How to manage pasture dieback

Fact sheet 4

Pasture dieback is currently impacting the productivity of tropical pastures in areas of eastern Queensland and north-eastern New South Wales. The condition is characterised by patches of otherwise healthy, productive grasses first exhibiting leaf discolouration (yellowing, reddening, or both), followed by unthrifty growth and senescence, resulting in premature death. There are numerous other conditions that can cause similar symptoms, however dieback is usually defined by grasses dying in patches for no other obvious reason (e.g. water or nutrient stress, soil or grazing variations).

There are multiple factors that may be involved with this condition:

- Environmental stress (e.g. soil and climate)
- Paddock management (e.g. grazing practices such as rotation, set stocking)
- Biological pathogen (e.g. virus, bacteria, fungi or insects)

Research indicates biological pathogenic organisms are the most likely cause. However, in some situations environmental and managerial factors also appear to be contributing.

This fact sheet aims to provide recommendations based on current knowledge. Updates will be produced as new information becomes available. Two commonly asked questions will be covered:

1. What can I do so I don't get pasture dieback?

2. What can I do if I have pasture dieback?

There are no one-size-fits-all strategies to manage pasture dieback. Each situation needs to be individually assessed to determine the best course of action; what is suitable for your neighbour might not be suitable for you.

Ensure paddocks are continually monitored for spread, or recovery.

Assess the costs and practicalities of management strategies versus the potential of a new pasture naturally regenerating over time.

If treatment is conducted, incorporating tolerant annual forages or perennial legume-grass pastures into the paddock is likely to be more cost-effective in the long-term than directly treating pathogenic organisms.

Queensland Government

1. What can I do so I don't get pasture dieback?

It's unlikely anything can be practically done to stop pasture dieback affecting specific paddocks or properties. While reducing pasture yield for periods of time could lessen the risk, beef production in extensive grazing systems relies on growing as much pasture as possible during the wet season, which is then used during the dry season. Grazing management needs to ensure pasture consumption (stocking rate) matches pasture growth without going to extremes – i.e.major pasture deficit and no ground cover, or a large surplus of pasture that is conducive to pasture dieback conditions.

There is high potential for pasture dieback when the following factors are present:

- The paddock is located within a known dieback area, currently eastern Queensland (or north-eastern New South Wales) with average annual rainfall higher than 600mm per annum.
- The pasture contains improved tropical grass species.
- Favourable soil and climatic conditions occur which enable moderate-to-high pasture yield in most years.
- Pasture yield is consistently moderate-to-high from conservative stocking rates or no grazing (e.g. areas fenced off to stock).

2. What can I do if I have pasture dieback?

If a paddock has been affected by dieback, there are several aspects to consider.

- What is the scale of the issue?
    - How big is the area affected?
    - How many patches or areas are affected?
    - How many paddocks are affected?
- Is the affected area expanding, contracting, or static?
- What stage is the dieback at (just started, mid-stage, or grass dead)?
- Are the affected paddock(s) cleared and open, or timbered (lightly or heavily)?

Strategies are separated into two categories:

a) Small area impacted and is still spreading
b) Large area impacted and either spreading or continuing to affect pastures

Photos top to bottom:
1 and 2. Buffel grass affected by pasture dieback, surrounded by otherwise healthy pasture.
3. Dry season healthy pasture around bare patches (grey colour) where pasture has died due to pasture dieback.

For more information the latest research DAF is conducting on management solutions see *Fact sheet 3. Research into management solutions for pasture dieback.*

Need help identifying pasture dieback? See *Fact sheet 2. How to identify pasture dieback* for more information on diagnosis.

Photos top to bottom:
1. Small area of buffel grass affected by pasture dieback.
2. Large area of pasture in between leucaena rows affected by pasture dieback.
3. Mealy bugs on grass leaf.

Best-bet option for small areas:
Graze the paddock to utilise remaining feed, spell, and monitor.

