# Controlling flaxleaf fleabane



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### Take home messages

- Roundup<sup>®</sup> alone will not control Flaxleaf fleabane
- addition of Surpass<sup>®</sup> and Ally<sup>®</sup> to Roundup provided the most effective control
- to avoid the need to use more expensive chemicals and spray more than twice, control fleabane before it begins to elongate (>40cm in height)

### Background

Flaxleaf fleabane (*Conyza bonariensis*) is a major weed seen in cropping areas of southern Queensland and northern New South Wales and more recently northern Victoria. The most worrying aspect of fleabane is that it is a prolific seeder: a mature plant can produce over 100,000 seeds. These seeds are air-borne (spread by wind), and can infest large areas in a short period. The relatively cool (25-30°C) wet harvest last year stimulated germination of fleabane along roadsides and in uncropped land in October and November. From these areas it spread to nearby paddocks.

It is particularly difficult to control in no-till farming systems. This is principally due to heavy reliance on glyphosate and seeds lying on the soil surface. No-tilled, glyphosate-based fallows are at greatest risk because populations have developed tolerance and/or resistance to glyphosate. Seeds prefer to germinate under 20-30°C (optimum 25°C) and moist conditions and only when they are on or close to the soil surface. Fleabane is not capable of emerging when buried beneath the soil surface. This is principal reason no-till systems are at greater risk than conventional. Germination is enhanced in no-tilled soils with high stubble levels as the seeds are not deeply incorporated and the farming system relies strongly on glyphosate.

Ideal temperatures for germination are around 25°C, typical of those occurring in autumn and spring. Once germinated, particularly during winter, though growth may appear slow above the ground, beneath it is establishing a deep tap root. By spring and early summer, the plants can be two to three months old, at which stage they are extremely difficult to kill. A study has found that when seeds are buried deeper than 10cm, emergence is significantly reduced, but seed dormancy can be prolonged from 18 months to six years. Generally, the weed has a short persistence (18-20months).

The GRDC recently-funded project 'Emerging weeds in southern Australia', led by the University of Adelaide, is investigating new methods and products to control difficult weeds. BCG is collaborating in the Victorian component. This project funded a trial which was conducted in the Mallee during harvest. The project will also look at other weeds such as windmill grass, hairy panic, couch and brome grass.

#### Aim

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To determine the most effective herbicides for controlling Flaxleaf fleabane (Conyza bonariensis).

Method	
Location:	Kooloonong (170km north of Birchip)
Replicates:	3
Spraying date:	4 November

Paddock history:	medic fallow (brown manured)
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Plot size: main herbicide plots (2.5m x 40m)

Sub-plots (2m x 2.5m)

Using a matrix design, 15 herbicide treatments were applied in a randomised block design. On 4 November, the treatments listed in Table 1 were applied, using a gas-pressured five-nozzle shielded sprayer.

The fleabane plants varied in size at the time of spraying, ranging from just four centimetres in height to well branched and beginning to bolt. The population was relatively low: density was recorded at less than 2 plants per metre square. Plants were visually assessed for herbicide efficacy scores at 7, 18 and 25 days after application (DAA). The ratings were based on a scale of 0 (alive) to 100 (dead).

	Description/product	Rate (per hectare)	Cost
1.	Untreated		\$0
2.	Roundup PowerMax®	1.0L	\$5.75
3.	Roundup PowerMax	2.0L	\$11.50
4.	Roundup PowerMax	3.0L	\$17.25
5.	Roundup PowerMax	5.0L	\$28.75
6.	Roundup PowerMax + Surpass 300®	2.0L + 1.6L	\$16.46
7.	Roundup PowerMax + Surpass 300 + Ally®	2.0L + 1.6L + 5g	\$16.86
8.	Roundup PowerMax + Ally	2.0L + 5g	\$11.90
9.	Roundup PowerMax + Hammer <sup>®</sup> (240g/L)	2.0L + 75ml	\$33.45
10.	Roundup PowerMax + Lontrel®	2.0L + 150ml	\$16.00
11.	Roundup PowerMax + Tordon 75-D®	2.0L + 700ml	n/a
12.	Roundup PowerMax + Balance®	2.0L + 100g	\$48.83

Table 1. List of the products and mixes used in this trial, treatments were sprayed east to west

Li700 was added to each mixture at 300ml/ha.

