HERBICIDE OPTIONS FOR CONTROLLING AMSINCKIA

Cameron Taylor (BCG)

Take home messages

- Velocity®, Precept® and Affinity® are the best options for elongating amsinckia.
- There is a wider range of effective herbicides to control amsinckia when they are small and actively growing than when they are elongating.
- Trifluralin is very effective for controlling amsinckia, but weeds can still persist in the crop row where the trifluralin has not been applied.

Background

Amsinckia is an herbaceous plant with an annual life cycle. It generally germinates after the first rains in autumn/winter, with successive germinations after rainfall events in the cooler months. There are often four or more waves of emergence.

Amsinckia seedlings grow quickly and are competitive. They form a rosette and the flowering stem emerges in mid-winter. As the plant begins to elongate, it becomes very hard to kill with herbicides and control options are limited. Generally, early spraying is recommended to control broadleaf weeds which can be difficult with successive germinations.

Flowering starts in August and continues through spring for about eight weeks. Flowers develop from the base of the tightly coiled flowering stem and progress upward as the stem uncoils. This results in a range of seed maturity times, which, together with the plant's seed characteristics makes harvest weed seed control very difficult and only partially effective.

Typically, amsinckia is a weed of low importance, associated with fence lines or isolated areas within paddocks. Nevertheless, common herbicides are often ineffective at controlling it and additional, more expensive, herbicides are required.

Note: Some of the herbicides tested in this demonstration were not registered for use at the rates they were applied, and were used only for research purposes. Any off-label use of herbicides is the user's responsibility, including residue control, environmental safeguards, occupational health and safety and animal welfare.

Aim

To identify the most effective herbicide brews to control elongating amsinckia.

Trial details

Location:	Dumosa
Soil type:	Loamy clay
GSR (Apr-Oct):	141.1mm
Crop type:	Wheat
Spray application date:	16 August
Weather details:	See Table 1
Herbicides:	See Table 2
Weed growth stage:	Wide range (5cm to 20cm rosette)
Weed population:	Dense stand (30-40 plants/m^2)
Growth stage:	Elongating (5cm-20cm tall)
Assessment date:	23 September (38 days after application (DAA))

Table 1. Spraying conditions at time of application.

Temperature (°C)	16.8	**Water rate (L/ha)**	100
Humidity (%)	55	**Nozzle type**	AIXR110-015
Wind speed	4km/hr West	**Pressure**	2 bar
Cloud cover (%)	35	**Plant conditions**	Healthy

Table 2. Herbicide treatments in the trial with costings.

Product/treatment	Herbicide group	Cost ($/ha)
Control (untreated)	-	-
Glean® @ 15g/ha + BS1000 @ 0.25%v/v	B	2.09
MCPA LVE 570g/L @ 500ml/ha + Ally® @ 5g/ha + BS1000 @ 0.1% v/v	I, B	6.18
MCPA LVE 570g/L @ 500ml/ha + Eclipse® @ 50ml/ha	I, B	15.55
Amicide® 625 low @ 1L/ha	I	6.25
MCPA Amine 500g/L @ 400ml/ha + Affinity Force® @ 85ml/ha	I, G	17.10
Brodal® Options @ 200ml/ha	F	8.00
Brodal Options @ 150ml/ha + Simazine 900DF @ 550g/ha	F, C	9.20
Tigrex® @ 1L/ha	I, F	10.60
Tigrex @ 600ml/ha + Ally @ 5g/ha + BS1000 @ 0.1% v/v	I, F, B	8.00
Jaguar® @ 1L/ha	F, C	12.90
Cadence® @ 115g/ha + Ally @ 5g/ha + BS1000 @ 0.25% v/v	I, B	5.54
Logran® B-Power @ 25g/ha + Uptake® @ 0.5% v/v	B, G	11.83
Diuron @ 280g/ha + MCPA Amine 750g/l @ 330ml/ha + BS1000 @ 0.25% v/v	C, I	7.86
Igran® @ 500ml/ha + MCPA Amine 750g/L @ 330ml/ha	C, I	14.40
Igran @ 850ml/ha	C	18.53
Igran @ 550ml/ha + Ally @ 5g/ha	C, B	12.37
Buctril® MA @ 1L/ha + Ally @ 5g/ha + BS1000 @ 0.1% v/v	C, I, B	13.63
Paradigm® @ 25g/ha + MCPA LVE 570 @ 400ml/ha + Uptake @ 0.5% v/v	I, B	19.70
Aptitude® @ 200g/ha + MCPA Amine 750 @ 330ml/ha	G, C, I	26.38
Ecopar® @ 400ml/ha + MCPA Amine 750 @ 330ml/ha	G, I	22.28
Flight® @ 540ml/ha	C, F, I	18.40
Triathalon® @ 1L/ha	C, F, I	16.80
Velocity® @ 670ml/ha + Uptake @ 0.5% v/v + Liase® @ 1%v/v	H, C	24.10
Precept® 150g/L @ 1.5L/ha + Uptake @ 0.5% v/v + Liase @ 1%v/v	H, I	15.10

