

MANAGING PROBLEM WEEDS

Introduction

While all weeds that occur in cotton are problems that must be dealt with, some weeds are far more difficult to control than others. Nevertheless, most of these difficult weeds can be adequately managed in the cotton farming system with an integrated management system, using herbicides, cultivation and chipping in conjunction with other management tools. These weeds are often problems in newly developed cotton blocks, but become less of a problem over time. However, there is a group of problem weeds that are not controlled with normal farming practices. These weeds can spread and become progressively worse year after year, in spite of the cotton grower's efforts.

Specific management strategies are required to manage these problem weeds.

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H2. Managing Cowvine in Cotton

Cowvine is an annual weed that is a problem both in crops and in fallows. It is not easy to control in a farming system due to a number of characteristics including: strong seed dormancy; long seed life in the seedbank; ability to germinate rapidly after rain, all year round; rapid seedling growth; and a twining growth habit.

Post-emergence applications of diuron and prometryn consistently give the best control of cowvine of the herbicides normally used in cotton. Glyphosate can be effective in controlling cowvine seedlings in conventional and Roundup Ready cotton. Glyphosate is most effective on actively growing cowvine seedlings. Good control of older, actively growing plants is possible with glyphosate.

An effective cowvine management system will use all the available control options (cultivation, chipping and herbicides) in combination. Management of this weed will be an on-going process over many seasons.

H3. Managing Nutgrass in Cotton

Eight different nutgrass species are commonly found in or around cotton fields. These species are quite different in their ability to spread from seed or rhizomes, and consequently require specific management strategies. Positive identification of the problem species is essential as the first step in management. Identification material for these species is given.

A range of management tools is available to manage these weeds. These tools include residual and contact herbicides, cultivation, and crop competition. There are also some management practices that can exacerbate a nutgrass problem and should be avoided whenever possible. Management of nutgrass needs a long-term approach, as these weeds will not be eliminated by any single management option. A successful management program will include all the management tools, used in combination as opportunity arises.

Glyphosate and Zoliar® herbicides have given the most effective control over time. Glyphosate should ideally be applied in-crop twice each season. Attention to machinery hygiene can be pivotal in a successful management program.

H4. Managing Polymerica (Take-all) in Cotton

Polymerica is a deep rooted, rhizomatous, perennial weed that spreads from seeds and rhizomes. It tolerates and can be spread by normal cultivation practices.

No herbicides are registered for controlling polymerica. A permit must be obtained from the Australian Pesticides & Veterinary Medicines Authority before using a herbicide to control polymerica in any situation.

Polymerica can best be managed in cotton with repeated applications of glyphosate on actively growing polymerica, applied through well constructed shields, used under appropriate conditions. Glyphosate should be spot-applied to the polymerica patches to improve crop safety. The addition of Pulse Penetrant or a non-ionic surfactant may improve spray efficacy. Good crop agronomy is also important, resulting in competitive, strong cotton.

Polymerica growing in fallow can be controlled with glyphosate on actively growing patches and with fluroxypyr (eg. Starane) in autumn. Grazon may be useful for controlling polymerica in fallows that are not going back to cotton. Imazapyr (eg. Arsenal) may be useful for controlling polymerica on non-cropping and waste areas.

H5. Managing Bellvine in Cotton

Bellvine is an annual weed that is difficult to control in cotton. It is an aggressive, highly competitive weed that can grow through and over a cotton crop and can tangle inter-row and harvesting equipment. Very high densities of bellvine seedlings can emerge with the cotton crop, and successive germinations may occur throughout the season.

None of the pre-emergence residual herbicides were effective in controlling bellvine. Best results were achieved with trifluralin, diuron and Zoliar. The 4-leaf stage Roundup Ready Herbicide application was effective in controlling bellvine seedlings in Roundup Ready cotton. Moderate infestations of bellvine can be managed with the combination of pre-planting residuals and in-crop applications of Roundup.

Directed applications of diuron and prometryn were relatively effective in controlling bellvine seedlings later in the season in-crop. Both mid-season and lay-by applications of residuals may be required in combination with the 4-leaf Roundup Ready Herbicide application to control bellvine in a heavy infestation. Directed applications of Roundup were not effective in controlling bellvine seedlings later in the season.

