

# Lentil Variety Evaluation in Victoria, 2001

Michael Materne, Stephen Murden, Bruce Holding. NRE – Horsham.

The aim of these trials is to compare the performance of current and potential new lentil varieties in the Mallee and Wimmera regions of Victoria.

## Summary

Paddock selection, disease management, variety selection and marketing are important in maximising profitability from lentils. Nugget has excellent yield potential in the Wimmera. Nugget, Cassab, Digger and Cobber are the best varieties for the Mallee. Cassab, Digger and Nugget are the best varieties where botrytis grey mould is a serious threat and Northfield is the best variety where ascochyta blight cannot be controlled.

## Background

The Coordinated Improvement Program for Australian Lentils (CIPAL) aims to improve lentil profitability in Australia by developing red and green varieties that are resistant to major diseases (ascochyta blight and botrytis grey mould) and soil constraints (boron, salt and waterlogging), and have improved havestability. CIPAL also aims to develop varieties that have new sources of resistance to current diseases and resistance to exotic diseases to ensure a sustainable lentil industry into the future. Reliable data on the yield performance and characteristics of potential new varieties will ensure that the best experimental lines are commercialised and that farmers select the most suitable variety for their farm.

## Methods

All lentil evaluation trials were sown on cereal stubble. Sowing rate was varied according to seed size to obtain a target plant density of 120 plants/m<sup>2</sup>. Seed was treated with fungicide, inoculated with lentil rhizobia and sown 5-6cm deep. Herbicides and insecticides commonly used by farmers were used in weed and insect control. The Birchip and Rupanyup trials were sown with 3 replications in plots 5m long and 6 rows wide at 0.15m row spacings. Due to the late break and dry weather the Birchip trial was sown on May 29 2001 and the Rupanyup site on July 4 2001. The lentils were sown with 90 kg/ha of Grain Legume Super + zinc®.

## Results

**Table 1. 2001 Mallee lentil yield results (F=frost, D=drought, S=soil constraints)**

	Beulah	Warne	Birchip	Quambatook	Rainbow	Ultima
Digger (T/Ha)	1.21	2.66	0.41	0.51	1.60	1.85
Aldinga	108	100	78	93	121	99
Cassab	103	103	89	86	98	108
Cobber	110	105	80	112	92	103
Cumra	39	78	14	98	81	66
Digger	100	100	100	100	100	100
Matilda	84	104	59	77	89	94
Northfield	105	99	80	77	95	89
Nugget	109	102	92	134	122	103
CV(%)	9.7	3.8	14.8	13.9	9.5	2.3
LSD(5%)	13	5	19	25	16	5
Yield limiting factors	F		S	D		

**Table 2. 2001 Wimmera lentil yield results (AB= Ascochyta blight, F=frost, D=drought, B=brodal)**

	Horsham	Laen	Rupanyup	Gooroc	Kaniva	Tarranyurk
Digger (T/Ha)	1.09	1.13	1.96	0.73	2.50	1.20
Aldinga	118	101	114	117	79	99
Cassab	101	103	105	99	102	86
Cobber	101	95	103			
Cumra	23	48	41	49	62	75
Digger	100	100	100	100	100	100
Matilda	119	97	110	101	79	86
Northfield	191	96	68	127	82	68
Nugget	161	101	120	119	120	109
CV(%)	9.3	7.8	8.6	21.8	4.0	15.0
LSD(5%)	17	11	11	39	8	23

Yield limiting factors	AB,F	D	B	F
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**Table 3. 2001 and longterm Victorian lentil yield results (%Digger)**

Variety	2001		Longterm (1996-2000)		Comments
	Wimmera	Mallee	Wimmera	Mallee	
Digger (t/ha)	1.51	1.33	1.29	0.93	
<i>Red lentils</i>					
Aldinga	104	101	94	89	
Cassab	102	104	99	99	
Cobber	99	104	100	98	
Cumra	53	70	81	81	
Digger	100	100	100	100	
Northfield	107	95	95	90	
Nugget	113	104	108	106	
94-004L*97H10	104	98			Tall, better lodging resistance
94-003L*97H26	117	94			Good splitting yield
94-002L*97H29	111	87			Good BGM and AB resistance
<i>Green lentils</i>					
Matilda	102	98	90	87	
94-004L*97H11	95	93			Large seed, less AB staining

BGM=Botrytis grey mould, AB=ascochyta blight

### Interpretation

Results in 2001 reflected varying growing conditions across Victoria. Although the break to the season was late, the average yield of lentils in the Wimmera and Mallee were above the longterm average (Table 3). This reflects favourable spring growing conditions in 2001, especially during flowering and pod fill. However, below average rainfall and/or frost severely reduced yields in some areas (Tables 1 & 2).

Cassab, Nugget and Cobber were the highest yielding red lentil cultivars in the Mallee region in 2001. Aldinga performed relatively well in 2001 when compared to the longterm average. The high yield of Nugget in the Wimmera was again highlighted in 2001. Northfield yielded relatively well in the Wimmera in 2001 when compared to the longterm average. The yield of Northfield was exceptional at the Horsham site where ascochyta blight was severe. Severe pod/seed infection in all varieties except Northfield caused quality problems and reduced yield. The experimental line 94-002L\*97H29 has excellent disease resistance and yielded well in south eastern Australia where ascochyta blight or botrytis grey mould were severe.

Yields at Birchip were very poor and may be related to the high salt levels in the soil and residues of sulphonylurea herbicides from 1999. These factors must be assessed when planning to grow lentils. If paddocks have historically grown poor cereal crops then it is unlikely that lentils will be successful. At Rupanyup Brodal® severely affected the varieties Northfield and Cumra (Table 2).

### Commercial Practice

- Paddock selection is important if planning to grow lentils, especially where soils may be high in salt and boron and are prone to waterlogging.
- Nugget has excellent yield potential in the Wimmera.
- Botrytis grey mould control is important and must be controlled in the Wimmera, especially for the variety Northfield.
- Cassab and Digger have the best botrytis grey mould resistance for high risk situations. However both can be severely affected by ascochyta blight.
- Ascochyta blight control is important for all varieties except Northfield in the Wimmera. The best timing of fungicide sprays to control pod/seed infection by ascochyta blight can vary depending on rainfall.
- The release of new varieties with resistance to both ascochyta blight and botrytis grey mould will deliver cost effective control of these diseases when used in an integrated management package.
- Brodal® is not registered on Northfield and may reduce yields.

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