

Field pea variety evaluation

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SUMMARY

Field pea trial yields across the Mallee were variable, ranging between 0.8 and 2.5 t/ha, reflecting those achieved in commercial crops in the region. The main factors affecting yield were low spring rainfall and presence of powdery mildew and downy mildew. Many of the new varieties show a significant advantage in yield, disease resistance, harvestability, early vigour, shatter resistance and seed quality compared to the commonly grown variety Dundale. A series of late maturing breeding lines have given superior yields in the Mallee over the last three years. The yield advantage due to shatter resistance in PSL4 was clearly demonstrated at the North Central sites where heavy rains fell prior to harvest. The dun pea PSL4 with its excellent shatter resistance and the white pea PSL10 will be multiplied as potential variety releases.

METHOD

Field pea variety trials are conducted annually across Victoria to determine the best variety options for farmers in each region. Seven trials were sown in the Mallee in 1999: Birchip, Warne, Rosebery, Rainbow, Walpeup, Gowanford, and Quambatook. Two trials were sown in the North Central region in 1999: Charlton and Mitiamo. All trials are replicated and subject to biometrical analysis prior to publication in the Victorian Pulse Variety Trial Results report.

RESULTS

Table 1.25 summarises yield data from Mallee and North Central field pea variety trials in 1999 (expressed as a percentage of Snowpeak), including resistance scores for downy and powdery mildew.

INTERPRETATION

Field pea yields across the Mallee were variable, between 0.8 and 2.5 t/ha, similar to commercial crops in the region. The Northern Mallee trials were affected by lack of rain and by downy mildew. Southern Mallee sites were affected by powdery mildew and downy mildew. Lines with resistance to powdery mildew (ie. Mukta) showed a significant yield advantage where the disease was severe as occurred at Rosebery and to a lesser extent at Warne and Rainbow. Lines susceptible to both downy and powdery mildew tended to be lower yielding. Susceptibility to both diseases is likely to explain the poor performance of varieties Laura and Parafield in 1999 compared with previous years.

Despite the lack of late spring rain and warm windy weather causing an early finish to the growing season at most Mallee sites, late flowering and maturing lines PSL4, PSM7 and PSM1 were the highest yielding lines in the Mallee. These yields are similar to the data from Mallee variety trials over the previous three years. They are also similar to yield data from the interstate pea variety trial at Balaklava, South Australia in 1999, where the late maturing pea PSL4 was the highest yielding line despite drought conditions and a severe powdery mildew infection. These results contradict the common perception that early/flowering, long vine length peas will always have an advantage over late flowering, semi-dwarf types in short growing season environments such as the Northern Mallee.

The North Central region had generally a favourable growing season however, the trial sites at Mitiamo and Charlton received heavy rains (~80mm) 10 days prior to harvest. While this increased the trial error, it also demonstrated the effectiveness of shatter resistance, particularly in the line PSL4, as this line yielded 3.17 and 1.76t/ha compared to Dundale 1.77 and 0.15t/ha at Mitiamo and Charlton respectively. The susceptibility to downy mildew of the varieties Dundale, Alma, Parafield and Laura may also have contributed to their poor performance at Mitiamo.

The variety trial results demonstrate the advantages the new varieties bring in yield, disease resistance, harvestability, early vigour, shatter resistance and seed quality compared to the commonly grown variety Dundale.

COMMERCIAL PRACTICE

Seed of the new varieties Snowpeak, Morgan, Soupa, Mukta, Santi and Parafield will be available in 2000. The varieties Excell and Paravic will be available in 2001.

The new varieties are all different and some are more suited to specific regions and management systems than others. The choice between varieties should not be based solely on yield, but also on the opportunities that flow from improved marketability, superior agronomic features or disease resistances. Blue peas are currently sold at a premium price for human consumption but only grow them if prepared to manage for high grain quality. This is achieved through earlier harvesting or desiccation. Both white and blue peas are soft seeded and will fit well in rotation with other pulse crops.

