

Field pea variety development

**Tony Leonforte, Janet Excel, Danny Kennieson, Bruce Holding and Trevor Bretag.
DPI-Horsham**

The aim of these trials was to investigate the effects of soil type and climate on the yield of commercial varieties and advanced breeding lines in Victoria and thereby assist in the selection of superior varieties for farmers in this state.

Summary

The best field pea varieties recommended for growers in the Wimmera and Mallee are for:

Dun type peas: 1) Kasper, 2) Parafield
White peas: 1) Snowpeak, 2) Mukta
Blue peas: 1) Excell

A new high yielding white field pea "Sturt" was commercialised in 2003 and showed the highest yield performance in 2003 in Victoria. Sturt will be available from growers from 2005/06.

Background

The Australian Coordinated Field Pea Improvement Program (ACPIP) aims to improve the yield potential, adaptation and grain quality of field pea in southern Australia by breeding superior varieties for growers. ACPIP varieties released over the last 5 years have superior grain yield potential compared to the widely grown types (eg Dundale). They also provide growers with superior agronomic features (lodging and pod shatter resistance and high vigour), improved levels of disease resistance and or tolerance to downy mildew, powdery mildew and ascochyta blight and more scope to market grain for premium markets.

Methods

All sites were managed in a way to reflect the best local practice for site selection, sowing time, fertiliser and herbicide types and rates, cultural practice (e.g. cultivation and rolling) and the timing of harvest.

Results

See Table 1.

Interpretation

Disease was only a major factor for the Horsham site where bacterial blight caused damage in 2003. Sturt was the highest yielding variety and line in both the Mallee and Wimmera in 2003 (Table 1). Relative to previous years, Excell and Snowpeak yielded relatively poorly compared to other varieties in 2003. Results were also variable due to late season frosts in the Wimmera at Gooroc and Laen and in the Mallee at Quambatook and Ultima.

The following breeding lines have performed particularly well compared to current varieties: 89-036*9-10, 89-036*9-8, 96-235*5, 96-262*1 and 96-286*1 and are being considered for commercialisation. All are semi-dwarf types with resistance to downy mildew and with good lodging resistance at harvest. Several of these lines also show resistance to pod shattering and powdery mildew and improved resistance to ascochyta blight.

Commercial Practice

Variety selection

The best field pea variety for an area should be selected on the basis of yield potential, disease resistance and marketing arrangements.

- Kaspia (dun type) has excellent yield potential in the Mallee and Wimmera, is resistant to downy mildew and pod shattering and has good standing ability at harvest.
- Parafield (dun type) has performed consistently well in Victoria, but lacks resistance to downy mildew, and is susceptible to pod shattering and lodging at harvest.
- Snowpeak and Mukta are high yielding alternatives for growers wanting to grow white peas. Mukta is resistant to powdery mildew. Snowpeak is quite early and has excellent lodging resistance at harvest.
- Excell is the best choice for growers wanting to grow blue peas. It is resistant downy mildew and shows excellent lodging resistance at harvest.

Crop Production Issues

- To manage downy mildew and ascochyta blight growers should use wide cropping rotations, grow more resistant varieties and use seed dressings.
- Grain harvested from crop patches infected with bacterial blight should not be kept for sowing in subsequent years. Stubble from paddocks infected with bacterial blight should be destroyed or removed.
- Frost can cause significant yield losses in field pea and therefore early sowing should be avoided.
- Blue and white peas can attract price premiums for human consumption trade, depending on market demand and quality of grain.

Acknowledgments

- ♦ Grains Research and Development Corporation (GRDC)
- ♦ Alan Bedggood and DPI crop evaluation staff.

Results

Table 1. Victorian yield results for 2003 (% Kaspas) for commercial varieties and breeding lines likely to be commercialised and long-term results to 2001.

Region Site	Mallee								Wimmera						
	Birchip	Rainbow	Rosebery	Walpeup	Warne	Quambatoo k	Ultima	Mean	Long-term	Horsham	Kaniva	Taranyur k	Rupanyu p	Mean	Long- term
Kaspa t/ha	2.18	2.25	2.44	3.02	2.74	1.04	1.03		1994-01	2.48	2.28	2.00	2.30		1994-01
Dun type peas						*	*								
Dundale	90	67	84	73	97	154	137	82	87	96	86	68	100	85	91
Dunwa	96	69	98	90	107	161	165	92	-	105	99	83	102	95	-
Parafield	90	73	88	82	101	158	153	87	93	94	96	70	105	90	96
Kaspa	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
96-286*1	101	94	96	91	105	171	163	97	-	93	119	98	94	104	-
Blue peas															
Excell	91	59	77	73	83	142	139	77	91	83	93	66	97	85	91
Soupa	93	85	93	82	105	142	71	92	87	91	110	79	-	95	89
White peas															
Mukta	100	74	95	77	99	157	100	89	93	76	102	98	94	98	96
Snowpeak	97	76	89	86	93	145	151	88	93	67	103	95	78	92	94
Sturt	117	78	105	96	110	191	170	101	97	104	126	87	125	113	97
Moonlight	104	78	95	75	94	166	176	89	-	84	95	66	95	87	91
89-036*9-10	93	96	101	91	99	144	178	96	-	98	97	55	108	93	-
89-036*9-8	98	94	98	91	104	153	207	97	-	99	105	65	108	85	-
96-235*5	105	75	102	90	106	137	149	96	-	99	95	81	-	88	-
96-262*1	116	78	100	102	97	124	179	99	-	100	110	79	121	103	-
CV (%)	10	11	7	8	6	10	13			9	7	9	6		
LSD (0.05)	17	13	11	11	9	22	30			13	11	12	11		

Note

* Late season frost at Quambatook and Ultima affected yield (particularly for Kaspas) and were not included in calculating the Mallee mean for 2003.

- Indicates the line was not adequately represented for long-term mean analysis between 1994 and 2001.

Sites at Gooroc and Laen were severely affected by frost and yield results are not presented.

