F2. <u>Sowing Date x Stubble Management, LRZ Upper Eyre Peninsula (Minnipa), South</u> <u>Australia</u>

Aim

To compare and identify optimum sowing times of 6 field pea varieties to maximise grain yield and minimise impacts of disease. This trial also aims to investigate whether field peas could benefit from sowing into standing stubble compared to slashed stubble in low rainfall areas in terms of grain yield, disease infection or harvestability.

Treatments

Varieties:	Kaspa, Parafield, PBA Gunyah, PBA Twilight, PBA Oura, and PBA Pearl
Sowing dates:	2 May (Early), 31 May (Late)
Stubble:	3.0t/ha Wheat stubble (30cm high)
Treatments:	Slashed (cut at ground height to leave 20-30cm length straw)
	Standing (30cm high)
Fertiliser:	DAP + Zn @ 63kg/ha

Results and Interpretation

• Vegetative Standing Height – Early vegetative standing height measurements (taken late July) showed that standing height of peas sown into standing stubbles was higher at both sowing dates (11-13cm) than those in slashed stubbles (Table F2.1). Standing height of late sown peas was also higher than early sown peas, due to greater vegetative lodging in early sown peas. Visual observations showed the peas tendrils "netting" onto the standing stubble, which provided a trellis for the peas to grow up, leading to more erect plants (see photos).



• Mature Standing Height – standing height at maturity showed a similar trend to vegetative standing height. Peas sown into standing stubbles averaged 12cm higher than those sown into slashed stubbles (Table 1).

Table F2.1. Effect of sowing date and stubble treatment on vegetative standing height (cm), and stubble management on mature standing height (cm) of field peas, Minnipa 2011

Measurement	TOS	Crop Stage	Slashed Stubble	Standing Stubble	LSD (P<0.05)	
Vegetative	Early	17-18 node	26	34	6.2	
Standing Height (cm)	Late	9-10 node	37	47	(1.4 same TOS)	
Mature Standing Heigh	nt (cm)	Maturity	27.5	39.6	2.07	

• Lodging – Lodging scores showed a significant three-way interaction between sowing date, variety and stubble treatment. Early sown peas were more erect at maturity when sown into standing stubble, except for Parafield which showed no difference between stubble management

methods (Figure F2.1). However standing stubble did reduce lodging in Parafield at the late sowing date.



Figure F2.1. Lodging scores (1-9) at maturity of six field pea varieties sown at different sowing dates and stubble management methods, Minnipa 2011. 1 = prostrate, 9 = erect.

• Grain Yield – although effects of stubble treatment were visually apparent early in the season through differences in standing plant height and growth habit, however these did not translate to differences in grain yield in 2011.

A significant sowing date by variety interaction was observed for grain yield (Table F2.2). All varieties yielded higher sown early (average 2.72t/ha) than sown late (average 1.85t/ha), averaging 32% (30kg/ha/day) higher when sown early. This is higher than in previous years, where the average yield loss from delayed sowing at Minnipa previous to 2010 (which showed no sowing date response) was 26kg/ha/day.

The high yielding white pea line PBA Pearl was the highest yielding variety sown early, yielding 31% higher than Kaspa, while PBA Oura also outyielded Kaspa by 10% when sown early. Parafield was outyielded by all other varieties at the early sowing date.

At the later sowing date all varieties generally performed similarly, except that PBA Pearl and PBA Twilight outyielded Kaspa (21 and 16%, respectively). PBA Pearl showed the greatest penalty from delaying sowing (40%, or 46kg/ha/day delay in sowing), while Parafield showed the least (21%, or 16kg/ha/day sowing delay) (Table F2.3).

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	Sowing Date	Kaspa	Parafield	Gunyah	Twilight	Oura	PBA Pearl	LSD (P<0.05)
Yield (t/ha)	Early	2.55	2.33	2.68	2.64	2.79	3.33	0.276
	Late	1.65	1.85	1.84	1.92	1.83	2	(0.21 same TOS)
Yield loss (kg/ha/day)		31	17	29	25	33	46	4.2

Table F2.2. Effect of sowing date on grain yield (t/ha) of 6 field pea lines, Minnipa 2011

Key Findings and Comments

• Stubble treatments showed no yield difference in 2011, however differences in plant height and lodging were observed throughout the season which may aid harvestability, particularly in shorter seasons with less biomass. Retaining anchored standing cereal stubble throughout the year field peas are grown is also seen as having benefits in reducing damage from wind erosion in regions characterised by light textured soils. With good quality cereal stubbles again in 2011, this agronomic trial will be continued with the new varieties to aim to validate these findings under variable seasonal conditions.