

FLAXLEAF FLEABANE FACT SHEET

NORTHERN, SOUTHERN AND WESTERN REGIONS MANAGING FLAXLEAF FLEABANE

Flaxleaf fleabane is a major weed of the northern cropping region and an emerging problem in the south and west. It is difficult to kill, particularly when mature. However, if a range of control tactics and vigilant monitoring is used, successful control is possible.

KEY POINTS

- ▶ Flaxleaf fleabane is now a problem weed in all Australia's grain-producing areas.
- ▶ It is a prolific seed producer and seeds can disperse long distances.
- ▶ Use an integrated weed management (IWM) strategy and focus on running down the weed seedbank.
- ▶ Target young, small weeds (seedlings and young rosettes); herbicide efficacy decreases as flaxleaf fleabane matures.
- ▶ 2,4-D and FallowBoss® TORDON are the only herbicides registered for in-crop control of fleabane.
- ▶ To reduce the likelihood of resistance developing use full label rates of herbicides, rotations between herbicide groups and prevent seed set of survivors
- ▶ Flaxleaf fleabane is susceptible to several residual herbicides.
- ▶ A double-knock approach is needed for dense infestations, especially if weeds are more than one month old.
- ▶ Utilise crop competition for added control of weed growth and seed production.
- ▶ Strategic tillage will suppress weed germination.
- ▶ Flaxleaf fleabane flourishes in non-cropping areas such as along fencelines. Maintain good on-farm hygiene to prevent new incursions.

Introduction

Flaxleaf fleabane (*Conzya bonariensis*) is a surface-germinating weed that had previously been well controlled by widespread tillage.

It has emerged as a major problem in Australian cropping since the move to no-till farming.

The weed is well established in the northern grains region and is increasingly an issue for growers in southern and western regions.

There are seven *Conzya* (fleabane) species in Australia but flaxleaf fleabane is the most widespread. It is the only *Conzya* species that is a major problem in broadacre cropping systems.

Flaxleaf fleabane can grow to one

metre high and has a branching habit. It is covered with grey-green leaves and produces fluffy, cream-coloured seed heads. Each plant can produce up to 110,000 seeds.

Wind, water, animals and vehicles easily disperse these tiny seeds over substantial distances, explaining its rapid spread into the southern and western cropping regions in recent years.

Populations of flaxleaf fleabane with resistance to glyphosate have been confirmed, particularly in the north where the weed is well established.

Widespread use of glyphosate in both agricultural and non-agricultural sectors has caused glyphosate resistance in this weed.

PHOTO: SARAH CLARRY



Flaxleaf fleabane flourishes along roadsides and fencelines as its seeds easily travel long distances and germinate on the surface of a wide range of soils.

PHOTO: HANWEN WU



Once a problem weed only in the north, heavy infestations of flaxleaf fleabane, such as this near Wagga Wagga, southern New South Wales, are now evident throughout all of Australia's cropping regions.

When treated young (one month old or less), susceptible flaxleaf fleabane plants can be controlled with glyphosate. When mature, however, the weed is very difficult to control with glyphosate, regardless of its resistance status. Other tactics are needed. Vigilance is essential as flaxleaf fleabane can establish in non-cropping areas. Pastures are a weak link in the management chain, along with roadsides and fencelines.

Emergence, growth and seed set

Flaxleaf fleabane emerges when temperatures are between 10°C and 30°C, with the optimal temperature between 20°C to 25°C.

Although it grows slowly above ground over winter, the roots continue to grow strongly, absorbing available water. This allows it to grow rapidly as the weather warms in spring.

The majority (90 to 95 per cent) of flaxleaf fleabane seeds lose their viability within 12 to 18 months on the soil surface.

A small percentage may persist for several years, particularly if they are buried a few centimetres below the soil surface.

Managing flaxleaf fleabane

When managing flaxleaf fleabane – as with any problem weed – the focus should be on driving down the weed seedbank.

This requires a strategic approach targeting all stages of the weed's life cycle, based on good agronomy and IWM principles.

