



A practical conversation on pasture dieback with Advancing Beef Leaders

Stuart Buck (CQ)
Ted Callanan (SQ)
Katie Hay (NQ)

DPI Sown Pastures team

Queensland Pasture Resilience Program



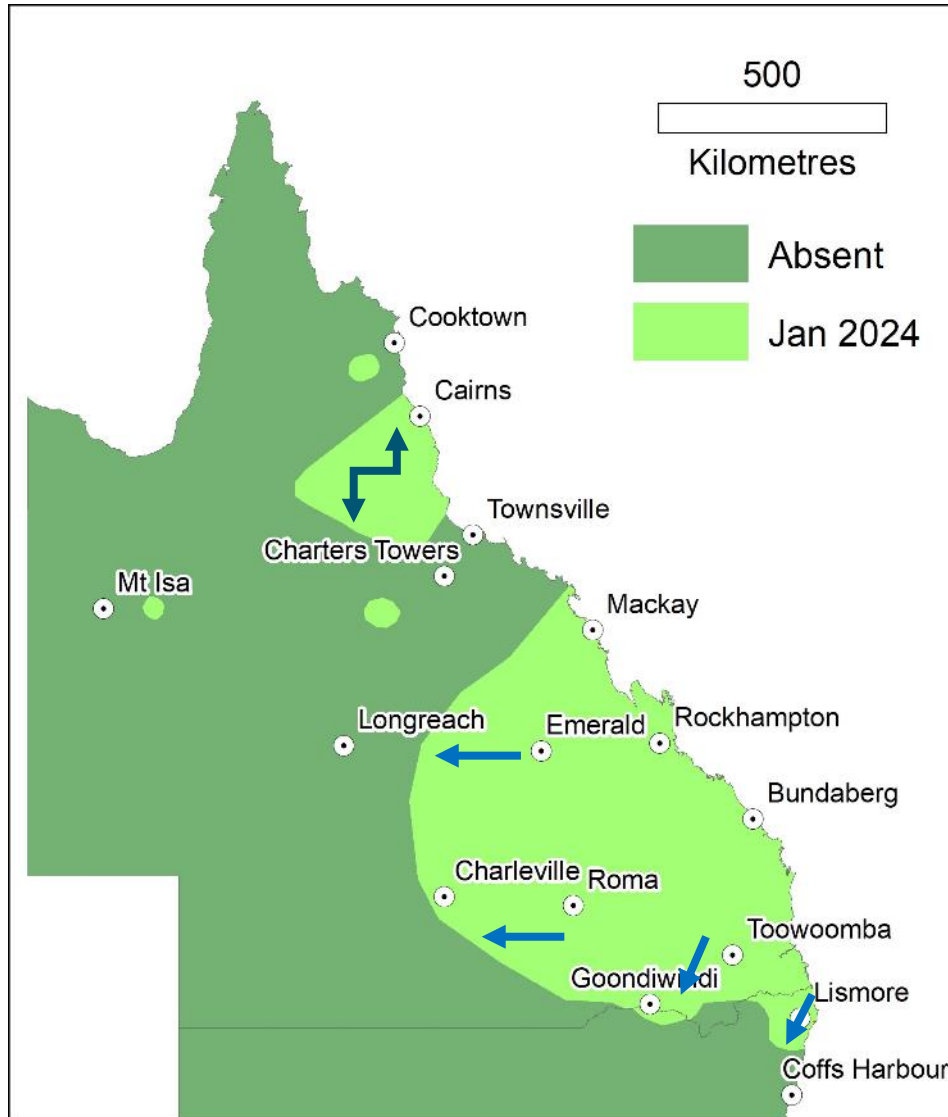
Outline

1. Background
 - Where is dieback located
 - Symptoms
2. Species affected
3. Causes and other factors needed for dieback
4. Management options
5. More information





Where is dieback?



Four symptom stages





Kikuyu pastures affected by dieback (Yarraman, March 2025)

What grass species are affected?



How do I... select grass varieties tolerant to pasture dieback?

The issue: Producers face ongoing challenges to maintain healthy and productive pastures to support their livestock operations. A growing concern for the industry is damage caused by pasture mealybug, its detrimental impacts are significant for pasture production, affecting a variety of pasture species.

The impact: Mealybug-induced pasture dieback reduces the overall productivity and quality of grazing land. It can lead to significant economic losses.

The opportunity: By selecting mealybug-tolerant pasture species and implementing best management practices, producers can minimise the impact of pasture dieback on their grazing operations. Best results are obtained when mixtures of legumes and tolerant grasses are planted.