Current APVMA insecticide permits for pasture mealybug control in pastures

Permit nos.	Insecticide	Trade name
PER87423	Imidacloprid	Confidor®
PER88482	Spirotetramat	Movento®
PER90238	Chlorpyrifos	Lorsban®
PER90239	Carbaryl Diazinon Malathion Methomyl	Carbaryl® Diazinon® Hy-Mal® Lannate-L®

Please refer to permit for specific regulations on use of these chemicals.

a) Small area impacted and still spreading. Options include:

- Don't treat. Monitor to assess further progress and if edible plants are remaining or are emerging. Graze by matching stocking rate to pasture production.
- Graze the paddock to use remaining available feed, then spell.
- Slash or burn the paddock (only when at very early dieback stage), then spell for recovery.
- Monitor to determine if mealybugs are present. Obtain professional advice to assess level of impact, whether predators are present, and if spraying will be an effective solution. If spraying is deemed the best option, strictly follow the Australian Pesticides and Veterinary Medicines Authority (APVMA) permit requirements relevant to the selected chemical. These are *generally*:
    - Spray juvenile-stage insects only, not adults.
    - Only spray an actively growing pasture, but not if flowering.
    - Ensure thorough coverage of all plant surfaces and crown of the plant.
    - Do not spray if bees are present, or if beneficial insects have been released.
    - Application only by ground rig.
    - Adhere to any grazing exclusion/withholding periods (some are very long).

  There are multiple factors to consider when deciding to spray insecticide. These include:
    - Product cost and cost/difficulty of spraying extensive areas.
    - Risk of insecticide residue in meat if grazing exclusion/withholding periods are not adhered to.
    - Probability of poor effectiveness in moderate-high biomass pastures (spray doesn't cover the whole plant).
    - Potential of insects to reinfect the paddock from nearby untreated areas.
    - The likelihood of beneficial insects being able to manage pest populations and the negative impacts if spraying occurs.

  As such, spraying should only be considered <u>a last resort option for small patches</u>.
- Developing, modifying, or adhering to an existing farm biosecurity plan should help minimise the chance of dieback being introduced onto the property through normal business activities.

b) Large area impacted and dieback is either spreading or continuing to affect pastures. Options include:

- Don't treat. Allow/encourage natural regeneration of a new pasture. Monitor to determine percentage of edible pasture plants (less susceptible grass species, forbs, legumes, etc), and graze sparingly to encourage thickening.
- Remove remaining pasture/weeds with herbicides or cultivation, fallow to store sufficient soil-moisture, determine fertiliser needs, and re-seed with either:
  - perennial legumes only (see side box for species)
  - perennial legumes with a less susceptible grass (see side box for species options)
  - annual forages (e.g. forage sorghum, lablab, or oats), then sow a perennial legume and less susceptible grass the year after.
- If paddocks are heavily timbered or machinery access is difficult, then consider aerial application of suitable treatments, or treating areas where machinery can access (i.e. zonal management).
- Burn the paddock (only when at very early dieback stage), then spell for recovery.
- Develop, modify, or adhere to an existing farm biosecurity plan to minimise the chance of dieback being brought onto and spread throughout the property through normal business activities.

Best bet option for large areas: Undertake detailed assessment to determine if re-seeding is more cost effective versus not treating and allowing natural regeneration to occur.

Grass species	Tolerance to pasture dieback
	SUSCEPTIBLE
Gayndah buffel grass	
Bisset creeping bluegrass	
Paspalum	
Kikuyu	
Sabi grass (perennial Urochloa)	
Pangola	
Setaria	
Signal grass	
Green / Gatton Panic	
Rhodes grass	
Bambatsi panic	
Angleton grass	
Floren bluegrass	
Indian bluegrass (couch)	
Biloela buffel grass	
Purple pigeon grass	
	TOLERANT

Suitable legume species

Perennial	Annual
Desmanthus	Lablab
Stylos (multiple species)	Cow pea
Butterfly pea	
Siratro and burgundy bean	
Leucaena	

Where to get more information

- FutureBeef: www.futurebeef.com.au
  - Fact sheet 1: What is pasture dieback?
  - Fact sheet 2: How to identify pasture dieback
  - Fact sheet 3: Research into management solutions for pasture dieback
  - Pasture dieback: past activities and current situation across Queensland report
- Meat & Livestock Australia: www.mla.com.au
- New South Wales Department of Primary Industries: www.dpi.nsw.gov.au

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 stuart.buck@daf.qld.gov.au

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

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

Compiled by Stuart Buck, DAF Rockhampton. March 2021