



## A problem shared is a problem halved when it comes to roadside weeds

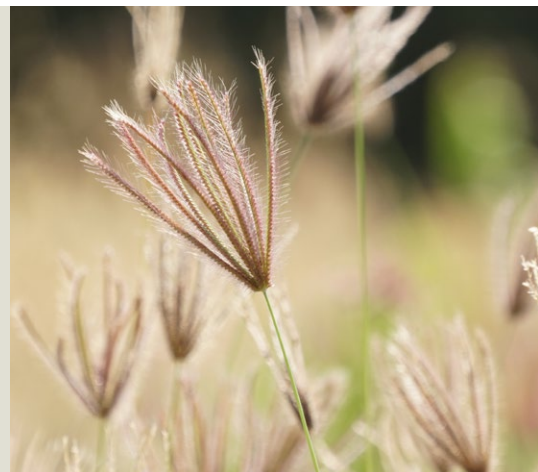
**Toowoomba Regional Council is working with growers and researchers to better manage roadside weeds across the Darling Downs region. The project has been a catalyst to start the conversation, and while feathertop Rhodes grass (*Chloris virgata*) populations are already reducing under management at experimental sites, it is the key learnings from the interactions between stakeholders that offer powerful insights for other regions looking to improve roadside weed management.**

Growing herbicide resistance among roadside weed populations is seeing an increase in hard-to-control weeds along more than 874,000 kilometres of roads across Australia, presenting a major challenge for road managers and neighbouring landholders, who are impacted by the spread of mobile weed seeds.

Across the Darling Downs, populations of feathertop Rhodes grass and flaxleaf fleabane (*Conyza bonariensis*) are among the weed species that are becoming increasingly resistant to glyphosate and presenting management challenges both on roadsides and in adjacent agricultural land.

### AT A GLANCE

- A collaboration between researchers, public and private land managers is making inroads into roadside weed control.
- Sharing insights into weed priorities, control options and neighbouring impacts can allow stakeholders to develop strategic plans that have cross-sector benefits.
- Conversations between multiple stakeholders provide opportunities for cross pollination of ideas and approaches to reduce the spread of herbicide resistant weeds.



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A range of different organisations and public and private land managers play a role in roadside weed management. All are constrained by budgetary frameworks, and none are under any obligation to work collaboratively. In addition, private landholders often have different motivations and priorities for managing roadside weeds than public land managers.

Roadside weeds are divided into two categories — ‘declared’ weeds and ‘other’ weeds. By law, declared weeds must be controlled and as such are prioritised when it comes to roadside weed management by public land managers, such as councils. Although there is no legal requirement to control ‘other’ weeds, such as feathertop Rhodes grass and flaxleaf fleabane, these are the weeds that often impact agricultural productivity.

Even without the challenges of herbicide resistance and multiple stakeholders with competing priorities, roadside weed management poses a complex challenge for the diverse range of stakeholders impacted by these weeds. Such challenges include the environmental impacts of weed control tactics, prioritisation of road-user safety during weed management activities, fire management on roadside verges and the conservation of rare and endangered species.

### Collaboration is king

Toowoomba Regional Council, Millmerran Landcare, Group the Grains Research and Development Corporation (GRDC) and the Commonwealth Scientific and Industrial Research Organisation (CSIRO) have been working together to implement an integrated approach to managing roadside weeds, while opening the communication channels between council and adjacent landholders.

*“Landholders aren’t always aware of the legal responsibility of council to only control those weeds declared under the Biosecurity Act,” said GRDC’s Grower Relations Manager Vicki Green.*

“Likewise, Council staff are not necessarily fully aware of which weeds are most problematic for neighbouring grain growers.”

“This project — with an area wide management (AWM) focus — has seen conversations occurring over the fence between landholders, Toowoomba Regional

Council and researchers, exploring different options to achieve best management practice and reduce the impact, particularly of feathertop Rhodes grass and flaxleaf fleabane, on the production of neighbouring grain properties.”

Toowoomba Regional Council’s Acting Principal Conservation and Pest Management, Garry Wilson believes an AWM approach fits perfectly under council’s biosecurity plan.

“We need to move away from being reactive and move towards a more proactive and planned weed management approach,” Garry said.

“Conversations with growers is assisting Council to better understand and plan our weed management strategies.”

