

Legume and oilseed herbicide tolerance

Key findings

- In the post emergent treatments, a range of herbicides produced very good control of all oilseed and legume crops included.

Why do the trial?

To compare the tolerance of legume and canola varieties to a range of herbicides and timings.

How was it done?

Plot size	2.0 m x 3.0 m	Fertiliser	MAP (10:22) + 2% Zn @ 75 kg/ha
Seeding date	May 30, 2019		

Fourteen strips of canola, pasture, linseed, vetch, chickpea, faba bean, field pea and lentils were sown. Forty-nine herbicide treatments were applied across all 14 crops at different timings.

The timings were:

Incorporated by sowing (IBS)	May 30
Post seeding pre-emergent (PSPE)	June 5
Early post emergent (3-4 node)	July 9
Post emergent (5-6 node)	August 2

Treatments were visually assessed and scored for herbicide effects approximately four to six weeks after application (Table 1).

Crop damage ratings were:

- 1 = no effect
- 2 = slight effect
- 3 = moderate effect
- 4 = increasing effect
- 5 = severe effect
- 6 = death

Many of the herbicides used here are not registered for the crops that have been sprayed. It is important to check the herbicide label before following strategies used in this demonstration. In 2019 a number of the herbicide treatments produced different crop tolerance or control ratings than expected. Care should be taken when interpreting these results as herbicide effects can vary between seasons and depend on soil and weather conditions at time of application.

A number of new pre-emergent herbicides were included in the 2019 trial including Butisan, Devrinol C, Ultro, Reflex, Luximax and Overwatch. Majority of these treatments had no effect on crop growth compared to the nil (Table 1). Similarly, a range of post sowing pre-emergent (PSPE) herbicides had no effect on crop growth compared to the nil (Table 1). This would not usually be expected and can be attributed to the dry surface soil conditions during the months of June and July following application.

At the 3 – 4 node application, simazine was the safest herbicide option and has been across a number of seasons. At this timing, metribuzin was slightly more damaging to Timok vetch and Genesis090 chickpea. Thistrol Gold was a new addition to this section in 2019 and is targeted as an early post-emergent application in clover. Both Thistrol Gold and Broadstrike were safe on clover. Ecopar is also registered in pastures (and vetch, field pea and faba bean) however, its use in other crops remains off label. Refer to the crop safety on label for specific variety information. At the 3-4 node application timing, the 800 mL/ha Ecopar rate resulted in slight damage (2-3 rating) to most of the legumes, but moderate damage (4 rating) in the pastures and severe (5 rating) in both lentil varieties.

In the post emergent 5 – 6 node treatments, a range of herbicides produced very good control of all the oilseed and legume crops. These included Eclipse, Paradigm, Velocity, Triathlon, Quadrant, Talinor and Starane. Ecopar was safer on field peas in the last four seasons. It should also be noted that crop establishment in the pasture section (Zulu II and Sultan SU) was patchy and poor early vigour contributed to a number of herbicides causing significant damage scores compared to those usually observed. Linseed has been a new addition to the trial and majority of the 5-6 node treatments resulted in moderate to severe (4-5 rating) this season.

For some of the newer product entries in the 5 – 6 node section:

- Pixxaro with Arylex active (16.25 g/L Arylex + 250 g/L fluroxypyr) is a post-emergent herbicide for use in all winter cereals from three leaf to flag leaf for the control of a range of broadleaf weeds. Pixxaro has resulted in good control of the legume crops in this trial over the past three years.
- Quadrant (10 g/L picolinafen, 20 g/L diflufenican, 240 g/L bromoxynil and 250 g/L MCPA) controls a range of broadleaf weeds in cereals and can be applied from the 3 leaf to late tillering crop growth stage (GS13–28).
- Rexade is a post emergent grass plus broadleaf herbicide for use in wheat. It contains the group B herbicide pyroxsulam plus the new Group I herbicide Arylex (halauxifen-methyl). It can be tank mixed with a range of broadleaf herbicides, typically MCPA LVE. In 2017 and 2018 Rexade gave very good control of the legume and canola crops.
- Talinor (37.5 g/L bicyclopyrone and 175 g/L bromoxynil) is a new fast acting cereal broadleaf herbicide that offers broad spectrum post-emergent weed control in wheat and barley (excluding durum). This product has been in the Hart herbicide matrix for three seasons and provided excellent control of all the legume and oilseed crop types.

Table 1. Crop damage ratings for legume and oilseed herbicide tolerance trial at Hart 2019.

