers may not realise that they have it.



Fact sheet 1 – What is pasture dieback?

What is causing pasture dieback and what can be done about it?

There are three possibilities of causal candidates: environmental conditions, management practices, or pathogenic organisms. While still being confirmed, research to-date indicates pathogenic organisms are the likely candidate. Interaction with environmental conditions and management practices can also occur. Researchers and graziers are trialling multiple techniques to restore pasture productivity. Practices such as burning, fertilising, renovating/cultivating only, spraying a range of pesticides or biological formulations, and changing grazing management have provided inconsistent results. Cultivating and re-seeding with legumes or forages have provided productivity improvements and are recommended until futher solutions are generated.

For more information on management options for country affected by pasture dieback, see *Fact sheet 4: How to manage pasture dieback.*

Current research

Multiple universities, private research organisations and natural resource management (NRM) groups are currently investigating the cause of dieback and impacts of different management options to restore productivity. The Queensland government, through the Department of Agriculture and Fisheries (DAF), is also undertaking research to identify causal agents and effective management solutions. Field trials to date have shown annual and perennial legumes are unaffected by this condition and have performed well when sown into paddocks affected by pasture dieback. These can provide both short and long-term feed.



Above: Dolichos Lablab growing well on an affected paddock at DAF's research trial near Gayndah.

Below: Drone photo of DAF's research trial plots near Gayndah.

To learn more about the outcomes of DAF trials see *Fact sheet 3: Research into management solutions for pasture dieback.*





DAF staff sampling dieback affected pastures in Queensland.

What is DAF doing about pasture dieback?

DAF has an extensive research, development and extension program to address the issue of pasture dieback across Queensland. DAF staff are undertaking activities in four key areas:

- 1. Industry engagement and extension
- 2. Defining and characterising dieback across the state
- 3. Diagnosing the causal agent or agents
- 4. Understanding the impacts of management options to restore productivity

Work is occurring concurrently across all four areas, performed by a multidisciplinary team of specialist diagnostic scientists, agronomists, beef extension officers and technical officers. Staff are located across multiple key locations where dieback is significantly affecting pasture and beef productivity.

Activities are being undertaken on affected properties, on research stations, in the glasshouse and in the laboratory. DAF is committed to supporting graziers affected by dieback across the state and is closely collaborating with other research organisations including Meat & Livestock Australia, universities, natural resource management and industry groups, and private service providers. DAF work is complementing these investigations and we are sharing our findings to ensure the broader scientific community is informed to help fast-track effective solutions for this condition.

Where to get more information

- FutureBeef: <u>www.futurebeef.com.au</u>
 - Fact sheet 2: How to identify pasture dieback
 - Fact sheet 3: Research into management solutions for pasture dieback
 - Fact sheet 4: How to manage pasture dieback
 - Pasture dieback: past activities and current situation across Queensland report
- Meat & Livestock Australia: <u>www.mla.com.au</u>
- New South Wales Department of Primary Industries: <u>www.dpi.nsw.gov.au</u>

Compiled by Stuart Buck, DAF Rockhampton. March 2021.

Who can producers contact about pasture dieback?

The DAF team is encouraging graziers affected by dieback (existing, new, or recovered) to make contact. This will help us understand this condition better, and to provide any available assistance. Please call the DAF Customer Service Centre on 13 25 23.

You can also contact:

Stuart Buck, Pasture Agronomist and DAF Pasture Dieback Project leader (07) 4843 2605 or <u>stuart.buck@daf.qld.gov.au</u>

Nicholas Brazier, Pasture Agronomist (07) 4843 2631 or <u>nicholas.brazier@daf.qld.gov.au</u>

Or visit your local DAF office and talk to a DAF extension officer.



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