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Faba bean time of sowing – Lockhart 2015

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Key findings

- » The optimum time to sow faba beans at Lockhart in 2015 was mid-April.
- » PBA Nasma, PBA Samira and Fiesta VF were the highest yielding commercial varieties.
- » The 23 April sowing had a mean bottom pod height of 42.3 cm, 29% higher than the 13 May sowing.

Introduction

This experiment aimed to compare the growth, development and yield of current commercial faba bean varieties and advanced breeding lines on two sowing dates at Lockhart in southern NSW. This information will be used to confirm and update current agronomic recommendations for faba bean in this region.

Site details

Site	'Warikirri', Lockhart
Soil type	Red clay loam, pH _{Ca} 5.6 (0–10 cm)
Trial design	Randomised complete block design with sowing date as the main blocks and varieties as the sub-plots; three replications
Stubble management	Heavy standing stubble; coulters used on time of sowing (TOS) 2 to help with the stubble flow
Fertiliser	40 kg/ha Granulock (N:P:S; 11:21.8:4) placed 50 mm below the seed
Plant population	Target 30 plants/m ²
Sowing	Direct-drilled using a six-row DBS cone seeder with 240 mm row spacings and GPS auto-steer
Inoculation	Group F peat inoculant was mixed directly into an on-board 100 L water tank then pumped through micro-tubes into each sowing furrow
Weed management	
Commercial practices used with the aim of weed-free trials to eliminate weed competition and weed seed set.	

Fallow weed control: Glyphosate (450 g/L) 1.5 L/ha, LI 700 105 mL/ha, AMS 270 g/ha (27 January 2015)	
Glyphosate (450 g/L) 1.5 L/ha, LI 700 86 mL/ha, AMS 216 g/ha, Amicide Advance 700 [®] 300 mL/ha (23 March 2015)	
Pre-sowing: Terbyne [®] 1043 g/ha, AMS 435 g/ha, Sencor 750WG [®] 304 g/ha, Chemwet 1000 [®] 113 mL/ha, Roundup DST [®] 1.0 L/ha (27 April 2015)	
Post sowing: Sequence [®] 500 mL/ha, Hasten [®] 678 mL/ha, AMS 534 g/ha (4 June 2015) Sequence [®] 500 mL/ha, AMS 539 g/ha, Hasten [®] 336 mL/ha (10 August 2015)	
Insect and disease management	
Targeting <i>Helicoverpa</i> sp, lucerne flea and chocolate spot: Penncozeb 750 DF [®] 1 kg/ha (4 June 2015) Fastac Duo [®] 250 mL/ha (15 October 2015)	
Spin flo [®] 500 g/L carbendazim 500 mL/ha (10 August 2015)	
Spin flo [®] 500 g/L carbendazim 500 mL/ha (2 September 2015)	
Harvest date	30 November

Pulse growth and rhizobia survival can be affected when soil pH falls below 5.0 especially with increasing free aluminium levels. This can lead to problems on the acidic red-brown soils that dominate the cropping zones of southern NSW. Growers need to consider this and routinely monitor soil acidity, aiming to maintain a base pH of approximately 5.0 through strategically incorporating lime. Problems caused by subsoil constraints were not evident at this site (Table 1).

Table 1. Site soil chemical characteristics for 0–10 cm depth at Lockhart in 2015.

Characteristic	Depth (0–10 cm)
pH (1:5 CaCl ₂)	5.6
Aluminium Exc. (meq/100 g)	0.2
Zinc (mg/kg)	2.8
Sulfur (mg/kg)	16
Phosphorus (Colwell) (mg/kg)	45
Organic carbon (OC) (%)	2.4
Cation exchange capacity (CEC) (meq)	12.2

A total of 501 mm rainfall was recorded at the trial site during 2015. The growing season rainfall (GSR) was 299 mm (Figure 1).

Treatments

Varieties (10)	PBA Zahra [Ⓛ]	Farah [Ⓛ]
	PBA Samira [Ⓛ]	Fiesta VF
	PBA Rana [Ⓛ]	AF08207
	PBA Nasma [Ⓛ]	AF10089
	Nura [Ⓛ]	Determinant type

Time of sowing (TOS)	TOS 1: 23 April
	TOS 2: 13 May

Results

Establishment

Faba bean establishment was close to the target of 30 plants/m². TOS 1 achieved an average of 28.9 plants/m² while TOS 2 was slightly lower with 26.2 plants/m².