#### Table 3. Weather conditions at the time of spraying

Spray details	Treatment Application		
Date	4 November 2011		
Implement	Gas pressure 2.5m sprayer		
Water rate	100L/ha		
Nozzles	AIXR110-02		
Boom height	70cm		
Temperature	27°C		
Wind Speed	6km/hr		
Direction	Southerly		
Humidity	50%		
Delta T	8		

### Results

Germination occurred in early October, after late September rainfall. Following the treatment applications on 4 November, herbicide efficacy scores taken at 7, 18 and 25 days after application (DAA) showed that increasing the rate of glyphosate did not improve control of fleabane (Table 4). Glyphosate effects were observed after 7 DAA, but by 25 DAA, the effect was negligible.

The addition of other products with different modes of action significantly improved the effect of glyphosate. Surpass and Tordon were the most effective products used in combination with glyphosate. The addition of Ally to the Surpass mix appeared to improve control slightly. Ally alone provided reasonable control up to 25 DAA.

Group G chemicals (e.g. Hammer<sup>®</sup>) were the least effective herbicides. Typically used as "spikes" to improve control with glyphosate, they were effective only early. The effect of Hammer was observed with necrotic spots on the leaves, but the plant remained healthy. Given that the glyphosate had failed to kill the weed, the plants subsequently regrew. By the 25 DAA assessment, those plots were healthy and setting seed.

Tracture at	Fleabane control (%)		
ireatment	7 DAA	18 DAA	25 DAA
Untreated	10	10	10
Roundup PowerMax (1L/ha)	40	20	15
Roundup PowerMax (2L/ha)	40	20	20
Roundup PowerMax (3L/ha)	45	25	30
Roundup PowerMax (5L/ha)	45	40	30
RupPMax (2L/ha) + Surpass (1.6L/ha)	60	50	80
RupPMax + Surpass + Ally (5g/ha)	60	50	85
RupPMax + Ally	50	40	50
RupPMax + Hammer (75ml/ha)	60	30	20
RupPMax + Lontrel (150ml/ha)	60	45	35
RupPMax + Tordon (700ml/ha)	65	60	70
RupPMax + Balance (100g/ha)	60	65	50
Sig. diff. LSD (P=<0.05)	P<0.001 5	P<0.001 10 16%	P<0.001 20 35%
ων%	0%	10%	33%

## Table 4. Herbicide efficacy scores (10 =alive, 100 = dead) for the main herbicide plots (or sub-plot A) at 7, 18 and 25 days after application (DAA)

### Commercial practice: what does this mean for the farmer?

Flaxleaf fleabane is a weed we must learn to control. Control is expensive and can be difficult during busy periods of harvest. Given the right conditions, this weed has the potential to be two to three months old before farmers are aware of its existence and realise that control is required. Figure 1 below illustrates the effectiveness of both single and double knock strategies. Control of the second application accounted for 90-100% of the weed plants. If fleabane is found on paddocks and even along fencelines, it warrants control, and higher and more expensive chemicals should be used. Commercially, if less than 80% control results from the first application, then a second application (double knock) is required.



Figure 1: Benefit of double-knock over single herbicide applications on fleabane control (DEEDI 2009). 1st application applied at 75 L/ha, 2nd application at 105 L/ha (applied 7 days after first knock for all timings)

Though the double knock strategy has not been reported in this trial, other studies on fleabane have found the practice to be very successful. Fleabane has been extensively studied in NSW. The findings of the first application in this trial were similar to the NSW experiences in that Roundup alone provided little control. Higher rates of Surpass were found to be the most effective and, where the rotation permitted, Ally provided good residual control. It was also found that if the first application is not effective, then a higher rate of SpraySeed<sup>®</sup> is required for the second application.

**NOTE:** SpraySeed is not currently registered for the control of fleabane, but BCG is in the process of applying for a permit from DPI to allow members access. Until a permit is issued and provided to members, a use pattern specifically targeting fleabane should **NOT** be conducted.

### References

Widderick, M, Cook T, Daniel R (2011) 'Keeping on top of fleabane - in-crop strategies, the role and impact of residual herbicides, crop competition and double-knock' www.grdc.com.au

### Acknowledgments

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