This fact sheet provides research-based knowledge to help producers make informed decisions regarding the relative tolerance and susceptibility of grass pastures to pasture dieback caused by pasture mealybug (*Helicoccus summervillei*) (Figure 1, Figure 2).

The information in this fact sheet summarises current conclusions from various field trials (an example in Figure 3) and glasshouse screening trials. These ongoing trials are evaluating the performance of different pasture species alongside mealybug-induced pasture dieback in a range of growing conditions. Observations by trained pasture agronomists in commercial paddock situations have also been incorporated. As additional data is collected, further updates will be produced.

Field trials and observations in commercial paddock situations have shown that pastures comprised of monocultures are more at risk from the impact of pasture mealybug than diverse pasture mixes, including both a mix of grass species and legumes (Figure 4).

Table 1 provides the relative tolerance levels of each grass species against the pasture mealybug, ranging from tolerant to highly susceptible.



Figure 1: Pasture dieback caused by pasture mealybug on tropical grasses. Note the small size of the mealybug, and purple and yellow streaking of dieback symptoms. Photo Caroline Hauxwell, QUT



Figure 2: Pasture dieback caused by pasture mealybug on tropical grass note purple and yellow streaking of dieback symptoms. Photo DAF

	Species	Common name	Cultivar(s)	Confidence rating*	Soil type adaptation	Annual rainfall requirement* (mm)
Tolerant	<i>Urochloa brizantha</i>	Brizantha	Mekong	M	Loam - clay	>800
	<i>Urochloa humidicola</i>	Humidicola	Tully	M	Loam - clay	>1000
	<i>Lolium multiflorum</i>	Italian ryegrass	Multiple (+ AR37 / AR1)	M	Loam - clay	>600 [‡]
	<i>Lolium perenne</i>	Perennial ryegrass	Multiple (+ AR37 / AR1)	M	Loam - clay	>800 [‡]
	<i>Megathyrus maximus</i>	Guinea grass	Hamil	L	Sandy/loam - clay	>800
Moderately Tolerant	<i>Cenchrus ciliaris</i>	Buffel grass	Biloela	H	Sandy/loam - clay	>600
	<i>Megathyrus maximus</i>	Panic	Galton; G2; Megamax059	H	Sandy/loam - clay	>700
	<i>Setaria sphacelata</i>	Setaria	Multiple	L	Sand - clay	>900
	<i>Astrelbia lappaceae</i>	Curly Mitchell grass	Native	L	Clay	>250
Low tolerance	<i>Chloris gayana</i>	Rhodes grass	Multiple	H	Sand - clay	>750
	<i>Megathyrus maximus</i>	Green panic	Petrie	H	Sandy/loam - clay	>700
	<i>Dichanthium aristatum</i>	Angleton grass / Floren bluegrass	Floren	M	Clay	>700
	<i>Setaria incrassata</i>	Purple pigeon	Inverell	M	Clay	>550
	<i>Urochloa decumbens</i>	Signal grass	Basilisk	L*	Loam - clay	>900
	<i>Bothriochloa pertusa</i>	Indian couch	Medway; Keppel	L	Sand - clay	>600
Moderately susceptible	<i>Panicum coloratum</i> var. <i>Makarikaense</i>	Bambatsi panic	Bambatsi	H	Loam - clay	>500
	<i>Digitaria eriartna</i>	Digit grass	Premier	M	Sand - clay	>500
	<i>Digitaria milanjlana</i>	Finger grass	Strickland	M	Sand - clay	>600
	<i>Bothriochloa bladhii</i> subsp. <i>bladhii</i>	Forest bluegrass	Native	L	Sandy/loam - clay	>650
	<i>Bothriochloa bladhii</i> subsp. <i>glabra</i>	Forest bluegrass	Swann	L	Sandy/loam - clay	>650
Highly susceptible	<i>Bothriochloa insculpta</i>	Creeping bluegrass	Bisset	H	Loam - clay	>700
	<i>Cenchrus ciliaris</i>	Buffel	American / USA; Gayndah	H	Sandy/loam - clay	>300
	<i>Paspalum mandicorum</i>	Broad-leaved paspalum	NA	H	Loam - clay	>900
	<i>Cenchrus clandestinus</i>	Kikuyu	Multiple	H	Loam - clay	>800
	<i>Urochloa mosambicensis</i>	Sabi grass	Nixon	H	Sandy/loam - clay	>600
	<i>Digitaria eriartna</i>	Pangola	NA	L	Sandy/loam - clay	>750
	<i>Dichanthium sericeum</i>	Old Bluegrass	Native	L	Clay	>500
	<i>Paspalum notatum</i>	Bahia grass	Competidor; Riba	L	Sand - loam	>800
	<i>Paspalum dilatatum</i>	Paspalum / Dallis	Common	L	Sandy/loam - clay	>750



What is causing pasture dieback?

