

New pulse varieties for more profit

Lupin variety performance in 2013

Alan Meldrum, Pulse Australia and **Ian Pritchard**, Department of Agriculture and Food Western Australia.

Key messages

- Lupins yielded very well at most sites, 8 out of 12 trials had a site mean greater than 3.0 t/ha. Commercial lupin crops were more profitable than in recent years with similar yields and pricing averaging \$304/t since July 2013.
- The high yield performance of PBA Barlock[®] and PBA Gunyidi[®] consistently yielding over 3.0 t/ha and up to 3.97 t/ha supports the release of these two varieties. Both varieties show wide adaptation across most Lupin zones in Western Australia .
- Adoption of these improved varieties will reduce the production risk of lupin crops in WA.
- PBA Barlock[®], PBA Gunyidi[®] and Jenabillup[®] are the highest yielding and first-choice varieties for lupin growers in WA, with one of the three being individually most suited to each Lupin Zone.

Background

The Department of Agriculture and Food regional offices conduct Crop Variety trials throughout WA, reporting the results back to National Variety Trials.

13 lupin variety trials were conducted in 2013. This paper reports the results of 12 trials which delivered significant results which were statistically sound with low variability.

Only the currently named varieties are reported. Details of unnamed lines with potential for release will be available at the spring field days.

Trial results

Lupin yields were high yielding (greater than 3.0 t/ha) in most Lupin Zones in 2013. Trial yields were significant and are summarised below. (*For an explanation of Lupin Zones in WA, which differ from Agzones, see figure 1.13, page 18 of 'Producing Lupins'- DAFWA Bulletin 4720.*)

- PBA Barlock[®] and PBA Gunyidi[®] were higher yielding than Mandelup[®] in all Lupin Zones.
- PBA Barlock[®] was significantly higher yielding than PBA Gunyidi[®] at Eradu. PBA Gunyidi[®] was significantly higher yielding than PBA Barlock[®] at Cunderdin and Pingelly. At the other 9 sites, the yield difference was not significant.
- Jenabillup[®] was significantly higher yielding than all varieties at Badgingarra and Pingelly.
NB: Jenabillup[®] is Moderately Susceptible to Anthracnose and is not recommended for Lupin Zone 1 where the anthracnose risk is high.

Region	Lupin Zone 1		Lupin Zone 1	
Nearest Town	Dandaragan		Walkaway	
Variety Name	t/ha	%	t/ha	%
PBA Barlock [Ⓛ]	3.81	107	2.92	102
PBA Gunyidi [Ⓛ]	3.68	104	2.85	100
Mandelup [Ⓛ]	3.46	98	1.95	68
Jenabillup [Ⓛ]	4.14	117	2.66	93
Tanjil [Ⓛ]	3.46	98	2.87	101
Danja	2.41	68	2.67	94
Site Mean (t/ha)	3.55		2.85	
CV (%)	7.30		6.74	
Probability	<0.001		<0.001	
LSD (t/ha)	0.43		0.33	
Harvest Date	20-Nov-2013		20-Nov-2013	
Sowing Date	15-May-2013		03-May-2013	
GS Rainfall, 2013, average (mm)	339.5	422.3	377.8	344.7

Region	Lupin Zone 2		Lupin Zone 2		Lupin Zone 2	
Nearest Town	Mingenew		Eradu		Coorow	
Variety Name	t/ha	%	t/ha	%	t/ha	%
PBA Barlock [Ⓛ]	3.67	103	3.97	111	3.66	112
PBA Gunyidi [Ⓛ]	3.55	99	3.42	95	3.45	105
Mandelup [Ⓛ]	3.32	93	3.16	88	2.79	85
Jenabillup [Ⓛ]	3.31	92	3.30	92	2.94	90
Tanjil [Ⓛ]	3.33	93	3.82	101	2.92	89
Danja	3.00	84	3.21	89	2.52	77
Site Mean (t/ha)	3.58		3.59		3.28	
CV (%)	3.73		5.54		7.20	
Probability	<0.001		<0.001		<0.001	
LSD (t/ha)	0.23		0.35		0.39	
Harvest Date	11-Nov-2013		03-Dec-2013		03-Dec-2013	
Sowing Date	01-May-2013		29-Apr-2013		07-May-2013	
GS Rainfall, 2013, average (mm)	303.7	346.4	262.2	319.4	260.2	316.5

Region	Lupin Zone 5		Lupin Zone 5	
Nearest Town	Cunderdin		Wongan Hills	
Variety Name	t/ha	%	t/ha	%
PBA Barlock [Ⓛ]	2.85	95	3.88	102
PBA Gunyidi [Ⓛ]	3.16	106	3.84	101
Mandelup [Ⓛ]	3.20	107	3.77	99
Jenabillup [Ⓛ]	3.11	104	3.54	93
Tanjil [Ⓛ]	2.41	80	3.45	91
Danja	2.72	91	3.25	85
Site Mean (t/ha)	3.00		3.81	
CV (%)	4.28		3.16	
Probability	<0.001		<0.001	
LSD (t/ha)	0.23		0.21	
Harvest Date	11-Nov-2013		18-Nov-2013	
Sowing Date	10-May-2013		14-May-2013	
GS Rainfall, 2013, average (mm)	229	225.4	256.2	315.9