Grain yield

PBA Nasma was the highest yielding variety at Lockhart in 2015. PBA Nasma is a northern NSW variety susceptible to *Ascochyta* blight and its seed size in southern NSW is smaller than PBA Zahra or PBA Samira, which could have marketing implications. Further work is required to determine if this was only a seasonal influence.

TOS 1 (23 April) yielded an average of 2.38 t/ha, which is 27% higher than TOS 2 (13 May), which yielded 1.74 t/ha (Figure 2).

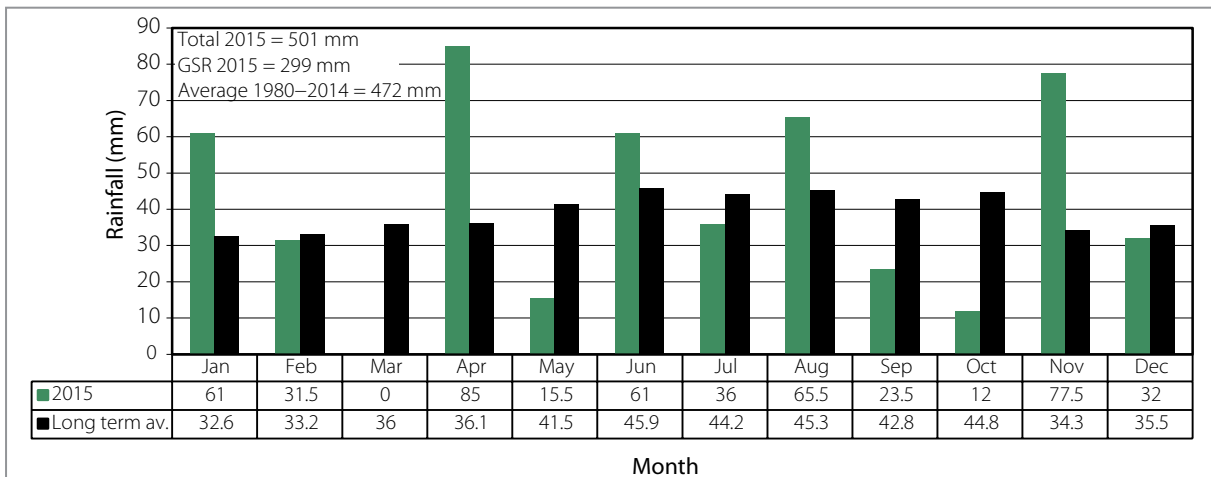


Figure 1. Annual and growing season rainfall (GSR) for 'Warikiri' in 2015 and the long term average.

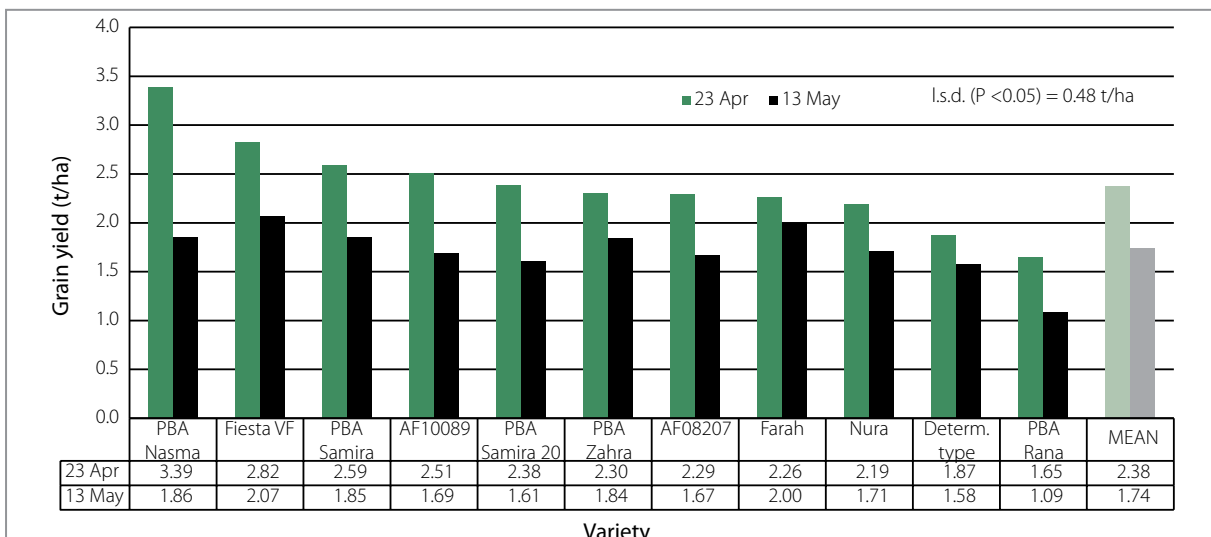


Figure 2. Grain yield of 10 faba bean varieties sown at two dates at Lockhart in 2015.

