

FABA BEANS

Faba Bean, Herbicide Tolerance (Group C), LRZ Southern Mallee (Curyo), Victoria

Authors

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Aim

To compare the level of herbicide tolerance in PBA Bendoc (an imidazoline tolerant faba bean variety) against the newly released line PBA Amberley (tested as AF11023) to pre and post emergent applications of GpC at various rates.

Treatments

Varieties: PBA Bendoc and PBA Amberley

Treatments: Five rates of GpC applied either pre/ post-emergent (See Table 2)

***Some of the herbicide treatments in this research contain unregistered herbicides, application rates and timings and were undertaken for experimental purposes only. The results within this document do not constitute a recommendation for that particular use by the author or author's organization.*

Table 1. Other Site Details

Curyo	
Sowing Date	06 May
Stubble height (cm)	Standing (15)
Row Spacing (cm)	36
Plant density (plants/m ²)	20
Fertiliser (kg/ha) ¹	80

¹ MAP (9.2, 20.2, 0, 2.7) + Zn (2.5)

Results and Interpretation

- Key Messages: PBA Amberley and PBA Bendoc showed little to no signs of herbicide damage at x0.25 and x0.5. At higher rates PBA Bendoc showed lower herbicide damage and higher grain yields than PBA Amberley.
- Establishment and Plant Growth: Establishment and growth of faba bean was excellent in 2019 due to the presence of adequate soil moisture at sowing and favourable growing conditions throughout the season. There were few frost events in the spring, which were not significant on growth and yield. PSPE applications seemed to have little or no impact on early plant development.
- Herbicide Damage: PBA Bendoc showed less herbicide damage than PBA Amberley, particularly when higher rates of herbicide were applied. Damage was insignificant in both varieties when GpC was applied at lower rates (x0.25, x0.5 and x1) as PSPE sprays. Herbicide damage was significant when GpC was applied at x1 and x2 at 4 node stage. However, PSPE application of x2 did not damage the tolerant variety, PBA Bendoc.
- Biomass at Flowering: Treatments with x1 gai/ha of GpC applied PSPE produced the greatest biomass, most likely due to lower degree of herbicide damage and lesser number of weeds competing for resources. Higher application rate (x2) decreased biomass irrespective of the time applied. Application of herbicides at the 4-node stage decreased biomass at flowering, particularly at x1 and x2.
- Grain yield: PBA Bendoc yielded higher than PBA Amberley especially when GpC was applied at the higher rate. For instance, when GpC was applied at x2 as a PSPE spray PBA Bendoc produced 600 kg/ha more yield than PBA Amberley and 700 kg/ha more in the 4-node application. Best average yields were produced in plants that received terbuthylazine PSPE application at x0.25. The yield loss compared to the control was not significant for most treatments except when GpC x2 gai/ha was applied at four-node stage.

Table 2. Effect of pre and post emergent application of terbuthylazine at different rates on the symptoms of herbicide damage observed on faba bean varieties grown at Curyo, Victoria in 2019

Rate of application	Time of application	Herbicide Damage ¹		Average
		PBA Amberley	PBA Bendoc	
0	Nil	0	0	0
x0.25	PSPE ³	0	0	0
	4 Node	0	0	0
x0.5	PSPE	0	0	0
	4 Node	5	3	4
x1	PSPE	3	3	3
	4 Node	40	23	32
X2	PSPE	21	6	14
	4 Node	78	62	70

LSD (P<0.05) Treatment x Variety = ns; Treatment = 10; Variety = 4. CV (%) = 19

¹ Scored on a scale of 0 – 100, where lack of any damage is 0 and plant death is 100

³ Post sowing pre-emergent

Table 3. Effect of pre and post emergent application of terbuthylazine at different rates on the biomass of flowering plants displayed as an average for the two varieties grown at Curyo, Victoria 2019

Rate of application (gai/ha)	Time of application	Mean biomass at flowering (t/ha)
0	Nil	5.80
x0.25	PSPE ¹	5.87
	4 Node	5.55
x0.5	PSPE	6.28
	4 Node	4.47
x1	PSPE	6.59
	4 Node	3.28
X2	PSPE	3.91
	4 Node	1.95

LSD (P<0.05) Treatment x Time of application = 1.54; Treatment = 1.02; Time of application = 0.93. CV (%) = 20

¹ Post sowing pre-emergent

Table 4. Effect of pre and post emergent application of terbuthylazine at different rates on the grain yield of faba bean varieties at grown Curyo, Victoria 2019

Rate of application (gai/ha)	Time of application	Grain Yield (t/ha)		Average
		PBA Amberley	PBA Bendoc	
0	Nil	3.5	3.5	3.5
x0.25	PSPE ¹	3.6	4.2	3.9
	4 Node	3.6	3.5	3.6
x0.5	PSPE	3.7	3.8	3.7
	4 Node	3.6	3.4	3.5
x1	PSPE	3.7	3.7	3.7
	4 Node	3.0	3.2	3.1
X2	PSPE	3.2	3.8	3.5
	4 Node	1.7	2.4	2.0

LSD (P<0.05) Treatment x Variety = ns; Treatment = 0.4; Variety = 0.2. CV (%) = 13

¹ Post sowing pre-emergent