

## Pasture herbicide tolerance

### SUMMARY

Herbicide options were investigated on newly sown pastures at three sites. Lathyrus stood out as an excellent producer of dry matter when sown early. It also appears to be less affected by insects and more tolerant to post emergent herbicides compared to Morava vetch.

Controlling broadleaf weeds in newly sown pastures is not straightforward. Many new pasture types (species and varieties) are coming on the market and herbicide tolerance information is limited. The BCG undertook three trials with pasture herbicide tolerance. These were located at Birchip, Charlton and at the Charlton Radish Site. The mix of pasture and herbicide options was slightly different between the three sites depending on soil type.

### METHOD

**Table 2.1** Pastures sown at Birchip, Charlton and Radish trial sites

Site	Sowing date	Pasture types
Birchip	16 April	<b>lathyrus</b> (Chalus), <b>vetch</b> (Morava ), <b>lucerne</b> (Aquarius) <b>3 clover</b> varieties (Nitro-persian and 2 Balansa types), <b>4 medic</b> varieties (Caliph, Herald, Paraggio, Mogul),
Charlton	30 March	<b>lathyrus</b> (Chalus), <b>vetch</b> (Morava), <b>lucerne</b> (Aquarius) <b>3 medic</b> varieties (Orion, Parragio and Mogul), <b>4 clover</b> varieties (Nitro-persian, Clare, Seaton Park and Balansa)
Radish	30 March	<b>lathyrus</b> (Chalus), <b>medic</b> (Mogul) <b>3 clover</b> varieties (Seaton Park, Balansa and Nitro-persian)

Pastures types were direct drilled in long strips and herbicides were applied at right angles to sowing. Herbicides were applied pre-sowing, post sowing pre-emergent (PSPE) and early post emergent (EPE). Early post emergent applications were applied when the pastures had between three and five true leaves. Herbicide effects were assessed as damage scores on pastures. Pastures were assessed two months after application.

### RESULTS

The best options for radish control were Broadstrike plus oil, Tigrex and Jaguar. Each of these herbicides had varying effects on the pasture types present. Broadstrike had some effect on the Lathyrus but was safe on the other pasture types, whilst Tigrex and Jaguar had a damaging effect on Lathyrus, Nitro Persian and Mogul medic, but were safe on balansa and the sub-clover Seaton Park. (Tables 2.3, 2.4 and 2.5 for Radish, Birchip and Charlton site results respectively).

### INTERPRETATION

- **Vetch:** there were no safe early post emergent herbicides in Morava vetch (Broadstrike may become registered in Popany vetch). Vetch is not tolerant to the phenoxy-based herbicides (eg. MCPA).
- **Lathyrus:** few more options with Spinnaker, Broadstrike, Brodal and Igran all appearing quite safe. Lathyrus had excellent early growth and was not affected by red legged earthmite and lucerne flea, compared to vetch. Lathyrus needs to be sown early April to optimise growth.
- **Lucerne:** Simazine plus Gramoxone is often used in established lucerne pastures but this proved to be quite damaging to newly sown lucerne. The best options in lucerne were with Spinnaker, Broadstrike, Brodal, MCPA250 and Jaguar.
- **Nitro Persian:** performed very well. The safest herbicide options were Spinnaker, Brodal and Tigrex. Bromoxynil based products can cause significant damage.
- **Sub-clover:** a wide range of herbicides were safe on the sub-clovers.
- **Balansa:** not quite as tolerant as the sub-clovers and the best options were Spinnaker, Broadstrike, Brodal, bromoxynil, Igran and a Brodal plus Diuron mix.
- **Medics:** were much less tolerant to herbicides and only Spinnaker and Broadstrike were safe to use.

The main weeds at the Charlton and Radish sites were capeweed and wild radish. The herbicides, which showed good control of both these weeds, were MCPA250, Brodal, Tigrex, Jaguar and the Brodal plus

Diuron mix. Broadstrike plus oil is good on radish but weak on capeweed. Broadstrike works much better when used on clear days which are relatively warm.

### COMMERCIAL PRACTICE

The selection of a herbicide in newly sown pasture is a matter of required weed control, level of acceptable damage to the pasture and cost. The following herbicides resulted in a low level of damage to the pastures in the 1999 trials. Careful consideration of weed type and numbers need to be made before deciding which herbicide to use. Some of these products are not registered and for unregistered herbicides the results can be damaging and variable. The results from these trials were from one season only and more severe crop effects can be expected in different seasonal conditions.

**Table 2.2** Various herbicide options and costs for various pastures

Pasture	Herbicide	Status	Cost	Herbicide	Status	Cost
Balansa and sub-clover	Tigrex 0.5L <sup>#</sup>	R	\$9	Jaguar 0.5L	R	\$12
	Broadstrike 25g	R	\$18	MCPA250 1L#	NR	\$6
	Brodal 0.15L	NR	\$22	Bromoxynil 1.2L	NR	\$17
	Brodal 0.1L + Diuron 0.3L	NR	\$18	Spinnaker 0.15L	NR	\$17
Nitro Persian	Tigrex 0.5L#	R	\$9	Brodal 0.15L	NR	\$22
	Spinnaker 0.15L	NR	\$17			
Lucerne	Jaguar 0.5L	R	\$12	Spinnaker 0.15L	R	\$17
Medic	Broadstrike 25g	R	\$18	Spinnaker 0.15L	NR	\$17
Lathyrus	Brodal 0.15L	NR	\$22	Igran 0.55L	NR	\$8
	Broadstrike 25g	NR	\$18	Spinnaker 0.15L	NR	\$17

<sup>#</sup> these herbicides caused a low to moderate level of damage to the pasture

In these trials there were no safe options found for the early post emergent control of weeds in Morava.