The harvestability of pea varieties may be an issue for farmers who do not have specialised equipment for trailing pea types such as Dundale or Parafield. Resistance to downy mildew should be considered a necessity for Wimmera farmers and a positive trait for Mallee farmers in long-term disease control. Powdery mildew resistance is a definite advantage in southwest and northeast Victoria and may be an advantage in the Wimmera and Mallee in some years. Farmers concerned with weed competition should consider early seedling vigour an important variety trait.

PSL4 and PSL10 are breeding lines suitable for the Mallee. They are for release by the Victorian breeding program in the near future.

PSL4 Superior features include: excellent early season vigour, large pods with large number of seeds per pod, excellent shatter resistance due to sugar-pod pea trait, good lodging resistance and harvestability at maturity. High grain yields in the Wimmera and Mallee Victoria and Southern NSW. Excellent resistance to downy mildew and improved resistance to Ascochyta. PSL4 is a dun-type grain that received a very favourable trade response because of its very attractive medium sized, uniform, smooth, round, reddish brown seed.

PSL10 This white pea features an early to mid season flowering and maturity habit, excellent early season vigour, excellent lodging resistance and harvestability. PSL10 has excellent resistance to downy mildew and very attractive medium size, uniform, round and smooth seed, suitable for splitting. High grain yields in both Victoria and Southern NSW.

Table 1.25 Yield from Mallee and North Central field pea variety trials in 1999 (expressed as a percentage of Snowpeak)

Line	Powdery Mildew	Downy Mildew	Mallee Mean	Mallee Trials						North Central	
				Gowanford	Warne	Rainbow	Walpeup	Rosebery	Birchip	Mitiamo	Charlton
Snowpeak t/ha				0.81	1.15	0.95	2.18	2.18	1.02	2.38	0.38
Blue Seeded Varieties											
Excell	S	R	102	103	107	106	93	101	101	104	211
Soupa	S	MR	94	78	99	109	83	99	97	72	103
90-158-*8-1	S	R	93	*	97	*	*	89	91	*	*
PSL9	S	R	92	103	95	86	90	87	77	109	114
Jupiter	S	MS	83	93	67	82	96	75	66	109	310
Dun Seeded Varieties											
PSL4	S	R	109	103	111	125	106	102	103	135	465
PSM7	S	R	106	102	107	122	97	103	113	113	261
90-027-*32-5	R	MR	100	*	95	*	*	106	94	*	*
Parafield	S	S	98	106	103	96	92	91	99	80	98
Paravic	S	R	95	98	90	101	99	88	83	86	85
PSM10	S	S	95	102	101	99	89	84	82	65	95
Dundale	S	S	94	101	98	97	86	88	89	53	38
Morgan	S	R	90	91	93	95	90	79	89	109	176
White Seeded Varieties											
PSM1	S	R	102	101	97	108	108	95	98	98	315
Mukta	R	R	101	89	108	112	76	120	89	90	140
*90-131-*27-7	S	MR	101	*	105	*	*	96	108	*	*
PSL10	S	R	101	98	99	123	95	88	86	96	207
PSM5	S	R	100	104	91	102	105	100	93	96	188
Snowpeak	S	R	100	100	100	100	100	100	100	100	100
Bohatyr	S	MR	99	98	101	101	99	94	96	92	283
PSM2	S	MR	97	92	89	102	108	95	104	71	90
Santi	S	R	96	97	101	98	98	88	95	92	89
90-166-*30-3	S	Seg	96	*	93	*	*	99	100	*	*
Laura	S	S	95	100	99	87	91	97	112	72	34
PSM9	S	S	91	92	99	93	84	85	85	88	145
PSL6	S	R	90	91	91	89	88	92	93	107	253
PSM3	S	R	85	76	84	96	83	87	88	84	223
Site mean (t/ha)				0.78	1.12	0.96	1.05	1.99	0.96	2.169	0.65
CV%				9.1	7.4	11.1	7.8	5.2	13.9	9.7	48
Average LSD (%)				17	10	22	13	7	19	15	148

*Lines have only been tested in limited number of trials, view mean data with caution.

R = Resistant, MR = Moderately resistant, MS = Moderately susceptible, S = Susceptible, Seg = Segregation