Disease control in field peas

Summary: The new Dun type field varieties Parafield and Kaspa (PSL4) had a significantly higher yield compared to Dundale at the Woomelang trial site (Dundale 1.3t/ha, Parafield 1.9t/ha, Kaspa 2.1 t/ha). The increased standability of Kaspa also makes harvesting much easier. In the 2001 season there were no benefits from a fungicide spray program on yield.

Background

Field peas have been grown in the southern Mallee for many years. Average field pea yields are in the range of 0.8 to 1.2 t/ha. With current prices ($300/t, 2001 harvest price) these relatively low yields make field peas a viable crop, however over the previous 5 years field pea prices have been around the $200/t and field peas were not an economic proposition. Field peas, like many other pulse crops, have highly variable yields (usual range between 0.2 and 2.5t/ha). The variable yields are due to:

(i) high frost susceptibility at podding,
(ii) old varieties such as Dundale, with low yield potential are the most commonly grown,
(iii) disease risk (black spot, downy and powdery mildew).

To investigate the effects of these variables on potential yield we instigated a trial at the Woomelang site.

Methods

Two new field pea varieties (Parafield and Kaspa) were compared to Dundale. The trial was sown on May 18, 2001 at a target density of 45 plants/m^2 for each variety. The crop was sown with Mallee Mix 1 at 80kg/ha. To ensure that a zinc deficiency would not affect the crop the trial was sprayed with Zincsol at 2L/ha at the 5 nodes stage. For weed control normal registered rates of herbicides were used. Disease control treatments included BTH and a foliar fungicide application at two timings. BTH is an experimental compound under investigation by Novartis. BTH is thought to assist young plants in activating their innate mechanisms which plants use to fight diseases. For the foliar fungicide Mancozeb was used at a low rate (to remain cost effective). Mancozeb is a broad spectrum, protectant foliar fungicide with activity on black spot and both mildews. The treatments were fully replicated:

product	timing
Control	
BTH at 40g/ha	4 to 5 node stage
Mancozeb at 1kg/ha	Just prior 1st flowers
Mancozeb at 1kg/ha	Early podding

Results

The two new varieties performed significantly better than the old variety Dundale (average yield Dundale 1.3t/ha; Parafield 1.9t/ha and Kaspa 2.1t/ha). Only low levels of black spot and downy mildew were observed on the crops at the early flowering stage and there were no observable differences between treatments in the level of disease. This observation was further confirmed at harvest when we found no differences between treatments in the yield of each variety (Table 1)

Table 1. Treatment effects on yield in three field pea varieties

Treatment	Dundale	Parafield	Kaspa
Control	1.3	1.8	2.1
BTH - 4/5 node	1.3	1.9	2.2
Mancozeb – 1st flower	1.4	1.8	2.2
Mancozeb – early pod	1.3	1.9	2.0
Significant difference	**NS**	**NS**	**NS**

The effect of frost could not be determined on the performance of each of these varieties because there was no frost at the trial site during the podding stage of peas in the 2001 season.

Interpretation

The two new Dun type varieties, Parafield and Kaspa, were compared against Dundale. Parafield was released in 1998 and is susceptible to black spot and both mildews. Its harvestability is similar to Dundale. Kaspa (PSL4 in previous trial work) is a semi-erect leafless pea. It has excellent early vigour and good lodging resistance. It is resistant to downy mildew, susceptible to powdery mildew and has improved resistance to black spot (Ascochyta). In our trial work Kaspa (2.1 t/ha) yielded significantly better than Parafield (1.9 t/ha), which in turn had a higher yield compared to Dundale (1.3t/ha).

The 2001 season was relatively dry at the Woomelang site and good yields were achieved because of high levels of soil water stored on fallow from the previous Spring rains. Because the season was dry the level of disease was low and no effect could be determined from the fungicide treatments.

There was no frost at the site during the podding stage of the field peas and frost effect differences on the three varieties could not be determined. Because Kaspa stands up better than Dundale and Parafield it may be less frost susceptible – but this has to be confirmed in an experimental situation.

Commercial Practice

Parafield and Kaspa are significantly outperforming older Dun types such as Dundale. With increased resistance to disease and lodging and better harvestability the variety Kaspa should be tried by farmers interested in growing peas in the southern Mallee and northern Wimmera. With current yields and prices it is doubtful whether fungicide spray programs on field peas are going to be an economically viable option. Adjusting the sowing date to a mid June sowing will reduce the susceptibility to frost. At this stage the BCG does not have information available on the herbicide tolerance of new field pea varieties (the herbicide trial at Birchip was frosted in the 2001 season).

Farmers interested in growing the new pea varieties need to discuss the marketability of the new varieties with their marketer.

Parafield is under PBR and marketed by Paramount seeds.
Kaspa is under PBR and marketed by AWB Seeds.