# Pasture dieback spread and observations in the Lower Hunter, NSW: Early on-farm findings

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**Abstract:** *Pasture dieback leads to the decline and death of summer growing grasses and is causing widespread loss of pastures in Eastern Australia. It is a complex condition associated with the pasture mealybug (*Heliococcus summervillei*). In May 2025, pasture dieback was confirmed in the Lower Hunter, currently the southernmost confirmed case in Australia. Early observations suggest that the Lower Hunter pasture dieback expression differs from that seen on the North Coast of New South Wales. Kikuyu (*Cenchrus clandestinus*) is the main grass affected and appears to be the local indicator species. The majority of cases in the Lower Hunter have been found on flats rather than hillsides. Mealybugs have been identified as* Heliococcus summervillei*. Pasture dieback has also been seen in paspalum (*Paspalum dilatatum*), setaria (*Setaria sphacelate*), Rhodes grass (*Chloris gayana*) and water couch (*Paspalum distichum*) across the Lower Hunter. Mealybugs have also been found on $C_3$ grasses, although these grasses were not showing clear dieback symptoms at the time. Two demonstration sites near Paterson have been established to examine grazing, fertiliser, mulching, and pasture species options. Early results show some grass mixes can establish well where kikuyu has declined. Measurements will continue to be collected from the sites.*

**Key words:** tropical grasses, mealybug, pasture death

## Introduction

Pasture dieback is a syndrome affecting tropical summer-growing ($C_4$) pastures. It causes previously productive pastures to become unthrifty, discoloured and patchy before grasses decline or die, reducing available feed and leaving bare ground (Baker *et al.* 2024). These bare areas become vulnerable to colonisation by broadleaf weeds, legumes and other opportunistic species (Baker *et al.* 2024). It is a complex syndrome associated with the pasture mealybug (*Heliococcus summervillei*), a soft scale insect that feeds on leaves and roots of susceptible grass species (Hauxwell 2022). Currently, there is no registered insecticide for the pasture mealybug. Pasture dieback re-emerged as an issue in Central Queensland during the summer of 2014- 2015 (Buck *et al.* 2025). It now affects millions of hectares of grazing land in eastern Australia (Buck *et al.* 2025). Pasture dieback was first detected in NSW in the Tweed Valley in autumn 2020 and has since spread south along the North Coast, with new infections confirmed between January and June 2024 in the Grafton and Coffs Harbour areas, and ongoing cases across several Local Government areas on the North Coast of NSW (NSW Government 2025). In May 2025, pasture dieback was detected for the first time in the Lower Hunter. At the time of publication, this is the southern extent of pasture dieback in Australia. Hunter Local Land Services (LLS) has been surveying the spread of pasture dieback, including the affected species, the extent of pasture symptoms and the location. Little is known about how regional distribution, field indicators, climatic associations, and pasture mealybugs interact to influence pasture dieback in the Lower Hunter. This paper reports early observations from across the Lower Hunter and summarises what is currently understood about the expression of dieback in the region. The paper will also outline two on-farm demonstration sites set up by Hunter LLS to address local knowledge gaps.

## Field observations

Pasture dieback has been observed in the Lower Hunter from the Stroud area in the north to the Cessnock area in the south. The western extent for pasture dieback is the Merriwa area. LLS staff logged occurrences of dieback, including the species affected and GPS location. This surveillance is important in identifying how dieback expresses itself in the Lower Hunter

region, and what patterns or lack of patterns are beginning to emerge. The majority of cases were identified through roadside surveillance or landholder enquiries regarding suspected pasture dieback. There is a noticeable gap in pasture dieback cases from the Coffs Harbour area to the Stroud area, which warrants further investigation and surveillance. Pasture dieback can be difficult to identify, because the early symptoms are similar to other pasture problems, including moisture stress, spray damage, and pests and diseases such as African black beetle (*Heteronychus arator*) and kikuyu yellows (*Verrucalvus flavofaciens*). To differentiate among similar causes, the presence of pasture mealybug was used to confirm cases of pasture dieback. The Hunter LLS agriculture team has sent mealybug samples from across the Hunter region to the Department of Primary Industries and Regional Development (DPIRD) entomology team. All mealybugs to date have been identified as *Heliococcus summervillei*. A practical field technique used by the team was to inspect the base of plants, litter, and plant leaves while wearing black nitrile gloves. The dark background makes the particularly small juvenile mealybugs easier to see. Pasture dieback has been confirmed in introduced C4 species across the Hunter in order of severity: Kikuyu (*Cenchrus clandestinus*), common paspalum (*Paspalum dilatatum*), setaria (*Setaria sphacelate*) and Rhodes grass (*Chloris gayana*). Figure 1 shows an example of roadside kikuyu affected by dieback.