Method

The paddock was selected on the basis of its dense population and even distribution of amsinckia. The trial was sprayed using a complete randomised block design with three replicates.

The top soil was dry, with adequate subsoil moisture below when the treatments were applied. The crop and weeds were not stressed when spraying occurred.

The amsinckia population ranged in height from 5cm to 20cm. Application of many of the herbicides at this stage is off-label, therefore crop safety and its effect on yield were not measured as part of this trial. It is also important to note that spraying at this stage and weed size may have a bearing on the performance of some of the herbicides. The reasons for this might include lack of canopy penetration or coverage, and ineffectiveness on larger weeds.

The trial was sprayed at a high water rate of 100L/ha to achieve best coverage possible. Estimated percentage weed reduction and control was visually scored 38 DAA.

Results and interpretation

As shown in Figure 1, Velocity, Precept and Affinity Force plus Amine performed best. Logran B Power and Aptitude were the second best performers. Velocity and Precept are the only two chemicals containing the active ingredient pyrasulfotole (group H). This seems to be the best active ingredient on amsinckia. The other active ingredients in Velocity and Precept (bromoxynil and MCPA) did not have very good activity in the other herbicide brews. This supports the theory that pyrasulfotole does most of the work. Velocity worked very quickly, while Precept took longer to achieve the same results.

These were closely followed by group G chemicals, Affinity Force and Aptitude which contain the active ingredient carfentrazone. Affinity has a higher concentration of carfentrazone than Aptitude. This may have contributed to Affinity having a higher percentage control at the rates applied. Carfentrazone is a contact product which needs good coverage to have maximum results. Using it early in crop would help increase efficacy.

Logran B Power, which contains the actives butafenacil and triasulfuron (groups G and B), was also a good performer in this trial. The addition of the butafenacil (group G) to Logran gave the extra control over the other Group B chemicals in the trial, similarly to Affinity.

Flight and Triathalon, which contain three modes of action (Group C, F and I) performed poorly in the trial. This correlated with the other chemicals containing active ingredients such as bromoxinal (Jaguar), diflufenican (Brodal, Tigrex), amine and terbutyrn (Igran). These chemicals would need to be used on very small weeds at about the 2-4 leaf stage to gain a higher level of control.

