

Lentil Variety Evaluation, Mallee, 2000

Michael Materne, Stephen Murden, Bruce Holding, Victorian Institute for Dryland Agriculture, Horsham
Balu Krishna P.V., Plant Biotechnology Lab, RMIT, Melbourne

SUMMARY

Nugget has been the highest yielding variety in Victoria in long term variety comparisons. Botrytis grey mould and ascochyta blight are major threats to the yield and quality of the Australian lentil crop. Digger and Cassab have the best resistance to botrytis grey mould. Northfield is the only variety with seed resistance to ascochyta blight but it is the variety most susceptible to botrytis grey mould. Northfield, ILL7685 and ILL6788 are more tolerant to salinity in glasshouse studies and were the highest yielding lines at Birchip where EC levels were high.

To compare the performance of current and potential new lentil varieties under low rainfall Mallee conditions.

BACKGROUND

The yield of lentils in northern Mallee and southern Wimmera have often been low due to dry springs or a dry finish, especially on heavy soils where boron and salinity levels are often high. A major aim of the Coordinated Improvement Program for Australian Lentils (CIPAL) is to develop early flowering varieties with tolerance to boron and salinity for the Mallee and northern Wimmera.

METHOD

The Birchip trial was sown on May 17 with two replications. Sowing rate was varied according to seed size to obtain a target plant density of 120 plants/m². Seed was treated with fungicide, inoculated with lentil rhizobia and sown 5-6 cm deep. The lentils were sown with 70 kg/ha of Grain Legume Super. Lines with reputed tolerance to boron and salinity were included in the Birchip trial.

RESULTS

Table 1. Long term yields (% Digger) of commercial lentil varieties in the Wimmera and Mallee regions and overall across Victoria

Variety	Mallee	Wimmera	Mallee		Victoria	
	2000	2000	1995-00	1996-00	1992-00	1996-00
Digger (t/ha)	0.81	1.85	0.99	0.93	1.23	1.10
Aldinga	85	100	86	89	90	93
Ansak	116	99		92		93
Cassab	89	105		99		99
Cobber	100	107	97	98	98	99
Cumra	101	59		81		82
Digger	100	100	100	100	100	100
Northfield	72	100	86	90	89	93
Nugget	118	117		106		107
Matilda	93	88	84	87	86	89

Table 2. Yields (% Digger) of commercial lentil varieties at individual locations and overall across the Mallee region in Victoria, 2000

Variety Digger t/ha	Stress rating		Birchip	Quambatook	Rainbow	Rosebery	Ultima	Warne
	Boron	Salt	0.51	0.29	1.02	1.13	1.10	0.57
Aldinga	I	I	100	107	107	100	82	94
Ansak	I		116	170	93	120	113	134
Cassab	I	I	100	73	93	102	85	115
Cobber	I		104	165	120	91	100	108
Cumra	I	I	96	244	96	80	100	95
Digger	I	I	100	100	100	100	100	100
Northfield	I	T	137	89	130	73	67	93
Nugget	I	I	104	80	112	102	117	129
Matilda	I		97	119	97	95	93	96
1989.164*3			124					
ILL1765	T	I	63					
ILL2031	I		113					
ILL5597	T		67					
ILL5883	MT	MT	82					
ILL6778		I	101					
ILL6784		MT	98					
ILL6788		T	143					
ILL7155	T	I	54					
ILL7164	T		27					
ILL7658	T		107					
ILL7685	I	T	125					
ILL7938	T		123					
CV(%)			20.6	16.9	7.1	14.6	4.8	21.2
LSD(5%)			65	39	14	21	8	34

T=tolerant, MT=moderately tolerant, I=intolerant

INTERPRETATION

In Victoria, lentils were affected by frost in the Wimmera, drought in the Kerang area, waterlogging, salt and rain at harvest in the southern Mallee, and botrytis grey mould in the Rupanyup/Marnoo area. Rain near maturity caused variable results at many Mallee sites as indicated by a large CV value (Table 2). Nugget was the highest yielding red lentil variety in the Mallee and Wimmera in 2000 (Tables 1 and 2). The yield advantage of Nugget over Digger was higher in 2000 than in long term comparisons (Table 1). The later flowering variety Ansak possibly benefited from late rains and was the second highest yielding variety in the Mallee in 2000.

Northfield was the highest yielding variety at Birchip, where results differed from all other Mallee sites. This may be due to the high levels of salinity at the site. Northfield, ILL7685 and ILL6788 are more tolerant to salinity in glasshouse studies and were the highest yielding lines at Birchip. The early flowering variety Cumra performed well at the drought affected Quambatook site.

COMMERCIAL PRACTICE

Nugget, Digger, Cassab and Cobber are the highest yielding red lentil varieties in the Mallee. Ascochyta blight and botrytis grey mould are major threats to the lentil industry the yield and quality of the Australian lentil crop. The widely adapted Digger and Cassab have the best resistance to botrytis grey mould. Northfield is the only variety with seed resistance to ascochyta blight but it is most susceptible to botrytis grey mould. Disease management and seasonal conditions will play a major role in the development of the disease. Drier areas such as the Mallee will be less prone to botrytis grey mould than higher rainfall areas.