

FEATHERTOP RHODES GRASS FACT SHEET

NORTHERN AND SOUTHERN REGIONS

MANAGING FEATHERTOP RHODES GRASS

Over the past two decades, feathertop Rhodes grass has gone from being a minor cropping weed to a major problem for northern – and now some southern – growers. However, with an integrated weed management approach, effective control is possible.

KEY POINTS

- ▶ Feathertop Rhodes grass (FTR) is well established in the northern grains region and is emerging as a problem in the south.
- ▶ FTR can be relatively tolerant to glyphosate, especially after early tillering.
- ▶ The only way to control FTR effectively is to use an integrated weed management (IWM) approach.
- ▶ Focus on running down the weed seedbank and preventing seed set.
- ▶ Choose competitive cultivars and use planting densities to improve crop competition.
- ▶ Select crops that allow the in-crop use of grass-selective (Group A) herbicides and residual herbicides. If FTR is concentrated in a particular paddock, rotate away from crops with limited FTR control options (such as sorghum).
- ▶ Group A herbicides have a high risk of resistance developing, so only use them as part of a carefully considered IWM plan. If Group A is made redundant, all in-crop grass management options are lost.
- ▶ Always sow crops into weed-free conditions.
- ▶ Pre-emergent herbicides will be most effective when applied prior to sowing rain.
- ▶ The double-knock tactic can be effective, and there are a number of available options.
- ▶ The efficacy of herbicides against FTR drops rapidly when plants are larger than the early tillering stage or are moisture stressed, so spray as soon as possible after rain for best results.
- ▶ Delay sowing of summer crops on paddocks with a high density of FTR.

Introduction

Feathertop Rhodes grass (*Chloris virgata* Sw.) is an established weed of the northern cropping region and is now beginning to worry growers in the south as well.

It was once common only on roadsides and fencelines, but as with many emerging problem weeds in non-traditional areas, it has been favoured by the shift in cropping systems to minimum tillage so is now more widespread.

FTR is a tufted annual grass growing up to one metre tall. It has a distinctive seed head of between seven and 19 feathery spikes.

FTR prefers lighter textured soils but will survive in heavier clays. It is quick to mature. FTR can produce seed heads within four weeks if conditions are suitable.

Emergence, growth and seed set

Major flushes of FTR occur when good rain falls over consecutive days, particularly in spring, although FTR can emerge all year round in environments such as Central Queensland.

FTR germinates at temperatures of between 20°C and 30°C, with a preference for the warmer end of the scale.

FTR needs minimal surface soil in which to germinate. The majority of germinations will occur in the top two centimetres.

The majority of seeds lose viability after seven to 12 months. This means that although FTR is a difficult weed to manage, if you are able to limit seed production, effective weed control can be achieved.

PHOTO: DARREN ASTHORPE



A single knock of glyphosate at full label rates has done very little to slow this mature infestation of feathertop Rhodes grass in a trial in Central Queensland. The greener plot on the left is the untreated control.

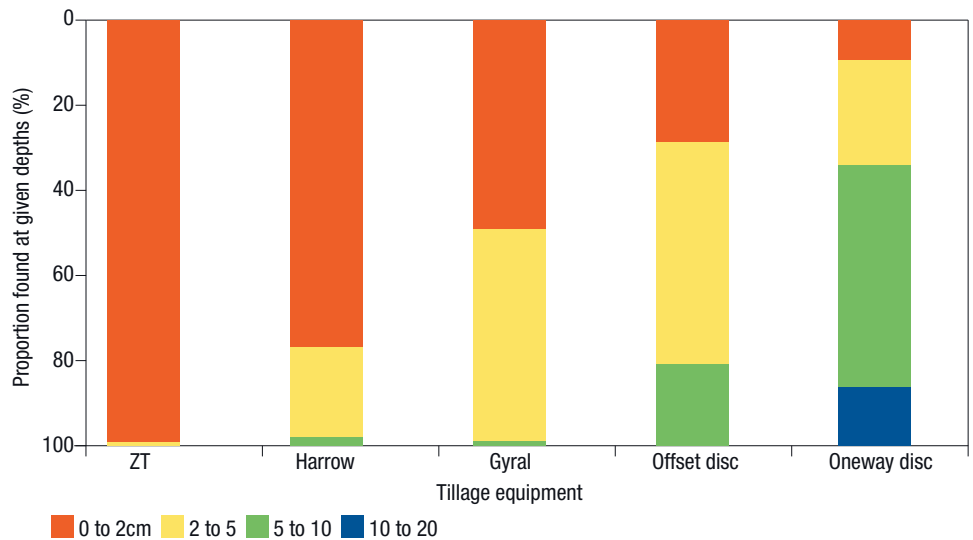
Managing FTR

FTR management is a challenge. All phases of the weed's life cycle need to be considered, with an IWM strategy employed in both the fallow and in-crop phases.