**Figure 1. Kikuyu affected by pasture dieback on a roadside in the Lower Hunter.**

In the Hunter region, kikuyu is the most impacted grass and appears to become affected first, acting as a local indicator species. This contrasts with what has been observed on the North Coast, where broadleaf paspalum (*Paspalum mandiocanum*) was affected earlier compared to kikuyu (Boschma *et al.* 2021). It is important to note that broadleaf paspalum is not a common grass species in the Hunter region. Also, in contrast to the North Coast where dieback was first recorded on hills and hillsides, pasture dieback has been located predominantly on flats across the Lower Hunter. This may be due to kikuyu being the dominant grass in these areas. Hill slopes dominated by blue couch (*Digitaria didactyla*) have not shown any symptoms of pasture dieback, but rather browning, which is thought to be due to lack of rain and moisture stress, rather than pasture mealybugs. Initial detections have been observed in areas of high-biomass pasture, often ungrazed along roadsides or in tree guards and tree belts. At some locations, in predominantly kikuyu, pasture dieback has been seen to move into shorter-grazed pasture (see Fig. 2).

**Figure 2: Pasture dieback moving into an area of low biomass from a high-biomass tree belt.**

The native $C_4$ grass, water couch (*Paspalum distichum*), has also been confirmed to be affected by pasture dieback in an unusually dry drainage area. Other *Paspalum* species, including common paspalum and broadleaf paspalum, have also been affected, indicating that this response is consistent across the genus. The impact on the water couch is also significant because very few native grass species have been documented to be affected (Buck *et al.* 2025). See Figure 3 which shows water couch, before-and-after dieback. Water couch is valued for grazing in low-lying and seasonally wet areas

**Figure 3: Water couch affected by dieback; photos taken 28 days apart.**

(Rose *et al.* 2009). Pasture dieback in this species may have important implications for floodplain grazing systems across eastern New South Wales. Further observations of water couch in water or temporarily dry floodplain systems will be needed to determine whether mealybugs occur in both situations.

Pasture mealybugs have also been observed by the authors in producers' paddocks in December 2025 on $C_3$ grasses, including Tall fescue (*Lolium arundinaceum*), annual rye grass (*Lolium rigidum*), and prairie grass (*Bromus catharticus*). At the time, these $C_3$ grasses appeared to be asymptomatic. Mealybugs become inactive in cool weather, so they are unlikely to cause damage through winter and spring (Hauxwell 2022). However, the prairie grass had yellowing on its leaves, potentially caused by another stressor. Prairie grass will be monitored closely, as it has better summer activity and heat tolerance than many other $C_3$ pasture grasses and would be actively growing while mealybugs are active. Monitoring of these species will continue, as their role as alternative hosts for mealybugs may have important implications for pasture management and advice given. This may influence pasture species selection in higher risk areas and may also affect the timing of pasture renovation to reduce potential green bridge effects. In addition, surveillance may need to include apparently healthy $C_3$ pastures, not just grasses showing obvious dieback symptoms.

On several properties, giant Parramatta grass (*Sporobolus fertilis*) persisted and flowered where kikuyu had been affected by pasture dieback (see Fig. 4). Similar observations have been made in Queensland with giant rat's tail grass (*Sporobolus pyramidalis*) colonising dieback areas. The potential for weedy *Sporobolus* species to exploit dieback patches is a concern for pasture productivity. This may create additional long-term costs for producers, as *Sporobolus* species are difficult and time-consuming to control once established. This difficulty will increase particularly where dieback has reduced pasture competition and left bare areas available for reinfestation.

Soil testing at a pasture dieback affected property revealed differences between a 'dead spot' (where kikuyu had declined and mealybugs were present) and unaffected neighbouring pasture. Testing showed a lower $pH_{Ca}$ (4.55 vs 4.78) and higher exchangeable aluminium (9.9% vs 4.0% of cations). If low pH and high aluminium are weakening root systems, affected plants may become more susceptible to pasture dieback (Boschma *et al.* 2021).

NSW Government (2025) notes that nutrient-stressed pastures succumb to dieback faster and with greater severity. Acid soils are widespread across the Lower Hunter, so this is unlikely to be an isolated case. Earlier Lower Hunter trials also identified fertiliser management as critical for the persistence of tropical pastures and legumes (Hand et al. 2018), reinforcing the likelihood that nutrient stress will amplify the impact of dieback.

**Figure 4: Giant Parramatta grass persisting and flowering where kikuyu had been affected by pasture dieback.**

## On-farm demonstrations

Hunter LLS established two demonstration sites on a property near Paterson, NSW, on 14 January 2026. Both sites were areas where dieback had been progressing along fencelines. Kikuyu was the pasture affected at the time and the dominant pasture at both sites.

Site 1 has three management options across strips extending from an active dieback front into productive pasture: (1) ungrazed, (2) rotationally grazed, and (3) rotationally grazed with supplementary fertiliser and mulching. At the time of publication, Site 1 had been established and treatment boundaries defined, but due to dry conditions, no grazing or inputs had been applied. The grazing treatment will be part of the landholder's normal rotation.