Successful IWM depends on having a flexible plan based on a thorough understanding of the target weed.

Don't just rely on herbicides: consider non-chemical weed control tactics as well.

Elements of an IWM approach to control flaxleaf fleabane may include the need to:

- ▶ benchmark the current flaxleaf fleabane and paddock situation – weed density and distribution – and herbicide history;
- ▶ consider planting densities, crops and varieties to improve crop competition, which will suppress fleabane growth and seed production;
- ▶ target young, actively growing weeds;
- ▶ rotate between different herbicide groups in fallow, or tank mix with effective herbicides from different modes of action;
- ▶ use full label rates of all herbicides to minimise the risk of resistance developing;
- ▶ consider a double-knock, particularly for dense infestations or weeds more than one month old;
- ▶ ensure survivors do not set seed and replenish the weed seedbank;
- ▶ bury seed below a favourable depth for germination with a strategic soil disturbance;
- ▶ manage the weed in surrounding non-cropping areas where possible – good farm hygiene is critical with this weed; and
- ▶ review the level of control achieved and adjust future management accordingly.

Seedbank depletion

A number of residual herbicides provide good control of flaxleaf fleabane seedlings for several months in fallow, pre-planting and during the crop phase.

Most residual herbicides will not control flaxleaf fleabane if it has already emerged. Therefore, these herbicides need to be applied before weeds have emerged in a paddock, or following (or mixed with) an effective knockdown herbicide or double-knock.

The herbicides Balance® and Tordon™ 75-D can provide residual control of flaxleaf fleabane in fallows.

As well, for growers with summer crops in their rotation, the Group C triazine herbicides have been shown to be effective when applied in a winter or early spring fallow when rainfall is received within one to two weeks of spraying.

Group C urea (used prior to cotton) and Group B sulfonylurea (used prior to wheat) were also effective in reducing weed emergence for several months.

When using any herbicide with residual activity, label directions for re-cropping must be followed.

Rosette control in fallows

Apply herbicides when the plant is a seedling or young rosette, preferably less

PHOTO: STEVE WALKER



Herbicide efficacy decreases rapidly as flaxleaf fleabane ages, so target young, actively growing weeds (rosettes less than one month old, as shown) when spraying. Field experiments have shown the overall efficacy of 11 Group I and Group B herbicides was substantially reduced when spraying was delayed by two weeks.

TABLE 1 Efficacy of knockdown herbicides in four winter fallow field experiments in the northern grains region, measured at six weeks after treatment, when applied to one and three-month-old weeds. The range of efficacy across the experiment is in brackets.

Herbicide	Weed control (%)	
	One-month-old weeds	Three-month-old weeds
Glyphosate + 2,4-D	84 (62-100)	76 (63-96)
Glyphosate + Tordon™ 75-D	93 (86-99)	84 (62-98)
Glyphosate + 2,4-D fb Spray.Seed®	96 (93-100)	93 (87-97)
Glyphosate + Tordon™ 75-D fb Spray.Seed®	99 (97-100)	97 (92-100)
Glyphosate + 2,4-D fb Alliance®	96 (92-99)	90 (78-100)
2,4-D fb Spray.Seed®	97 (97-98)	83 (68-97)
2,4-D#	88 (81-95)	53 (48-57)
Amitrole®#	90 (84-95)	96 (95-97)
Spray.Seed®#	84 (78-89)	22 (13-30)
Mean	92	77

fb = followed by a seven-day interval

= applied in only two of the four field experiments

SOURCE: QAAFI, NSW DPI, DAFF QUEENSLAND

than one month old. One trial showed the average efficacy of a range of herbicides was reduced from 92 per cent on one-month-old weeds to 77 per cent on three-month-old weeds (Table 1).

Use a mix of glyphosate and 2,4-D (Amicide Advance 700®); or a mix of glyphosate and picloram plus 2,4-D (Tordon™ 75-D) to effectively control low-density infestations of young flaxleaf fleabane in fallows.

Several herbicides, mixes and sequential applications (double-knock) provide good control of seedlings.

However, the size and age of the weed, density and growing conditions will all affect the performance of the herbicide.