The last significant rainfall event was on 4 September and the experiment suffered severe heat and moisture stress in the first week of October. This caused both TOS 1 and TOS 2 to abort flowers and mature prematurely. Due to the more advanced stage of development, TOS 1 was less severely affected. However, these results are consistent with maximum faba bean yields from sowing in mid-April–early-May in this region. Growers still need to consider the consequences of:

- » sowing too early (before 20 April) – excessive height, lodging and disease risk;
- » Sowing too late (after the middle of May) – short plants and restricted dry matter and grain yield.

Growers also need to be aware that in cool, moist, extended springs, even late April sowings can be subject to greater disease pressure and require careful monitoring and preventative foliar fungicide sprays. Whilst there was a wet winter and early spring at this site, a preventative fungicide program combined with dry spring conditions reduced disease levels to an insignificant level.

Height to bottom pod

Height from the soil surface to the bottom pod was significantly affected by time of sowing ($P < 0.001$) and variety ($P < 0.001$). There was a significant interaction between variety and TOS ($P < 0.038$) in this experiment (Figure 3).

TOS 1 had a mean bottom pod height of 42.3 cm, 29% higher than TOS 2 (30 cm) (Figure 3).

Pod height influences header knife height at harvest and harvest efficiency, therefore pod height from TOS 1 is preferable to TOS 2.

Summary

Times of sowing, followed by variety, were the main influences on faba bean grain yield in 2015. This correlates to previous years' research, with the exception of 2014 where TOS showed no statistical differences. In 2014, there were severe vegetative/early flowering frost events that affected crops, which had greater effects on early-sown treatments.

Growers need to carefully manage disease by using preventative foliar sprays especially in wet or high rainfall zones.

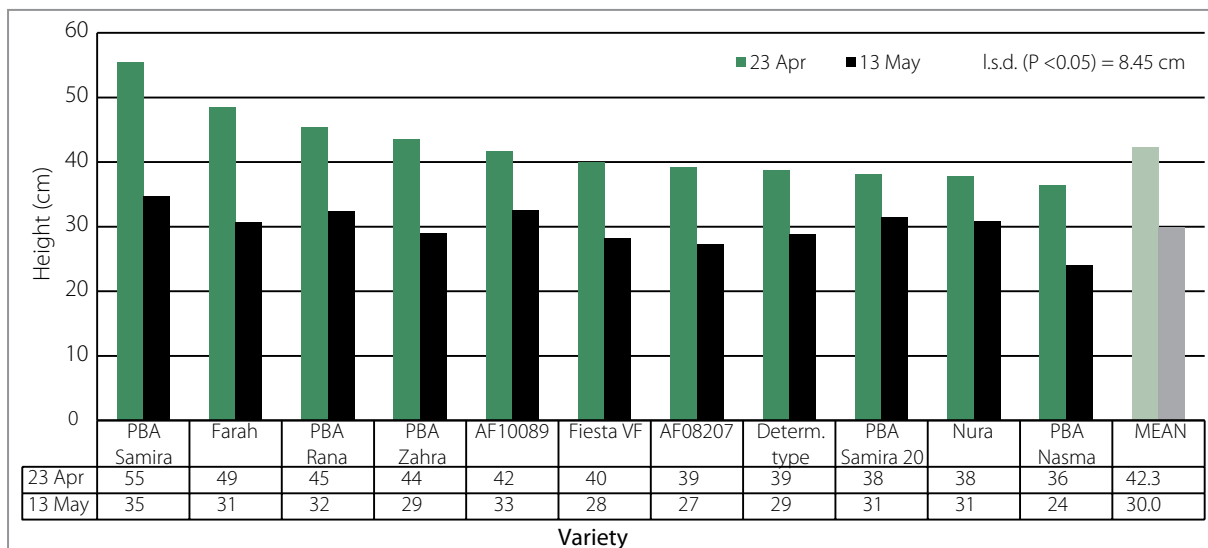


Figure 3. Height to bottom pod of 10 faba bean varieties sown at two dates at Lockhart in 2015.

Acknowledgements

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