Site 2 is approximately 70 m long by 30 m wide and divided into eight plots. Each plot is exposed to a comparable level of potential dieback risk from the affected boundary. Species and cultivar details are shown in Table 1. Seed was broadcast onto mown kikuyu. The site has been monitored at fortnightly intervals for groundcover, dieback severity, species performance, and pasture mealybug presence.

These two demonstration sites will assist in addressing the following questions:

- Does grazing management impact the way that dieback can move from the area where dieback has occurred (the affected dieback area) into healthy, productive pastures?
- Will fertilisers and mulching reduce the severity of the expression of dieback or aid in pasture recovery?
- What grass varieties and legume species will grow well and persist under current pasture dieback conditions?

At Site 2, the grass mix (Table 1) had the highest establishment and persistence rates. This corresponded with the kikuyu in this plot being most severely affected by the pasture dieback. The removal of kikuyu, reducing moisture competition, has enabled better establishment. This has practical implications for advice on establishing new pastures.

**Table 1. Species and cultivar details for the eight plots at Site 2, listed from the fenceline (dieback front) into the paddock.**

| Plot | Treatment | Cultivar | Species | Type |
|---|---|---|---|---|
| 1 | Grass mix | Megamax 059/Endura | *Panicum maximum/Chloris gayana* | Grass blend (60:40) |
| 2 | Legume blend | Presto/Spellgrazer | *Macroptilium bracteatum/Desmanthus spp.* | Legume (50:50) |
| 3 | Digit grass | Premier | *Digitaria eriantha* | Grass |
| 4 | Panic | Megamax 059 | *Panicum maximum* | Grass |
| 5 | Rhodes grass | Marina | *Chloris gayana* | Grass (tetraploid) |
| 6 | Rhodes grass | Endura | *Chloris gayana* | Grass (diploid) |
| 7 | Rhodes grass | Katambora | *Chloris gayana* | Grass (diploid) |
| 8 | Kikuyu (control) | — | *Cenchrus clandestinus* | Control (unsown) |

As observed in northern regions, tropical pastures that decline or become ill-thrifty could provide an opportunity for pasture renovation. Peck *et al* (2022) reported similar observations with pasture species establishing successfully when sowing into a paddock where Rhodes grass had been killed by dieback and the original sward removed. In the other plots, the kikuyu has been affected by mealybugs, but not as severely as in plot 1. Successful establishment is not the same as long-term resilience. In Queensland, some resown perennial pastures have succumbed to dieback within twelve months of establishment (Boschma *et al.* 2021). Site 2 will need at least one more full growing season before we can say anything about which species or mixes hold up.

Mealybugs have been detected on all sown pasture species at Site 2, along with the kikuyu. The authors initially measured the distance from the affected fenceline at which the mealybugs were found. By mid-March 2026, mealybugs could be found throughout the entire site. Kikuyu in all plots was symptomatic as of the time of writing.

## Discussion

Damage to and death of kikuyu is of major significance to the beef and dairy industries in the Lower Hunter, as it is the major summer-growing species on better soil fertility farms. Many landholders have invested heavily in fertiliser applications (especially with poultry manure) to encourage kikuyu dominance (Griffiths 2007). Oversowing annual and Italian ryegrasses (*Lolium* spp.) into kikuyu is a common practice in the Lower Hunter for year-round performance. Damage and death of the kikuyu threatens the system that producers have spent decades building. Locally relevant research into tropical pastures has been completed by Dungog-Gresford Land and Beef Group (Hand *et al.* 2018). This project, completed in 2018, trialled new varieties of tropical grasses and companion legumes that may persist and establish in both high- and low-fertility soils (Hand et al. 2018). This work will help shape advice to landholders on the suitability of local legumes and the establishment of tropical grasses.

Dieback expression in the Lower Hunter is not the same as what has been seen on the North Coast. Kikuyu is affected first, rather than broadleaf paspalum; the infestations are turning up on flats rather than hills. Kikuyu is the worst-affected species so far, and it is also proving to be the most useful local indicator of dieback.

Kikuyu is present on many properties in the Lower Hunter, and pasture dieback could have flow-on consequences for carrying capacity and fodder budgets. The fact that mealybugs are appearing on $C_3$ grasses, and that weedy *Sporobolus* species are flowering in dieback areas, suggests the long-term impact could be costly and time-consuming for producers. Early signs from Site 2 are that grass mixes can establish well in severely affected paddocks once kikuyu has declined. However, establishment does not mean long-term persistence. Continued monitoring is needed before firm recommendations can be made. A full season of data is still needed.

## Conclusions

Dieback is a significant threat to pastures in the Hunter region, impacting many grazing businesses. Pasture dieback is presenting differently in the Lower Hunter than on the North Coast. There is a need to continue monitoring the spread and identify regionally specific management options to maintain productive, profitable grazing businesses.

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