Pasture mealybug *Heliococcus summervillei*



What factors are needed for pasture dieback to occur?

Susceptible grass species



Pasture mealybug



Pasture dieback



Increase prevalence & severity

- Highly susceptible grasses
- High biomass
- Active grass growth
- Hot/humid, long growing season
- Secondary infections, viruses?
- High numbers of mealybugs

Reduce prevalence & severity

- Less susceptible grasses, legumes
- Low biomass
- Dormant grass
- Cool/dry, short growing season
- Predatory insects
- Low numbers of mealybugs



What can be done about pasture dieback?

PREVENTION?

No reliable and practical prevention strategies (currently)

ERADICATION?

No cost-effective eradication strategies (currently)

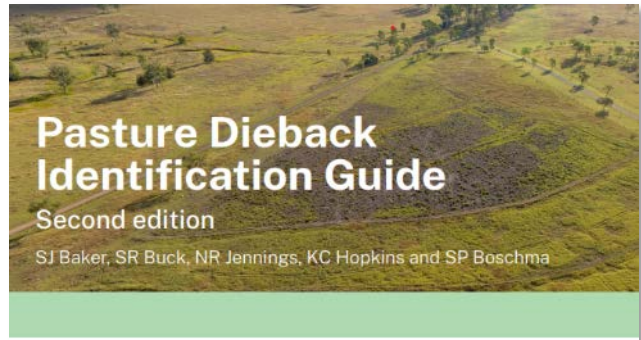
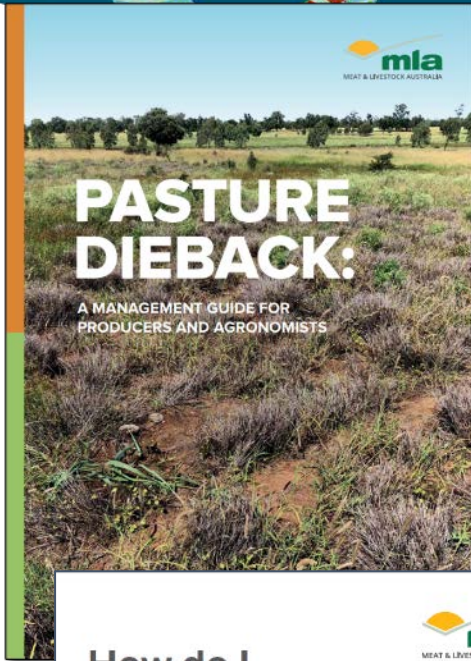
MANAGE WITH?

Yes, the only solution at this stage

What management options are effective?

Management strategies	Practice	Small patch		Widespread	
		Arable	Non-Arable	Arable	Non-Arable
1. Manage for recovery	Adjust stocking rate (forage budget)	✓	✓	✓	✓
	Monitor and treat weeds in bare patches	✓	?	✓	?
2. Improve pasture	Sow legumes and tolerant grasses	✓	✓	✓	✓
	Apply fertiliser	?	?	✓	?
	Renovation with cultivation only	?	X	✓	X

Information and tools available www.futurebeef.com.au



Management of pasture dieback

What is pasture dieback and where does it occur in Queensland?

Pasture dieback causes death of otherwise healthy tropical and sub-tropical grass pastures. It affects most high yielding sown species and some native species, while legumes and other broadleaf plants are unaffected.

Pasture dieback occurs across eastern Queensland and north-eastern New South Wales – generally in areas with more than 600 mm annual rainfall. Pasture death begins in patches but can quickly spread to large areas – or whole paddocks – within one summer season when it is warm and wet.

Water and temperature stress, nutrient deficiency and herbicide damage can present similar symptoms to pasture dieback. Other known pathogens such as fungal infections can also be misdiagnosed as pasture dieback. It is important to exclude these to definitively diagnose this condition. The four stages of pasture dieback symptoms are:

1. Yellowing and/or reddening of individual leaves, starting from the older leaves.
2. Stunted, unhealthy growth of plants in patches – or in severe cases, across whole paddocks – with obvious yellowing and/or reddening of multiple leaves or the whole plant.
3. Death of pasture, in patches or widespread throughout the paddock.
4. Broadleaf plants (legumes or weeds) growing unaffected in areas of dead pasture. Dead pasture plants are grey and can be easily uprooted.

