Pulse row spacing and standing stubble

Key findings

- Height to lowest pod was greater in wider rows for beans compared to peas or chickpeas.
- Beans were higher yielding on narrower row spacing.
- Standing stubble did not increase grain yield in any pulse crop trialled.
- Standing stubble improved bean yields only at the wide row spacing.

Why do the trial?

To investigate the effect of row spacing and standing stubble on the grain yield and harvestability of pulse crops.

How was it done?

Plot size	Wide 450mm (18") spacing 2.7m x 10m Narrow 225mm (9") spacing 1.4m x 10m	**Fertiliser**	MAP @ 60 kg/ha + 2% Zn
		Crop	Kaspa peas Farah beans Genesis 090 chickpeas
Seeding date	13th May 2009	**Stubble**	Standing or Slashed

The trial was a randomised split, split plot design with 3 replicates of 3 crops (beans, peas and chickpeas), 2 row spacings, (22.5cm (9") and 45cm (18")) and 2 stubble treatments (standing and slashed). The light stubble was from an ungrazed wheat crop in 2008 and the treatments were inter-row sown.

All plots were assessed for height to lowest pod (cm from the ground) prior to harvest and grain yield.

Plot edge rows were removed prior to harvest in the beans and chickpeas. The peas were lodged and tangled and so the whole plots were harvested.

Results

Sowing beans on wider rows significantly increased height to the lowest pod from 32cm to 36cm. There was no difference in the peas and chickpeas. The height to the lowest pod in all crops was not affected by stubble treatment.

Table 1: Height to the lowest pod (cm from the ground) averaged across stubble treatment in Farah beans, Kaspa peas and Genesis 090 chickpeas at Hart 2009.

Row spacing (cm)		Height to lowest pod (cm)		
		Beans	Peas	Chick peas
Narrow	22.5	32	20	30
Wide	45.0	36	19	29
LSD (0.05)		2	ns	ns

Beans were the highest yielding crop, averaging 2.90 t/ha, followed by peas with an average of 2.72 t/ha. Chickpeas were the lowest yielding, averaging 1.30 t/ha.

Beans produced 0.93 t/ha higher grain yields when sown on narrow row spacing (3.37 t/ha) compared to sowing on wide row spacing (2.44 t/ha Table 2). Stubble treatment had an impact only when the beans were sown on wide row spacing. Grain yield was significantly reduced from 2.64 t/ha to 2.23 t/ha when the stubble was slashed compared to leaving the stubble standing. The stubble treatment however did not significantly influence the grain yield of beans in the narrow spacing (3.37 t/ha average). This result illustrates the importance of standing stubble cover in bean crops sown at wider row spacing. Note that there was only a light stubble present, and this may have helped to contribute to the reduction in bean yields with wide row spacing in this trial. Loss of soil moisture through evaporation where there is insufficient ground cover is an important issue to consider in wide row beans.

The chickpea grain yield was not significantly affected by row spacing or stubble treatment, and ranged from 1.27 t/ha to 1.35 t/ha.

As with the beans, pea grain yields were significantly higher when they were sown on narrow row spacing (2.98 t/ha) compared to sowing on wide row spacing (2.46 t/ha). The pea grain yield was not significantly affected by stubble treatment.

Table 2: Grain yield (t/ha) for Farah beans, Genesis 090 chick peas and Kaspa peas for pulse row spacing trial at Hart in 2009.

Crop	Narrow spacing (22.5cm)		Wide spacing (45.0cm)	
	Removed	Standing	Removed	Standing
Beans	3.31 ab	3.42 a	2.23 f	2.64 cde
Chickpeas	1.30 g	1.35 g	1.27 g	1.27 g
Peas	2.90 bcd	3.06 abc	2.51 def	2.41 ef
LSD (0.05)	Letters indicate significantly different values			