

F9 Sowing Time, Crop topping, Disease Management, Stubble HRZ Southern (Lake Bolac), Victoria

Aim

To investigate the adaptability of a range of field pea varieties to varying sowing dates, crop topping and disease control.

Treatments

Varieties:	Kaspa, PBA Oura, OZP0902, PBA Twilight.
Sowing dates:	20 May (Early), 16 June (Mid), 9 August (Late).
Crop Topping:	Mid: Applied at rye grass milky dough
Disease Control	Fortnightly: chlorothalonil 500 @ 2 L/ha applied fortnightly starting 6 weeks after emergence.
Stubble:	Slashed Burnt

Note: Stubble treatments were sown as independent trials. Crop topping and Disease management treatments were compared with an untreated control.

Other Details

Row Spacing:	18 cm.
Fertiliser:	MAP + Zn @ 100 kg/ha at sowing.
Plant Density:	35 plants/m ² .

Results and Interpretation

- **Key Message:** Early sowing, concurrent with previous research, was significantly higher yielding in 2011. Varietal differences in this trial were minimal. Yield loss from disease, primarily black spot, was significant and economically viable control measures are important to develop.
- **Grain Yield –** Seasonal conditions at Lake Bolac were excellent for pulse production, with adequate rainfall and few high or low temperature events that impacted on yield. Grain yields ranged from 0.9 t/ha for OZP0902 sown Aug 9 to 3.9t/ha for Kaspa sown 20 May, both in the slashed stubble block (Table F9.1 & F9.2). A summary for each of the agronomic treatments is outlined below.
 - **Stubble treatment:** Overall grain yield in the slashed stubble block was slightly higher, 2.26t/ha compared with 2.13t/ha in the burnt stubble (Table F9.1 & F9.2). However, this may not be indicative of the full response as OZP0902 appeared to be 20% lower yielding on slashed, while all other varieties had 10-15% higher yields in slashed stubble.
 - **Crop Topping –** Data has been averaged across the three sowing dates as trends were similar. Overall there was no effect of crop topping on grain yield in either slashed or burnt stubble (Table F9.1 & F9.2). However, there appeared to be differences among varieties with OZP0902 showing a significant yield loss in the slashed stubble, while PBA Oura had a significant yield loss in the burnt stubble which occurred at the May 20 sowing date.
 - **Disease management -** Data has been averaged across the three sowing dates as trends were similar. In the trial sown on burnt stubble there was a 20% increase in grain yield (Table F9.2), while on the slashed stubble the yield improvement was insignificant, but still showed an increasing trend (Table F9.1). All varieties, showed increased yields with the fortnightly disease management strategy.
 - **Sowing Dates –** In both trials the early sowing date (20 May) had 20% higher grain yield than the mid sowing date (16 June) and 70% higher grain yield than the late sowing date (Aug 9) (Tables F9.1 & F9.2). Varieties generally responded similarly, except OZP0902 on the slashed stubble which was similar at the early and mid sowing dates.

Table F9.1. Effect of the agronomic treatments, crop topping and complete disease control, and various sowing dates on grain yield (t/ha) of field pea varieties grown on slashed stubble at Lake Bolac in 2011.

Treatment	Kaspa	OZP0902	PBA Oura	PBA Twilight	Average
<u>Agronomic Treatments</u>					
Nil	2.58	1.72	2.30	2.45	2.26
Crop Topped	2.42	1.30	2.36	2.41	2.12
Fortnightly Fungicide	2.63	1.96	2.55	2.47	2.40
<u>Sowing Dates</u>					
20th May	3.87	1.98	3.43	3.40	3.17
16th June	2.83	2.10	2.52	2.87	2.58
9th August	0.94	0.91	1.27	1.06	1.04
Average	2.55	1.66	2.40	2.44	2.26

To compare interactions lsd($P < 0.05$)CTx Var = 0.3, DMxVar = ns, SDxVar = 0.57.

To compare main effects (ie. average) lsd($P < 0.05$)CT = ns, DM = ns TOS = 0.35, Var = 0.12.

Table F9.2. Effect of the agronomic treatments, crop topping and complete disease control, and various sowing dates on grain yield (t/ha) of field pea varieties grown on burnt stubble at Lake Bolac in 2011.

Treatment	Kaspa	OZP0902	PBA Oura	PBA Twilight	Average
<u>Agronomic Treatments</u>					
Nil	2.11	1.94	2.27	1.75	2.02
Crop Topped	2.04	2.02	1.60	2.18	1.96
Fortnightly Fungicide	2.38	2.33	2.67	2.29	2.42
<u>Sowing Dates</u>					
20th May	3.27	2.87	2.91	2.86	2.98
16th June	2.28	2.40	2.56	2.30	2.38
9th August	0.99	1.03	1.06	1.06	1.03
Average	2.18	2.10	2.18	2.07	2.13

To compare interactions lsd($P < 0.05$)CTx Var = 0.47, DMxVar = ns, SDxVar = ns.

To compare main effects (ie. average) lsd($P < 0.05$)CT = ns, DM = 0.24, TOS = 0.23, Var = ns.

Key Findings and Comments

- Stubble – Similar to Rupanyup, there appeared to be an improvement in yield in the slashed stubble compared with burnt stubble. It is unclear why OZP0902, responded differently to other varieties in this trial.
- Crop Topping – The response of OZP0902 in the slashed stubble was expected as this variety is very late maturing and has primarily developed for forage or hay production. A similar response was not observed in the burnt stubble block and reasons for this are unclear. Further work will continue in 2012. The grain yield loss of PBA Oura in response to crop topping in burnt stubble was inconsistent with previous research and likely to be experimental error.
- Disease Management – This treatment was implemented to assess the effect disease is having on grain yields of field peas in a high rainfall zone. These trials indicate that peas are suffering yield loss from disease, primarily black spot in these trials. The strategy of a fortnightly fungicide regime is unlikely to be economically viable, unless yields are above 2t/ha and differences are in excess of 20% when using a fungicide. In response to these trials further work is now occurring to develop an economically viable strategy to manage the risk of disease in field peas.
- Sowing Dates – Early sowing, concurrent with previous research, was significantly higher yielding in 2011. It was particularly beneficial for Kaspa which achieved yields of almost 3.9 t/ha on the slashed stubble when sown early. Early sowing can also maximise the benefits from crop topping as the crop will mature earlier, minimising risks of yield loss in the peas when targeting to optimum stage in the ryegrass. With appropriate rotations and disease management strategies (under development) the risks of disease can be minimised.