

Trial 2

Evaluation of lentil varieties for the southern Mallee

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Lentils are a new crop in the southern Mallee with production expected to expand as better adapted varieties become available and farmers gain experience in growing lentils. As with other grain legumes, lentils are useful as a breakcrop for cereal diseases such as cereal cyst nematode when kept grass free. Relative to other field crops there is a higher risk involved in growing lentils. However, better adapted varieties, attention to crop management, improved machinery and high prices all reduce this risk. Lentil evaluation and breeding in Australia is a coordinated effort between collaborators in WA, SA, NSW, Tasmania and Victoria. In Victoria lentil evaluation trials are being expanded from the Wimmera to the southern Mallee region.

Varietal Information

There are two main types of lentils distinguished by seed size and cotyledon colour (colour inside the seed). Red lentils have a seed diameter of 2 to 6 mm, red cotyledons and a pale to dark seed coat. Green lentils have a seed diameter of 6 to 9 mm, yellow cotyledons and a green or pale brown seed coat. Laird was the main green lentil grown in Australia before the release of Matilda by the Victorian Institute for Dryland Agriculture (VIDA) in 1993. Laird is a late flowering and late maturing variety from Canada with a large seed size. Spinner was released by The Lentil Company in 1995. It is a late flowering green lentil with resistance to seed infection by ascochyta blight. Matilda is earlier flowering and better adapted to the medium rainfall areas of Australia. In 1993 the red lentil varieties Cobber and Digger were released by VIDA and Aldinga by the South Australian Research and Development Institute (SARDI). All three varieties are moderately susceptible to ascochyta blight and of medium maturity and medium height. Cobber, Digger and Aldinga are significantly higher yielding than the existing red lentil varieties Kye and Callisto. Kye is very early to flower and mature, but is short, very susceptible to shattering and susceptible to ascochyta blight. Callisto is susceptible to ascochyta blight and too late to flower in most areas of Australia. Northfield was released by SARDI in 1995. It has improved resistance to seed infection by ascochyta blight but it has yielded less than Digger and Cobber in trials in the Wimmera .

Birchip Trial Results

Lentil trials were sown at the Birchip cropping demonstration site with three main aims:

- 1) To assess the potential of lentils on light sandy soils in the Birchip area.
- 2) To compare the grain yield of commercial lentil varieties at Birchip.
- 3) To assess the effect of sowing time on grain yield.

Commercial lentil varieties were sown at two times (15/6/1995 and 4/7/1995). Seed was sown at a depth of 6cm and at a rate of 200 viable seeds per m². Lexone was used post-sowing pre-emergent at 150g/ha to control broadleaf weeds and Targa at 250ml/ha post sowing to control grass weeds. Results have also been included for the Victorian advanced lentil trial sown at Rosebery East.

The grain yield of varieties sown on June 15 were approximately double those of the July 4 sowing at Birchip. The 100 grain weight was reduced and the lowest pods were generally lower following the July 4 sowing which made harvesting more difficult. There was no significant difference in yield between Aldinga, Cobber, Digger and Matilda at either sowing time. Northfield was not significantly different in yield from these varieties in the June 15 sowing. In the Rosebery trial Digger was significantly higher yielding than Aldinga and Northfield but not significantly different in yield from Matilda and Cobber.

The yield and 100 grain weight of lentil varieties sown at Birchip on June 15 and July 4, 1995 (R=red lentil, G=green lentil). If the yields (t/ha) of any two varieties differ by less than the LSD value they are not significantly different.

Variety	Trial sown 15 June 1995			Trial sown 4 July 1995		
	Yield t/ha	Yield % Digger	100 Grain weight (g)	Yield t/ha	Yield % Digger	100 Grain weight (g)
Aldinga ^R	1.67	101	5.43	0.88	117	4.67
Cobber ^R	1.47	89	4.49	0.59	79	3.89
Digger ^R	1.65	100	4.25	0.75	100	3.83
Kye ^R	0.73	44	2.98			
Laird ^G	0.77	46	6.71			
Spinner ^G	1.18	71	4.86			
Matilda ^G	1.70	103	5.51	0.76	101	5.33
Northfield ^G	1.56	94	3.50	0.53	71	3.04
LSD (0.05)	0.45			0.29		

The yield and 100 grain weight of lentil varieties sown in the Victorian advanced lentil trial at Rosebery East on 23 May 1995. If the yields (t/ha) of any two varieties differ by less than the LSD value they are not significantly different.

Variety	t/ha	% Digger	100 Grain weight (g)
Aldinga	1.16	78	5.2
Cobber	1.21	81	4.1
Digger	1.48	100	3.9
Laird	1.15	77	6.9
Matilda	1.34	90	5.3
Northfield	1.04	70	3.2
LSD (0.05)	0.27		

Results from these trials indicate that lentils can be grown successfully on the lighter soils of the Birchip area. However, 1995 was a favourable year for lentil production and results should be noted with some caution. Sowing early can result in higher grain yields, increased pod height for ease of harvest and an increase in seed size. However, in the Wimmera the severity of seed infection by the disease ascochyta blight increases with earlier sowing and therefore only seed with low levels of disease and treated with a fungicide should be used for sowing. A foliar fungicide spray may be required for green lentil varieties. The lower yields of the late flowering varieties Laird and Spinner show that earlier flowering is important in the Birchip area. Lentil trials will be planted again at Birchip in 1996 with additional entries selected from lines evaluated throughout Australia as part of the Nationally Coordinated Improvement Program for Lentils in Australia (CIPAL).