

HARD TO CONTROL FALLOW WEEDS

Residual herbicides, new herbicide tolerance traits & what role they can play.

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FACT SHEET JULY 2024

KEY MESSAGES

- Residual herbicides add an additional layer of weed control.
- Residuals reduce weed numbers at planting, therefore knockdown herbicides are only applied to small weed numbers.
- New herbicide modes of action available in XtendFlex® cotton.
- Glufosinate is best applied in full sunlight and low Delta T conditions.
- When using post emergent herbicides, aim to target small weed numbers.

After winter rains we are starting to see fallows with a green tinge from those annoying winter weeds like annual ryegrass, however it is also when summer weeds such as fleabane, sow thistle and feathertop Rhodes grass are starting to emerge. Now might be a good opportunity for growers to incorporate some residual chemistry into their weed control program to set cotton fields up for a weed free planting.

Experiments conducted by Eric Koetz, NSW DPI, at Leeton Research Station showed a 60% reduction in weed numbers when pre-emergent herbicides were used compared to a glyphosate alone strategy.

The addition of residual herbicides with a knockdown is a good opportunity to keep cotton fields weed free prior to planting.

This season will also see growers with access to new herbicide traits in cotton varieties. Tolerance to dicamba and glufosinate will be available in the new XtendFlex® cotton varieties. In fields planned for XtendFlex® varieties applying dicamba on hard to control broadleaf weeds such as fleabane provides extra flexibility as application can be made without any fear of plant back issues.

Likewise, glufosinate is an ideal partner through a camera spray system to control patches of weeds that have emerged or survived fallow herbicide applications. In addition, glufosinate is an alternative to a glyphosate as a knockdown at planting or early in-crop and is ideally suited as a double knock partner.

Research conducted at the QDAF Leslie Research Centre in Toowoomba by Jeff Werth has attempted to unpack how to maximize efficacy with glufosinate. Glufosinate is slow acting and takes time to penetrate the leaf surface.



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Therefore, you need to maximise the time that glufosinate has on the leaf surface, allowing it to get into the plant. The best conditions for this are full sunlight, warm temperatures and high humidity.

Unlike paraquat where efficacy is improved when applied in low light or during nighttime, glufosinate should not be applied during these conditions, the plants can grab glufosinate and place it into a space within the plant where it can no longer bind to the target site.

A word of caution, growers need to be aware of potential plant back issues when using residual herbicides during the fallow period. Over the past couple of seasons the dry conditions across much of the cropping area have made the calculation of plant back periods problematic with some reports of crop damage from herbicide carryover occurring.

In research conducted at ACRI, Narrabri by Graham Charles, an experiment was designed to examine high rates of residual herbicides similar to an optical spray application. Products that are safe at the label rate had an impact on cotton establishment and early development (Table 1).

For example Starane at 4X and 8X the label rate reduced both cotton establishment and plant size compared to the control (Label rate). The four- and eight-times rates (4X, 8X) were applied to replicate when camera sprayers have several nozzles activate, thereby increasing the already high rates applied. This can create patches in-field where plant back periods will be much higher than label recommendations.

Remember: *always read and understand the label, especially the rainfall requirements for re-cropping intervals.*

Product rates*	Crop establishment	Plant size
Balance 4X, 8X	Reduced at 8X	Reduced
Sharpen 4X, 8X	Reduced at 8X	Reduced
Starane 4X, 8X	Reduced	Reduced
Valor	No effect	No effect
Voraxor-all rates	Reduced at 2X, 4X & 8X	Reduced
2,4-D amine	No effect	No effect

Table 1. Crop establishment and seedling damage

2X = 2 times the label rate

4X = 4 times the label rate

8X = 8 times the label rate

Controlling fallow weeds is also important for protecting soil water, nutrition, depleting the weed seed bank and managing herbicide resistance. Weeds are also potential hosts for insects and disease.

They pose a significant biosecurity risk if allowed to grow and maintain a green bridge for disease and a place for insects to over winter giving them a head start on the coming cotton crop.

With glyphosate resistance on the increase in all the main summer and winter weeds in our farming systems, rotating to a different mode of action (part of WEEDsmart Big 6: <https://www.weedsmart.org.au/big-6/>) and combining this with a zero survivors mentality will ensure that you start the cotton season with clean fields.

This will take the pressure off in-crop herbicide applications and add extra diversity into weed management programs. If you notice any new weed incursions after recent floods, options such strategic cultivation, spot spray, chipping or weed removal before seed set is important.

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One of the key components of the Herbicide Resistance Management Strategy (HRMS) is the use of TWO non glyphosate products for weed control during the fallow period. Remember, it is always best to target small populations of weeds.

By applying residual herbicides in fallow the planting program can commence with clean fields improving the chance of in-crop herbicides controlling weeds.

Many of the problematic summer weeds require an understanding of their lifecycle and ecology to target the weak links for maximum control. CottonInfo has produced fact sheets for three of the hardest to control weeds:

- **Feathertop Rhodes Grass**
<https://www.cottoninfo.com.au/publications/weeds-feathertop-rhodes-grass>
- **Windmill Grass**
<https://www.cottoninfo.com.au/publications/weeds-windmill-grass>
- **Sow Thistle**
<https://www.cottoninfo.com.au/publications/weeds-sowthistle>

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For further information:

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ADDITIONAL RESOURCES

Websites

- **CottonInfo Weed Management**
<https://www.cottoninfo.com.au/weed-management>
- **WeedSmart**
<https://www.weedsmart.org.au/>

Videos

- **CottonInfo YouTube channel** (search for *Sources of weed seed, Minimising glyphosate resistance and Intergrated weed management in cotton*):
<https://www.youtube.com/watch?v=AH3jwf0TY60&list=PLQy8KAPn-DyqVfkSzUcGiC5ExuIX4Ov4f>



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