These conversations between multiple stakeholders have highlighted that it’s not only the management options used, but the timeliness of operations that has an impact on resistant weed populations.

This is where the insights from the research community come into their own. By working with land managers along the public-private spectrum, GRDC and its research partners can help provide an effective toolbox of strategies to manage these hard-to-control weeds.

“It’s cost effectiveness and ability to control both grass and broadleaf weeds has seen glyphosate used as the main herbicide to control roadside weeds resulting in herbicide-resistant weed populations increasing along roadsides,” Vicki said.

“With large areas to manage along roadsides, it is inevitable that some weeds are not managed at the optimum time and may be slashed after they have set seed or sprayed when plants are stressed (e.g. from high temperatures or low soil moisture).”

“Both practices not only reduce the efficacy of weed-control efforts but ultimately increase the spread of herbicide resistant weeds.”

“Slashing and herbicide application are both valid weed-control tools, but they need to be implemented at the right time and with the right combination of products — it’s an integrated strategy that works best,” Vicki explained.

### Creating a plan

‘Problem’ weeds are not present on all sections of the road network. Mapping and monitoring the areas where weeds are a major issue will allow a more targeted and effective approach to weed management.

“If we know which sections of road we need to prioritise across the Council region, we can ensure appropriate and effective management strategies are implemented to target those areas and reduce the spread and impact of weeds not only on the road network, but also across neighbouring properties,” Garry said.

“If we can control annual weeds and stop them from setting seed, we — the Council, landholders and the wider community — will all reap the benefits longer-term.”

## Early trial results look promising

CSIRO researcher Brett Cocks has been working with Millmerran Landcare group for the past two years trialling alternative management options to control feathertop Rhodes grass on roadside verges. Management options include increased slashing frequency, competition and burning.

One roadside site has been monitored for around 14 months, with two treatments — slashed and unslashed. Areas are slashed five times a year — just prior to seed set and at the end of growing season.

“We are currently analysing the data, but preliminary results suggest frequent timely slashing is working, with a reduction in feathertop Rhodes grass noted across the site,” Brett said.

As part of the trial program, the group is also investigating how feathertop Rhodes grass competes with sorghum sown at different row spacings.

“We have replicated trials in a grower’s paddock that adjoins the road, with sorghum sown at three different row spacings — 25 centimetres, 50 and 100cm. Feathertop Rhodes grass has a highly mobile seed, and we are investigating whether we can manage the edge of the paddock separately to the rest of the paddock to control weed spread,” Brett explained.

“If growers are planting sorghum and have grass weed problems there are limited chemical control options available. We want to see if a feasible option for growers is to use agronomic practices, such as reduced row spacing around the edge of the paddock to reduce the spread of weeds from paddock boundaries.”



*ABOVE: Row spacings of 25cm are looking promising with no weeds growing between the rows, while row spacings of 50 and 100cm have large weed densities between the rows.*

“The results for the 25cm row spacing are looking promising with no weeds growing between the rows, compared to the 50cm and 100cm row spacings which are full of weeds,” Brett said.

Irrigation ditches are another area of concern for weed spread and feathertop Rhodes grass is very mobile in both irrigation and flood water. As a result, the group is also looking at replicated trials in areas adjacent to irrigation ditches, planting sorghum at the same three row spacings (25, 50 and 100cm) in the same paddock.

“We need to analyse the data fully, but preliminary results are the same with no weeds between the 25cm rows, while the 50cm and 100cm rows are full of feathertop Rhodes grass,” Brett said.



# Area wide management of weeds in cropping systems

**A ground-breaking project is exploring the potential for cross-sector collaboration to make inroads into the ever-evolving challenge of weed control across private and public land. The project is investigating and demonstrating the agronomic, economic and social benefits of tackling the problem of mobile weeds on a cross-industry scale.**

The project looks to increase understanding of the mobility of key weeds in cropping systems, their herbicide resistance status, the costs of managing herbicide-resistant weeds and the attitudes of a range of stakeholders to collaborative weed management approaches, such as AWM.

Researchers focussed on three main regions with diverse land-use types and distinct social dynamics: the Darling Downs, Queensland, Riverina, New South Wales and Sunraysia, Victoria.



Local stakeholders were engaged across the project to better understand the impacts of weeds and weed dispersal and the collective motivation to minimise weed seeds at a landscape scale. This will have a larger impact than individuals working independently.



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