Map of Queensland and northern New South Wales showing dieback detection as of January 2024.

Buff grass leaves showing discoloration.

Figure 1: Pasture dieback caused by pasture mite/bug on tropical grasses. Note the small size of the mite/bug, and purple and yellow streaking of dieback symptoms. Photo: Caroline Howarth, QUT

Figure 2: Pasture dieback caused by pasture mite/bug on tropical grasses. Note the purple and yellow streaking of dieback symptoms. Photo: QUT

daf.qld.gov.au

How do I... select grass varieties tolerant to pasture dieback?

The issue: Producers face ongoing challenges to maintain healthy and productive pastures to support their livestock operations. A growing concern for the industry is damage caused by pasture mite/bug. Its detrimental impacts are significant for pasture production, affecting a variety of pasture species.

The impact: Mite/bug-induced pasture dieback reduces the overall productivity and quality of grazing land. It can lead to significant economic losses.

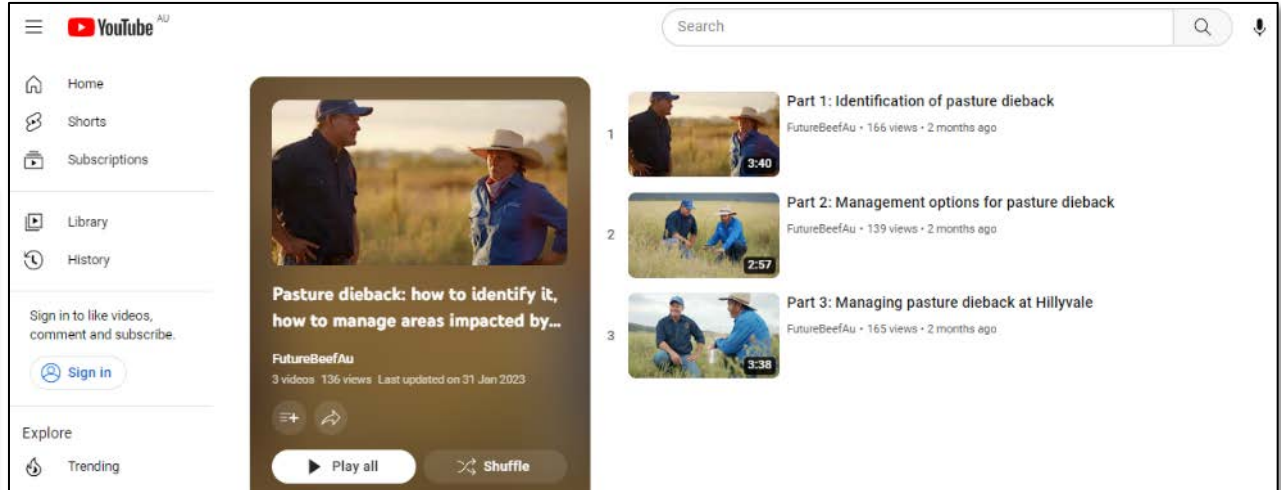
The opportunity: By selecting mite/bug-tolerant pasture species and implementing best management practices, producers can minimise the impact of pasture dieback on their grazing operations. Best results are obtained when selection of tolerant and tolerant grasses are planned.

This fact sheet provides research-based knowledge to help producers make informed decisions regarding the relative tolerance and susceptibility of grass pastures to pasture dieback caused by pasture mite/bug (*Helicoverpa armigera*) (Figure 1, Figure 2).

The information in this fact sheet summarises current knowledge from on-farm field trials (see example in Figure 3) and glasshouse screening trials. These ongoing trials are evaluating the performance of different pasture species and varieties under simulated pasture dieback in a range of growing conditions. Observations by trained pasture agronomists in commercial paddock situations have also been incorporated. As additional data is collected, further updates will be provided.

Field trials and observations in commercial paddock situations have shown that paddocks composed of monocultures are more at risk from the impact of pasture dieback than diverse pasture mixes, including both a mix of grass species and legumes (Figure 4). Table 1 provides the relative tolerance levels of each grass species against the pasture mite/bug, ranging from tolerant to highly susceptible.

1



Thank you. Time for questions



Queensland Pasture Resilience Program