An effective bellvine management system will use all the available control options (cultivation, chipping, herbicides, rotation and fallows) in combination, with both contact and residual herbicides used in-crop.

Note. Roundup Ready Herbicide is not registered for controlling bellvine in cotton.

H6. Managing Caustic Weed in Cotton

Caustic weed is an annual weed of cotton that competes for nutrients and water, and at high densities can reduce yields. It is a persistent weed that may become more problematic in reduced input systems.

Stomp and diuron gave the best control of the residual herbicides, with diuron giving good post-emergence control as well as some pre-emergence control of caustic weed. Glyphosate (Roundup CT) also gave good post-emergence control of caustic weed in an irrigated field.

An integrated weed management system including inter-row cultivation, residual herbicides and glyphosate should effectively control this weed. A mid-season directed application of diuron may be a useful tool in fields where no pre-planting residual herbicides are used.

H7. Managing Mintweed in Cotton

Mintweed is a minor annual weed of cotton that can emerge in large numbers at or soon after crop emergence. Mintweed seedlings grow more rapidly than cotton seedlings in spring conditions and can compete for sunlight, nutrients and water.

A pre-planting combination of Dual and Diuron gave the best residual control of mintweed. Atrazine and simazine also gave good residual control of mintweed, although they can not be safely used in cotton.

Glyphosate gave good post-emergence control of mintweed in cotton, and should be an effective management option for this weed in Roundup Ready Flex cotton crops.

H8. Managing Lippia in the Cotton Farming System

Lippia is a highly undesirable, invasive weed that is negatively impacting the grazing industry and the riparian zone. Once established, lippia competes very strongly with all other species, often resulting in almost pure lippia stands. Lippia should not be allowed to establish in the cotton industry. Particular care must be taken to ensure that lippia doesn't establish on irrigation structures as its presence is likely to lead to the failure of these structures.

Lippia should be controlled with cultivation where appropriate, or repeated applications of Lantana 600 on non-crop areas, or glyphosate on fallows. Glyphosate plus metsulfuron is the preferred option on fallows on non-alkaline soils, where cotton will not be a following crop.

2,4-D amine may be used to control lippia in pastures provided that there is no risk of spray drift to sensitive crops such as cotton.

H9. Managing Flaxleaf Fleabane in Cotton

The success of fleabane in the cotton system can be attributed to its ability to emerge in different seasons, relative tolerance to glyphosate and its prolific fecundity. Flaxleaf fleabane seedlings can establish in fallows and under crops at any time of year, running up to head in the warmer months. This weed is most problematic in zero-tillage situations.

A long term (2 - 3 years), whole farm, integrated approach is needed for its effective control. It can be controlled using a combination of contact and residual herbicides, together with crop competition, cultivation and spot-spraying. Control can be improved by using a double-knock approach. The best control was observed with a tank-mix of glyphosate and Tordon 75-D followed by Spray.Seed (double-knock) in combination with a residual herbicide. However, Tordon 75-D can't be used in or around cotton.

The cotton herbicides, diuron, prometryn and Convoy all gave effective residual control of fleabane and could be used in cotton in combination with cultivation.

Fleabane should be managed in all crop and fallows as well as non-crop areas, such as roads, irrigation channels and fence lines, to prevent re-infestation into the cropping area.

H10. Managing Feathertop Rhodes Grass in Cotton

Feathertop Rhodes grass is becoming increasingly prevalent in cropping systems in the northern region and is a major problem in central Queensland due to its apparent tolerance to glyphosate, and competitiveness in minimum and no-till, glyphosate based cropping systems.

It is a small-seeded annual species, so the key to its management lies in managing the seed bank and preventing new seed from entering the soil.

This can best be achieved by:

- Utilising tillage and pre-emergent herbicides to reduce numbers of seedlings emerging
- Monitoring emergences and controlling seedlings when they are small
- Using robust herbicides and rates and the double knock tactic to control plants and prevent seed set

Feathertop Rhodes grass seeds have a relatively short life compared to other species, so intensive management for up to two years can have a major impact on driving down the seed bank.