Several herbicides, such as Amitrole® (Group Q), are slow acting, with symptoms visible as late as one month after application and weed death at six to eight weeks.

The commonly used treatment of glyphosate plus 2,4-D provides good control of young rosettes, but efficacy is variable.

The most consistently effective treatments are double-knocks (sequential application), particularly with glyphosate + Tordon 75-D® followed seven days later with Spray.Seed® (paraquat plus diquat).

The success of the double-knock depends heavily on the level of control from the first knock.

Trials from South Australia have shown efficacy from the first knock needs to be greater than 60 per cent to achieve effective control of fleabane with double-knock in summer fallow.

For fallow treatments to be effective, full label rates are needed (as well as high water volumes of about 100 litres per hectare for paraquat products), particularly for dense populations and high stubble levels.

Optimum follow-up times for Spray.Seed® and paraquat products are five to 10 days after glyphosate application.

A shorter interval is likely to result in reduced efficacy resulting from insufficient time for the first knock to move and act within the plant. Similarly, a longer interval will also result in reduced efficacy.

Rosette control in-crop

Good in-crop control reduces the problem in the following fallow.

Currently Amicide Advance 700® (2,4-D) is the only registered in-crop option for control of flaxleaf fleabane up to the six-leaf stage in cereals. FallowBoss® TORDON is a new in-crop option that will be available from October 2013.

Trials have shown that late autumn and early winter flushes of flaxleaf fleabane in wheat can also be controlled with several Group I (phenoxy and pyridine) and Group B (sulfonylurea) herbicides.

In both pot and field trials, the Group I herbicides gave excellent control on young weeds under optimal soil moisture conditions.

PHOTO: HANWEN WU



Flaxleaf fleabane often germinates under a winter crop and develops unobserved until harvest, when plants begin to elongate for flowering. Prompt control of any survivors soon after harvest is required, as the survivors will develop and mature quickly due to the loss of crop competition, as shown here.

Efficacy declines with increasing weed age and size, and to a lesser extent with moisture stress.

A two-week delay (from four weeks to six weeks) substantially diminished the efficacy of the treatment in two field trials, from 83 per cent control to 62 per cent control.

Further work is underway to support the registration of these additional in-crop control options.

Stopping seed production

No single measure consistently gives 100 per cent weed control. Monitor for, and control, survivors to prevent seed set.

Flaxleaf fleabane is a poor competitor. Aside from chemical control options, increased crop competition, particularly by cereals, can suppress growth and weed seed production.

Increasing wheat crop density and using narrower row spacing decreased seed production on sprayed survivors and escapes by 90 per cent.

Strategic soil disturbance is another option. One harrow operation can reduce the number of seedlings emerging by about 90 per cent compared to zero-till.

Weed detection spray technology has an important role in enabling growers to apply knockdown herbicides and the double-knock tactic using full label rates to isolated plants and survivors. A range of herbicides is now registered for this technology in some states. Check with your adviser or state department for registrations in your state.

On-farm hygiene

It is important to control flaxleaf fleabane in areas surrounding cropping paddocks as some seeds can move long distances.

The control tactics used in fallows – double-knocks followed by residual herbicides at full label rates – are also effective at keeping fenceline areas weed-free for the whole season.

MORE INFORMATION

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USEFUL RESOURCES

Flaxleaf fleabane

Fleabane – an emerging weed in southern farming systems

www.csu.edu.au/research/grahamcentre/conferences_workshops/fleabane/Fleabane_Booklet.pdf

Ground Cover TV: Fleabane

www.grdc.com.au/Media-Centre/Hot-Topics/2012/06/Fleabane/Details

GRDC Weedlinks

www.grdc.com.au/weedlinks

Flaxleaf fleabane: A weed best management guide

www.qaafi.uq.edu.au/content/Documents/weeds/IWM-Fleabane-guide.pdf

Double-knock for controlling flaxleaf fleabane

www.qaafi.uq.edu.au/content/Documents/weeds/Controlling-flaxleaf-fleabane-2.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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