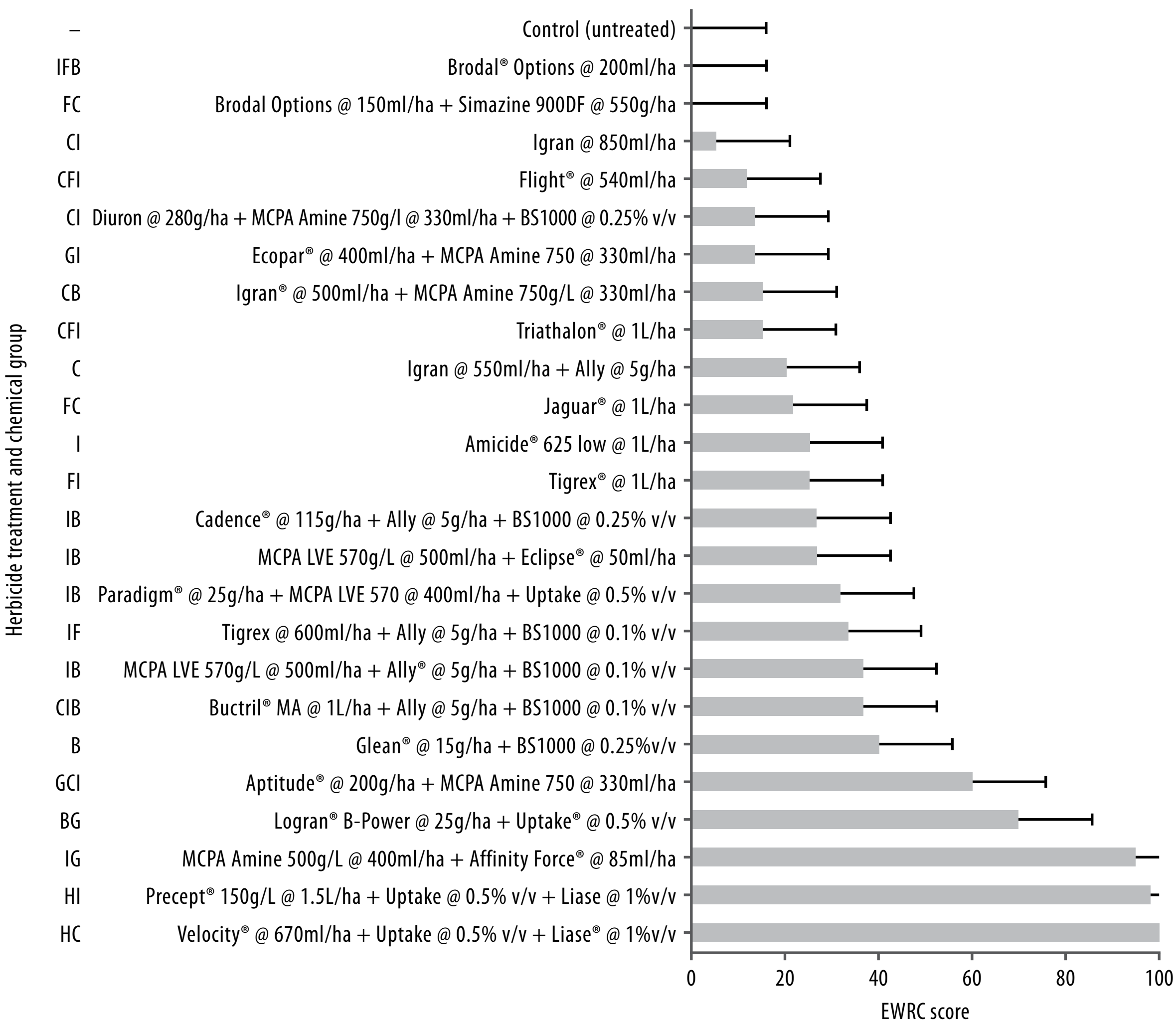

Figure 1. Amsinckia control expressed as a visual per cent reduction (5) from the untreated for each of the herbicide treatments 38 DAA. Stats: P<0.001, LSD 15.87, CV 29.5%.

Commercial practice

In a normal commercial practice trifluran can be very effective as it traditionally has controlled a high percentage of amsinckia in the inter-rows, where it is applied. Nevertheless, it has commonly been found that the amsinckia is becoming an issue within the crop row, where the trifluralin has not been applied. Typically the crop can then have a competitive advantage against the weeds that come up in the row. However, in recent years, crop vigour has been poor in the winter months, preventing adequate competition.

If controlled early, a cheaper option such as Tigrex plus Ally or Buctril MA plus Ally appear to have good control (based on visual assessment of small weed control). As amsinckia starts to elongate, control options become more limited and often expensive.

Over the last few years, Percept and Velocity have proven to be really good chemicals for controlling a wide range of broadleaf weeds. However, when selecting a chemical it is important to keep in mind the sowing plan for the following year. Pyrasulfotole (active ingredient in Velocity and Precept) has a long plant-back period for legumes (particularly lentils) and to a lesser extent, canola. If the intention is to keep pulses and canola in the rotation, then selecting a chemical that does not have a plant-back, such as Affinity, may be a better option.

Growers should be wary of trying to control amsinckia in pulses with diflufenican (Brodal). The trial had very poor results and there may be many escapees with pulses due to the lack of herbicide options.

It is unlikely that amsinckia would be an issue under a Clearfield rotation as the imi-herbicides are very effective when sprayed on younger plants and when weeds are actively growing.

The release of the lentil varieties PBA Herald XT and PBA Hurricane XT, with a permit for the post-emergent use of the Group B herbicide imazethapyr, may provide an opportunity to change herbicide strategies.

Remember that all weeds are better controlled when they are small. Spraying early and using robust rates will achieve the most reliable results and will keep costs from blowing out as is likely with a recovery job.

Acknowledgements

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