Lentil variety development

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Summary
Paddock selection, disease management, variety selection and marketing are important to maximising profitability from lentils.

The Coordinated Lentil Improvement Program (CIPAL)

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.

Summary of Variety Features and Performance

The best lentil variety for an area should be selected on the basis of yield potential, disease resistance and marketing arrangements. Marketing arrangements differ between varieties.

- Nugget has excellent yield potential in the Wimmera and has moderate resistance to ascochyta blight and botrytis grey mould.
- Nugget, Cassab, Digger and Cobber have the highest long-term yields in the Mallee.
- For areas at high risk from botrytis grey mould, Cassab and Digger have the best resistance but Northfield is susceptible.
- Northfield is resistant to ascochyta blight and the best variety where ascochyta blight is severe and botrytis grey mould is not a significant problem. Nugget has moderate resistance to both diseases.

The experimental line CIPAL102 has excellent disease resistance and has yielded well in south eastern Australia when ascochyta blight and botrytis grey mould were severe. CIPAL105 is a green lentil with larger seed size, better early vigour and improved resistance to botrytis grey mould compared to Matilda. Both lines are being seed increased as a potential release to growers.

Crop Production Issues

- Paddock selection remains very important when planning to grow lentils, especially where soils can be high in salt or boron and are prone to waterlogging.
- Residues of sulphonylurea herbicides can also seriously retard lentil crops.
- Residual nitrogen remaining after failed cereal crops may promote lush growth in lentils and increase the potential for botrytis grey mould, especially if lentils are sown too early or at a high sowing rate.
- 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.

Table 1. Desirable features of commercial lentil varieties.

Variety	Seed coat colour	Seed size	Flowering time	Lodging resistance	Pod Drop	Botrytis grey mould	Ascochyta blight	
							Foilage	Seed
Red lentils								
Aldinga	Green	Medium to Large	Mid	MS	MR	MS	MR	MS
Ansak	Grey	Medium	Mid to late	MS	MR	MR	MR	MS
Cassab	Grey	Medium	Mid	MS/MR	MR	MR	MR	MS
Cobber	Green	Medium	Mid	MR	MR	MS	MR	S
Digger	Grey	Medium	Mid	MS/MR	MS	MR	MR	MS
Northfield	Tan	Small	Mid to late	MR	MR	S	R	R
Nugget	Grey	Medium	Mid	MR	MR	MR*	MR	MS
Green lentils								
Matilda	Green	Medium to Large	Mid	MR	MR	MS	MR	S

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

* Nugget can produce large amounts of biomass making it more prone to botrytis grey mould

Table 2. 2001 and longterm Victorian lentil yield results (expressed as a percentage of Digger)

Variety	2001		Longterm (1996-2001)		Comments
	Wimmera	Mallee	Wimmera	Mallee	
Digger (t/ha)	**1.51**	**1.33**	**1.29**	**0.93**	
Red lentils					
Aldinga	104	101	96	91	
Cassab	102	104	100	101	
Cobber	99	104	102	98	
Digger	100	100	100	100	
Northfield	107	95	95	90	
Nugget	113	104	112	104	
CIPAL103	117	94			Good splitting yield
CIPAL102	111	87			Good BGM and AB resistance
CIPAL104	104	98			Tall, better lodging resistance
Green lentils					
Matilda	102	98	90	89	
CIPAL105	95	93			Large seed, less AB staining

BGM = Botrytis grey mould, AB = ascochyta blight

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