Number	Application Timing	Treatment	Rate (ml or kg/ha)	Canola			Bean		Pea	C/pea	Lentil		Vetch		Linseed	Medic	Clover
				Nuseed Quartz	Hyola®559TT	Pioneer 44Y90	PBA Bendoc	PBA Samira	Wharton	Genesis090	Jumbo 2	Hallmark	RM4	Timok	Croxton	Sultan SU	Zulu II
1	IBS May 30	NIL		1	1	1	1	1	1	1	1	1	1	1	1	1	1
2		Trifluralin	1500 ml	1	2	2	1	1	1	1	1	1	1	1	1	1	1
3		Sakura	118 g	1	1	2	3	2	1	1	1	1	2	1	1	1	1
4		Boxer Gold	2500 mL	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5		Propyzamide	560 g	1	1	1	1	1	1	1	1	1	1	1	5	2	1
6		Butisan	1800 ml	1	1	1	3	3	2	2	1	1	3	3	1	1	1
7		Devrinol C	2000 kg	1	1	1	4	3	1	1	1	1	4	3	1	1	5
8		Ulro	1700 g	2	1	2	1	1	1	1	1	1	1	1	3	1	1
9		Reflex	1000 ml	1	1	2	1	1	1	1	1	1	1	1	2	1	2
10		Luximax	500 ml	1	1	1	1	1	3	3	2	2	2	3	3	1	1
11		Overwatch (F9600)	1250 ml	2	2	2	1	1	1	1	2	1	1	1	6	1	1
12		Terrain	180g	1	3	3	2	2	1	1	3	2	2	1	3	1	4
13	PSPE June 5	NIL		1	1	1	1	1	1	1	1	1	1	1	1	1	1
14		Diuron (900 g/kg)	825 g	5	6	6	1	1	1	3	3	1	2	1	3	1	6
15		Simazine (900 g/kg)	825 g	6	1	6	1	1	1	3	4	4	3	1	6	6	6
16		Metribuzin (750 g/kg)	280g	6	1	6	3	3	1	1	4	4	5	5	6	1	6
17		Terbyne (750 g/kg)	1000 g	6	1	6	1	1	1	1	4	4	3	3	6	6	6
18		Balance + Simazine	99 g + 830 g	6	6	6	6	6	6	1	6	6	6	6	6	6	6
19		Palmero TX	1000 g	6	6	6	5	6	5	1	6	6	6	6	6	6	6
20	3-4 Node July 9	NIL		1	1	1	1	1	1	1	1	1	1	1	1	1	1
21		Simazine (900 g/kg)	850 g	2	1	2	2	2	1	1	1	2	2	2	3	1	5
22		Metribuzin (750 g/kg)	280 g	6	1	6	5	5	1	3	1	2	3	2	4	2	6
23		Broadstrike + Wetter 1000	25 g + 0.2%	6	6	2	1	5	1	3	3	3	4	4	4	2	2
24		Thistrol Gold + Banjo	2000 mL + 0.5%	6	6	6	3	4	3	2	4	4	4	4	4	1	1
25		Brodal Options	150 mL	1	1	3	3	3	1	2	2	1	4	5	2	1	1
26		Brodal Options + MCPA Amine 750	150 mL + 100 mL	3	3	3	4	4	4	3	2	2	2	2	2	2	2
27		Spinnaker + Wetter 1000	70 g + 0.2%	6	6	2	3	3	3	2	4	1	2	2	4	1	5
28		Raptor + Wetter 1000	45 g + 0.2%	6	6	2	1	3	3	4	5	1	2	2	4	4	6
29		Ecopar + Wetter 1000	800 mL + 0.2%	6	5	6	2	2	3	4	5	5	3	2	6	4	4
30	5-6 node August 2	NIL		1	1	1	1	1	1	1	1	1	1	1	1	1	1
31		Ally + Wetter 1000	7 g + 0.1%	6	6	1	6	6	6	6	6	6	6	5	3	4	6
32		Eclipse SC + Wetter 1000	50 mL + 0.1%	5	5	1	4	6	4	4	4	4	4	6	2	4	6
33		Atrazine + Hasten	1000 g + 1%	4	1	4	4	4	2	6	3	3	3	3	3	5	6
34		Lontrel 600	150 mL	1	1	1	6	6	5	6	6	6	6	6	3	6	6
35		Ecopar + MCPA Amine 750	400 mL + 330 mL	4	4	4	4	4	1	3	4	4	4	4	4	4	5
36		Carfentrazone + MCPA Amine 750	100 mL + 330 mL	4	4	4	4	5	4	6	4	4	3	4	4	4	6
37		Velocity + Uptake	670 mL + 0.5%	6	6	6	5	5	6	5	4	4	5	4	4	6	6
38		Talinor + Hasten	750 mL + 1 %	5	6	6	6	6	6	6	6	6	6	6	4	6	6
39		Paradigm + MCPA LVE + Uptake	25 g + 500 mL + 0.5%	6	6	6	5	6	6	6	6	6	6	6	6	6	6
40		NIL		1	1	1	1	1	1	1	1	1	1	1	1	1	1
41		Flight EC	720 mL	6	6	6	4	5	3	4	4	4	4	5	2	5	5
42		Triathlon	1000 mL	6	6	6	4	4	5	5	4	4	2	4	3	5	6
43		Quadrant	1000 mL	6	6	6	5	5	5	5	4	4	2	5	5	5	5
44		Frequency	200 mL + 1.0%	5	6	5	4	4	5	3	2	2	3	3	5	5	6
45		Intervix + Hasten	600 mL + 0.5%	6	6	1	1	4	4	6	5	1	3	4	5	3	6
46		Starane	600 mL	1	1	1	1	1	4	6	4	4	4	4	5	3	6
47		Pixaro + Uptake	300 mL + 0.5%	1	1	1	5	5	6	6	6	6	6	6	6	6	6
48		Rexade + Wetter 1000	100 g + 0.25%	5	6	1	4	6	6	6	6	4	6	6	5	4	6
49		Atlantis OD + Hasten	330 mL + 0.5%	6	6	1	4	6	4	4	4	2	4	5	2	4	6