The effect of sowing time and plant density on the grain yield and dry matter of fara bean (Vicia Faba L.)

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Early sowing and higher plant density have been reported to increase yields of faba beans (1,2,3). In Mediterranean environment water stress in spring is a major limitation to yield, but there is little information in South Australia on the development of stress or its interaction with sowing time.

## Methods

A field experiment was conducted at Roseworthy, SA in 1991. The variety Fiord was sown at 2 times. 13 May and 26 June. and at 2 plant densities, 20 and 40 plants/m<sup>2</sup>. in a split-plot design. Yield and dry matter production per plant were monitored fortnightly by harvesting 5 plants/plot. Yield was calculated from yield/plant and plants/m<sup>2</sup>. Measurements of leaf water potentials ( $ty_1$ ) were also taken fortnightly.

## Results and discussion

Late sowing significantly decreased yields by 61% (Table 1 ). This was mainly due to fewer seeds/m2. although the mean weight per seed was also lower. With late sowing, pod set was delayed, the duration of pod tilling was shortened and dry matter production was reduced. The decline in leaf area and the cessation of pod growth were associated with the decline in  $v_i$  from -0.5 MPa to -2.2 MPa over a 3-4 weeks period, with the effect being greater in the late-sown crops.

Total dry matter per m<sup>2</sup> was increased at the higher density but the seed dry weight was not increased. There was no significant interaction between sowing time and plant density on yield and its components. These results emphasize the need to sow faba bean early due to its inability to adjust to the rapid development of water stress late in the season. Increasing plant density could not compensate for the effect of late sowing.

	Podded nodes /m <sup>2</sup>	Pods /m <sup>2</sup>	Seeds /m <sup>2</sup>	Mean seed wt (mg)	Seed wt (g/m <sup>2</sup> )	Seed:pod ratio	Total shoot dw (g/m <sup>2</sup> )	Harvest Index
Sowing time		12-01-22				70.003		
13 May	364	547	1023	375	384	0.81	871	0.44
26 June	264	351	461	319	150	0.76	562	0.26
s.c.d.	n.s.	35.4	42.2	2.9	12.7	n.s.	54.1	0.045
Plants/m <sup>2</sup>								
20	243	366	644	334	224	0,77	565	0.40
40	385	531	839	360	311	0.81	869	0.36
s.e.d.	18.9	53.3	n.s.	n.s.	n.s.	11.5.	86.0	n.s.

## Table I. Effects of sowing time and plant density on yield and yield components

## References

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