

## **Developing Lentils for Profitability in Australia**

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The area sown to lentils in Australia has expanded from 2,400 ha in 1994 to approximately 56,000 ha in 1997. Lentils are short and can be relatively difficult to grow and harvest. However, the release of better adapted varieties, attention to crop management, improved machinery, good marketing and relatively high prices have resulted in the successful production of lentils and an expansion of area sown. In Victoria, where about 50,000 ha of lentils were grown in 1997, lentils have expanded from a small and unreliable crop to a significant component of rotations in the Wimmera and southern Mallee.

Red lentils have been the predominant lentil type grown in Australia as green varieties are generally lower yielding and are currently lower in price. In trials, the average yield of red lentils in the Wimmera has been 2.1 t/ha (1990-96) and in the southern Mallee 1.8 t/ha (1995-96). Red lentil prices have ranged from approximately \$400 in 1995 and 1996 to over \$500 in 1997. Gross margins for lentils have been very good in comparison with other pulse crops.

In the drought year of 1994 lentils performed well in the Wimmera compared to other crops. Lentils were short in height but seed set was good. In 1997, lentil yields have been variable and generally low throughout Victoria largely due to drought and frost. This has been especially the case in the southern Mallee region where the average yield of trials ranged from 0.1 t/ha at Birchip to 1.2 t/ha at Rosebery (Table 1). At the Birchip site, on heavier soil, the lentils grew relatively well during the dry winter and produced pods but yields were very low (0.1 t/ha) as seed size was small or pods were aborted. Lentils were also sown on the same day on a lighter soil at Warne, north of Birchip, on the property of Ian and Warrick McClelland. The lentils, at this site, were very stressed throughout the growing season but produced an average yield of 0.5 t/ha and had a larger seed size than at Birchip. At Rosebery (south of Hopetoun) vegetative growth was excellent but potential seed yield was reduced by moisture stress later in the season.

1997 has shown that although lentils can yield well under drought conditions the timeliness of rain and soil type are very important. Lentils which are earlier to flower and mature could perform better in dry years. As earlier flowering is generally associated with shorter height it will be essential to develop tall varieties which can be machine harvested in all types of season. The varieties currently grown in the Mallee are all derived from germplasm introduced from the International Center for Agricultural Research in the Dry Areas in Syria and were released for the medium rainfall areas of the Wimmera in Victoria and in South Australia. The Coordinated Improvement Program for Australian Lentils (CIPAL) is a GRDC funded project which is comprised of collaborators from all Australian states. CIPAL aims to expand lentil production into the drier areas of Australia by developing high yielding, early flowering, tall, ascochyta resistant, good quality lentil varieties.

As part of an ACIAR funded project involving Agriculture Victoria, CLIMA, Nepal and Pakistan valuable research is being conducted on ascochyta blight at VIDA, Horsham, by Dr Mahmood and Dr Bretag. As part of this project research is also being conducted in Western Australia to identify traits and genotypes which are tolerant of drought.

**Table 1. Summary of lentil yield trials conducted by Agriculture Victoria in the southern Mallee in 1997; yield (t/ha).**

Variety	Birchip	Warne	Rosebery	Average
<i>Red lentils</i>				
Aldinga	0.10	0.57	0.84	0.50
Ansak	0.04	0.47	1.07	0.53
Cobber	0.14	0.58	1.43	0.72
Digger	0.07	0.47	1.30	0.61
Northfield	0.06	0.45	1.07	0.53
<i>Green lentils</i>				
Laird	0.01	0.16	0.93	0.37
Matilda	0.08	0.63	1.45	0.72
CV (%)	39.1	15.1	10	
<b>LSD (0.05)</b>	<b>0.05</b>	<b>0.10</b>	<b>0.18</b>	

Note: The higher the CV the more variable the trial. If varieties in a trial differ in yield by more than the LSD then they are significantly different in yield.

**Table 2. Summary of lentil yield trials conducted by Agriculture Victoria in the Wimmera in 1997; yield (t/ha). Results are not yet available for the Watchem and Tarranyurk sites.**

Variety	Horsham	Laen	Kaniva	Average	Average (1990-96)
<i>Red lentils</i>					
Aldinga	1.45	0.59	0.86	0.97	1.90
Ansak	1.54	0.68	0.56	0.93	-
Cobber	1.53	0.77	1.19	1.16	2.13
Digger	1.70	0.73	0.79	1.07	2.13
Northfield	1.42	0.57	0.94	0.98	1.98
<i>Green lentils</i>					
Laird	0.92	0.25	0.32	0.50	1.41
Matilda	1.57	0.67	0.33	0.86	1.79
<b>LSD(0.05)</b>	<b>0.38</b>	<b>0.18</b>	<b>0.14</b>		