When planning an IWM approach to control FTR, consider the following points:

- No single weed management application will provide 100 per cent control. Use a variety of tactics – both chemical and non-chemical.
- Aim to stop seed-set and run down the weed seedbank.
- Determine treatment type according to the density and distribution across paddocks.
- Use spot treatment for scattered or occasional FTR infestations.
- Target small, non-moisture-stressed and actively growing plants to improve the chances of good control. Spray small FTR seedlings immediately after rain.
- Adopt good herbicide application techniques to maximise coverage. This means using full label rates and appropriate nozzles, boom heights, water volumes and speed for the intended spray job.
- Closely monitor the results of all management applications, and spot treat survivors as soon as possible.

FIGURE 1 Proportion of feathertop Rhodes grass seed buried by various tillage practices.



Note: Data on burial of plastic beads that mimicked FTR seed. All tillage treatments gave 60 to 80 per cent reduction in emergence over the following summer.

- When using residual herbicides, apply to a clean soil surface. Ideally no weeds should be present.
- If using tillage to control existing plants, ensure the depth and type of tillage is sufficient to uproot the grass without transplanting it.
- If using tillage for seed burial, aim for good depth to prevent seed from germinating. See Figure 1.
- Manage outbreaks along roadsides, fencelines and around sheds as these will be a continuing seed source for paddocks.

Chemical control options

Balance® (Group H) has recently gained a label extension for use as a residual herbicide in fallow in all states, and FTR is one of the specified weeds.

Paraquat (Group L) is registered for control of annual grasses generally, and imazapyr (Group B) is registered for non-crop land uses.

Several residual herbicides are effective at stopping seeds germinating and plants establishing in sequential flushes, and therefore can suppress the weed seedbank.

Ideally residual herbicides are applied to a clean paddock – so they make contact with the soil surface – and rain is received within two weeks of application. This allows the herbicide to move into the surface soil and minimises breakdown of the chemical from exposure to ultraviolet light.

The best time to apply is prior to sowing rain, as the herbicide will then control any FTR emerging with the crop. Keep application water volumes high – around 80 to 100 litres per hectare – for best results.

When using any herbicide with residual activity, follow label directions for re-cropping.

Double-knock

Glyphosate (Group M) alone may be ineffective on FTR regardless of the age of the weed. However, if paraquat (Group L)

PHOTO: DARREN AISTHORPE



The seed capacity of feathertop Rhodes grass is illustrated by this paddock in Central Queensland where the seed was 1cm to 2cm thick on the ground. Each plant can produce up to 6000 seeds, making it critical for the grower to focus on stopping the FTR life cycle.

is applied sequentially in a double-knock, control is improved, although 100 per cent control is rarely achieved.

The addition of a grass-selective residual herbicide, such as Balance®, to the second knock can provide control of subsequent emergents.

Wait a minimum of seven days between knocks for best results, but no longer than 21 days, otherwise efficacy is likely to be reduced.

A permit initiated by the Northern Grower Alliance (PER12941) allows the double-knock of a Group A herbicide followed by paraquat (Group L) but only in fallows that are to be planted to mungbeans.

This permit is effective until August 2016 and is restricted to Queensland growers only.

As Group A chemistries are susceptible to resistance developing in target weeds, PER12941 limits Verdict® 520 to one application per season in fallow, and this must be followed by a double-knock application of at least 1.6L/ha of a 250 grams per litre paraquat product.

This strategy can give up to 100 per cent control, but level of control is compromised when treating large and/or stressed weeds. Because of the issue of group A resistance, it is critical that any escapes are controlled.

With any herbicide applications, it is best to target the young actively growing weeds, and apply at full label rates to reduce the possibility of resistance developing.

Double-knock need not always refer to two applications of different herbicides. In some instances, the second knock may be a strategic tillage operation.

WeedSeeker®

A permit initiated by NSW DPI is in force until February 2015 (PER11163) allowing the minor use of a range of chemical products in conjunction with a WeedSeeker®.