**Table 2.3** The effect of various herbicides on pastures at the Radish site

Herbicide	Rate	Timing	Pasture Damage Score					Radish Score
			Lath	Nitro	Bala	S. Park	Mogul	
Trifluralin	1.0L	Pre-sow	1	1	1	1	1	1
Simazine	1.0L	PSPE	1	1	1	1	1	1
Diuron	1.0L	“	1	1	1	1	1	1
Dual	0.5L	“	1	1	1	1	1	1
Simazine	1.0L	EPE	1	3	1	1	3	1
Simazine + Gramoxone	1.3L + 0.15L	“	3	9	8	4	9	3
Spinnaker	0.15L	“	2	3	2	1	2	5
Broadstrike + Uptake oil	25g + 0.5%	“	3	3	1	1	1	7
MCPA250	1.0L	“	4	3	2	2	2 <sup>#</sup>	7
Brodal	0.15L	“	4	3	2	3	6	4
Tigrex	0.5L	“	6	4	3	3	5	8
Jaguar	0.5L	“	7	5	5	5	7	7
Buctril200 (bromoxynil)	1.2L	“	7	7	3	2	7	5
Igran	0.55L	“	2	7	1	1	5	2
MCPA500 + Diuron	0.3L + 0.5L	“	4	8	7	6	6	3
Brodal + Diuron	0.1L + 0.3L	“	3	8	5	4	7	6

<sup>#</sup> expected more damage from MCPA on medic



# VARIETIES

**Table 2.4** The effect of various herbicides on pastures at the Birchip site

Herbicide	Rate	Timing	Lathyrus	Vetch	Nitro	Early Para <sup>1</sup>	Paradana <sup>1</sup>	Caliph	Herald	Paraggio	Mogul
Trifluralin	1.0L	Pre-sow	1	1	1	1	1	1	1	1	1
Simazine	1.0L	PSPE	1	2	1	1	1	2	1	1	1
Diuron	1.0L	“	1	1	1	1	1	1	1	1	1
Dual	0.5L	“	3	1	1	1	1	1	1	1	1
Simazine	1.0L	EPE	1	1	1	1	1	1	1	1	1
Simazine + Gramoxone	1.3L + 0.15L	“	8	9	9	9	8	9	9	8	8
Spinnaker + Diuron	0.15L + 0.3L	“	4	7	4	4	4	2	1	1	1
Broadstrike + wetter	25g + 0.1%	“	2	8	6	2	2	1	1	1	1
MCPA250	1.0L	“	8	9	5	3	3	7	7	7	7
Brodal	0.15L	“	2	5	2	2	2	4	4	3	4
Tigrex	0.5L	“	7	8	2	3	3	7	7	7	7
Jaguar	0.5L	“	7	7	3	3	2	7	7	7	7
Buctril200 (bromoxynil)	1.2L	“	9	8	4	2	2	7	6	6	6
Buticide (2,4 DB)	3.0L	“	3	9	4	2	2	1	1	1	1
Igran	0.55L	“	3	5	5	4	4	5	6	5	5
MCPA500 + Diuron	0.3L + 0.5L	“	3	8	6	6	4	4	3	4	3

**Table 2.5** The effect of various herbicides on pastures at the Charlton site

Herbicide	Rate	Timing	Lathyrus	Vetch	Nitro	Paradana <sup>1</sup>	Aquarius <sup>2</sup>	Orion	Paraggio	Mogul	Clare	S. Park
Trifluralin	1.0L	Pre-sow	1	1	1	1	1	1	1	1	1	1
Simazine	1.0L	PSPE	1	2	1	1	1	1	1	2	1	1
Diuron	1.0L	“	1	1	2	2	1	1	1	1	1	1
Dual	0.5L	“	1	1	1	1	1	1	1	1	1	1
Simazine	1.0L	EPE	1	3	2	1	1	2	3	3	1	1
Simazine + Gramoxone	1.3L + 0.15L	“	7	8	7	6	6	6	6	6	7	6
Spinnaker	0.15L	“	2	4	3	3	2	1	2	1	2	2
Broadstrike + Uptake oil	25g + 0.5%	“	2	5	4	2	1	2	2	2	2	2
MCPA250	1.0L	“	5	8	4	4	3	5	6	5	3	2
Brodal	0.15L	“	3	5	3	3	2	6	6	6	3	3
Tigrex	0.5L	“	6	8	3	4	6	5	6	6	3	3
Jaguar	0.5L	“	7	7	5	4	3	7	7	7	3	3
Buctril200 (bromoxynil)	1.2L	“	8	8	6	3	5	6	7	7	2	2
Igran	0.55L	“	3	5	6	3	4	5	5	5	3	3
MCPA500 + Diuron	0.3L + 0.5L	“	4	7	6	4	4	5	4	5	4	4
Brodal + Diuron	0.1L + 0.3L	“	4	6	6	3	4	5	5	5	3	3

Herbicide assessment on the pasture: 1=no effect, 5=damage, 9=dead; <sup>1</sup> Balansa; <sup>2</sup> lucerne