# Managing weeds in vetch rotation crops

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Vetch is being increasingly grown as an alternative rotation crop for cotton. It is a useful green manure crop, and is capable of adding large amounts of nitrogen to the soil.

Vetch crops can be sown in autumn into a fallow or crop stubble. They are commonly sown into cotton stubble soon after picking. Vetch grows over winter, and is normally removed in early spring, prior to cotton planting and before the vetch has started to set seed.

Removing the crop prior to seed-set is important as vetch is hard seeded and can produce large quantities of viable seed. If it is allowed to seed, vetch will be a nuisance weed in later cotton crops.

Weed management in vetch is problematic, with few herbicides registered for in-crop weed control and none registered for controlling the vetch to allow replanting back to cotton, where this option is desired.

Vetch crops may be sown into cotton trash after picking. They can fix large amounts of nitrogen and may be plowed in as green manure, or killed by herbicides and left as a surface mulch.

It is a legal requirement that pesticide users follow the directions on the product label. Growers who wish to make an off-label pesticide application must first obtain a minor-use permit from the APVMA for the proposed use.

Many of the herbicide options discussed in this article are off-label and must be covered by a minor-use permit.

## Pre-planting herbicides

Vetch should be sown into a clean seedbed, with weeds controlled prior to planting with cultivation and/or herbicides. A wide range of products are registered for controlling weeds in fallows.

Spray.Seed (a range of trade names) and Surpass plus glyphosate (a range of trade names for both products) are registered for controlling weeds prior to planting vetch. There is a 7–10 day plant-back period constraint before planting vetch following a Surpass application.

Growers should be aware that vetch emergence and establishment may be adversely affected by residual herbicides previously applied to cotton when vetch is planted immediately following a cotton crop.

There are no pre-planting residual herbicides registered for use with vetch crops in NSW and Queensland.

A range of residual pre-planting herbicides was screened in an experiment at the ACRI in 2005. Herbicides were applied and incorporated prior to planting the vetch and the crop was watered up.

No establishment problems were observed with any of the herbicides used, with satisfactory establishment levels on all treatments.

Vetch growth was monitored following establishment. All treatments grew satisfactorily, but some stunting was observed on treatments containing simazine and fluometuron, indicating that vetch had less tolerance to these herbicides.

The results indicated that pendimethalin, trifluralin, diuron and prometryn might all be satisfactorily used as pre-planting residual herbicides for vetch crops.

## Post-emergence weed control

A number of herbicides are registered for controlling grass weeds in vetch. These include Aramo, Correct, Fusilade Forte, FusionSuper, Targa and Verdict.

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Herbicide combinations for early removal of a vetch crop seven weeks after planting.

No herbicides are registered for broad-leaf weed control in vetch crops.

A range of herbicides were screened for broad-leaf weed control in vetch, not all of which could be safely used if a cotton crop was to be planted in the same season. Basagran and simazine had no negative affect on the vetch, but simazine has a long soil half-life and a nine month plant-back to cotton.

Fluometuron, prometryn and diuron all caused some initial leaf damage to the vetch, but caused no long-term damage. These products could be used with some caution, with lower rates used where possible. These products would ideally be applied as shielded or directed sprays in young vetch.

### Removing vetch crops with herbicides

Vetch crops are normally planted in the autumn/winter before a cotton crop and must be killed prior to cotton planting.

Slashing and incorporating the vetch crop is the best option for removal, as this method returns the maximum amount of available nitrogen to the following cotton crop, while minimising any potential problems with insects and diseases.

There are no herbicides registered for killing a vetch crop.

A range of herbicides and herbicide combinations with Roundup PowerMAX were screened for removing young vetch in late winter, and an older crop at the flowering stage in spring.

**Herbicides for late removal of a vetch crop in late September, 16 weeks after planting, when vetch was at the flowering stage.**

MCPA 500 at four litres per hectare and Starane at one and two litres per hectare gave the best control of young vetch, with better than 95 per cent control observed.

Roundup PowerMAX at four litres per hectare gave a reasonable result, also controlling all other weeds present on the plots.

A range of combinations using lower rates of Roundup PowerMAX in combination with lower rates of some of the other herbicides was also screened.

The Roundup PowerMAX at one litre per hectare plus Envoke at 10 grams per hectare and Roundup PowerMAX at two litres per hectare plus Starane at one litre per hectare combinations both gave good results, although the result for the Starane combination was no improvement over Starane alone at one litre per hectare.

Cotton was planted into all treatments in early October and no phytotoxicity was observed with any of the treatments. But the Envoke label specifies a nine month plant-back period to cotton and so Envoke cannot be used to remove vetch this close to a cotton crop.

A later application was made to much larger vetch on September 30, 16 weeks after planting.

Envoke at 20 grams per hectare, Starane at one and two litres per hectare and MCPA 500 at four litres per hectare all gave very good control of large vetch plants. The combination of Roundup PowerMAX plus Envoke at 10 grams per hectare also gave good control and controlled all other weeds present on the plots.

The combination gave much better control than Envoke alone at 10 grams per hectare. But Envoke, with a nine month plant-back period to cotton, cannot be used to remove vetch immediately prior to a cotton crop. Starane has a much shorter plant-back to cotton of 14 to 28 days (depending on the application rate). The plant-back to MCPA should be similar, at around 14 days, although no plant-back period for cotton was specified on the product label.

Both Roundup and Envoke may be valuable for controlling volunteer vetch plants in a cotton crop, should these become a problem.

The Roundup PowerMAX at two litres per hectare plus MCPA 500 at four litres per hectare combination also gave a good result and controlled all other weeds, but gave a slightly inferior result to MCPA 500 at four litres per hectare alone. Growers electing to use this combination would have to weigh up the advantage of an increased weed control spectrum with the disadvantage of possibly poorer control of vetch.

**For more detail on herbicides for vetch crops, refer to the full article in WEEDpak on the internet at www.cotton.crc.org.au. Follow the links through Information Resources and Weeds, or contact the author.**

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