The permit stipulates the use of 65-degree flat fan even nozzles (TP6503E or larger) and a minimum coarse spray. It also provides a list of active ingredients that are covered.

Soil disturbance

As FTR germinates at or very near the soil surface, burying the seed below 5 centimetres will prevent germination.

PHOTO: DARREN AISTHORPE



FTR well established in a chickpea crop. In this situation, rapid and aggressive control is needed to stop seed-set in crop. Most pulse rotations offer effective Group A knockdown herbicide solutions such as haloxyfop (Verdict®) should your in-crop residual allow escapes. However, in crops where there are no suitable in-crop knockdown options or crop stage prevents the use of them, seed management must be first priority. The use of a double-knock knockdown option post-harvest, strategic tillage with a residual herbicide included or selective spot spraying or tillage are some of the key IWM practices that could be used.

Strategic tillage has been shown to be effective in breaking the FTR life cycle.

Weed seedbanks can also be depleted in the soil by encouraging emergence.

A 'tickle' with harrows can facilitate peak flushes of FTR, exhausting the seedbank and presenting excellent opportunities for early post-emergent management.

Inter-row tillage can be an option for in-crop control of FTR, although this will depend on the crop rows being wide enough to allow the passage of machinery.

To avoid damage to the crop, this tactic should be used only when the crop is small.

When FTR plants are mature and clumped, offset discs and chisel ploughs are the best choice for uprooting and mulching the plant material.

In-crop

In-crop control of FTR will be limited by herbicides that are registered and can be safely used in that particular crop.

Group A grass-selective herbicides can be used in broadleaf crops such as mungbean and chickpea and there are other Group A herbicide options for wheat and barley.

Having these broadleaf crops in the rotation provides additional options for FTR control, such as residual herbicides, as well as being good practice for delaying or preventing herbicide resistance developing.

Crop competition

Increased crop competition can suppress FTR growth and weed seed production. Trials in Central Queensland showed FTR numbers were 30 per cent lower in wheat planted in 25cm rows compared with 50cm rows.

Select a competitive crop such as barley or wheat, sown under competitive configurations, and keep row spacings tight and plant densities high. Aim to establish the highest crop population for that cultivar and your region.

Good crop competition is also essential to maximise residual control with certain herbicides, especially Chlorsulfuron (Glean®) in wheat. Glean® is an effective in-crop weed-control option, although not suitable in a fallow.

Sow into a clean seedbed and provide adequate nutrition and crop protection (insect and disease control).

Stopping seed production

FTR seed can be short-lived (around 12 months), so one or two seasons of attention and monitoring can bring it under control.

Manage the weed population when it is small in area, and don't wait for large outbreaks before trying to control it.

Check the success of any weed management measure after treatment to identify survivors. Control them via spot tillage, spot spraying or manual removal.

An IWM approach requires diligence and persistence. Used together, the suite of tactics will result in reduced seedbanks and weed pressure.

IWM also reduces the likelihood of herbicide resistance developing, because it requires the grower to actively rotate crops, tactics and herbicide groups.

On-farm hygiene

FTR that grows in non-cropping areas such as roadsides, fencelines and around buildings can act as a seed source for cropping paddocks, so focus weed management efforts on these areas as well.

Seed can travel short distances via wind or water, but can also be transferred by vehicles, clothing, animals and other means.

Introducing a non-invasive ground cover is a good idea for non-cropping areas because FTR is less likely to establish on ground that is not bare.



The difference that crop competition can make in control of FTR is illustrated in these two scenarios. The wheat on the left has been planted in tight row spacings and a residual herbicide applied, resulting in a very clean crop. On the right, the weeds have flourished in the wide rows and low plant densities, despite the application of the same residual herbicide.

USEFUL RESOURCES

Feathertop Rhodes grass

Feathertop Rhodes grass: A weed best management guide

www.daff.qld.gov.au/__data/assets/pdf_file/0010/51040/Feathertop-rhodes-grass.pdf

Ground Cover TV: Feathertop Rhodes grass

www.grdc.com.au/GCTV10-DoubleKnock

GRDC Weedlinks

www.grdc.com.au/weedlinks

WeedSeeker® permit

permits.apvma.gov.au/PER11163.PDF

Herbicide resistance

Australian Herbicide Resistance Initiative (AHRI)

www.ahri.uwa.edu.au

AHRI Insight – Email newsletter on current herbicide resistance research
www.ahri.uwa.edu.au/subscribe

Weedsmart

www.weedsmart.org.au

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