Region Nearest Town Variety Name	Lupin Zone 4 Pingelly		Lupin Zone 6 Pingrup	
	t/ha	%	t/ha	%
PBA Barlock [Ⓛ]	2.18	87	3.44	104
PBA Gunyidi [Ⓛ]	2.88	107	3.29	99
Mandelup [Ⓛ]	2.18	87	3.30	99
Jenabillup [Ⓛ]	3.17	126	3.29	99
Tanjil [Ⓛ]	2.30	92	3.31	100
Danja	1.85	74	2.95	89
Site Mean (t/ha)	2.51		3.32	
CV (%)	9.62		3.16	
Probability	<0.001		<0.001	
LSD (t/ha)	0.40		0.18	
Harvest Date	03-Dec-2013		03-Dec-2013	
Sowing Date	17-May-2013		20-May-2013	
GS Rainfall, 2013, average (mm)	390.3	376.4	197.8	260.4

Region Nearest Town Variety Name	Lupin Zone 7 Merredin		Lupin Zone 7 Dalwallinu		Lupin Zone 7 Hyden	
	t/ha	%	t/ha	%	t/ha	%
PBA Barlock [Ⓛ]	2.83	103	1.71	101	3.26	104
PBA Gunyidi [Ⓛ]	2.88	106	1.53	91	3.27	105
Mandelup [Ⓛ]	2.84	103	1.57	93	3.09	99
Jenabillup [Ⓛ]	2.73	99	1.61	95	2.95	94
Tanjil [Ⓛ]	2.59	94	1.51	89	2.80	89
Danja	2.31	84	1.67	99	2.64	84
Site Mean (t/ha)	2.75		1.69		3.13	
CV (%)	5.10		8.49		3.76	
Probability	<0.001		<0.001		<0.001	
LSD (t/ha)	0.25		0.25		0.21	
Harvest Date	11-Nov-2013		11-Nov-2013		18-Nov-2013	
Sowing Date	03-May-2013		06-May-2013		17-May-2013	
GS Rainfall, 2013, average (mm)	185.4	246.4	207	202.1	277.3	250

Source: NVT 2014 & BoM

2008 to 2012 Lupin variety yields expressed as % of Mandelup

Lupin Zone	1	2	3	4	5	6	7	8	Overall
PBA Barlock [Ⓛ]	104	105	102	102	100	84	91	100	99
PBA Gunyidi [Ⓛ]	103	103	103	106	99	96	90	102	100
Mandelup [Ⓛ]	100	100	100	100	100	100	100	100	100
Jenabillup [Ⓛ]	102	104	101	103	104	80	93	99	98
Tanjil [Ⓛ]	92	93	84	90	91	70	81	91	87
Danja	82	82	81	84	89	63	74	82	80
Coromup [Ⓛ]	98	88	101	85	97	78	86	93	91

Source: Bevan Buirchell
DAFWA 2013

Variety descriptions

PBA Barlock[Ⓢ]

- High yielding across most lupin growing areas of WA, NSW, Vic and SA
- Resistant (R) to anthracnose (equal to Tanjil and Wonga)
- Tolerant to metribuzin (superior to Tanjil and equal to Mandelup)
- Improved resistance to pod shattering (equal to Tanjil and Coromup)
- Moderately resistant (MR) to phomopsis stem blight (equal to Tanjil and Wonga)
- Early flowering and early maturity
- Grain quality parameters that on average meet market requirements

PBA Gunyidi[Ⓢ]

- High yielding across most lupin growing areas of WA, NSW, Vic. and SA
- Improved resistance to pod shattering (equal to Tanjil and Coromup)
- Resistant to anthracnose (equal to Tanjil)
- Moderately resistant to Phomopsis stem blight, (equal to Tanjil)
- Early flowering and early maturity
- Quality parameters on average meet market requirements
- Susceptible to Grey Spot.

Jenabillup[Ⓢ]

- Higher yielding than all current varieties in the south and south-east coastal areas of Western Australia
- Tolerant of BYMV. Under south coast conditions able to maintain yield potential better than other varieties
- Resistance to aphid colonisation similar to Kalya and Tanjil
- Moderately susceptible to anthracnose
- Poor tolerance of metribuzin similar to Tanjil and Quilnock

Conclusion

Lupin production in Western Australia was well above average in 2013 in most regions. The West Kwinana, Albany and Esperance Port Zones experienced very good growing conditions from mid-July to achieve record yields. The Geraldton port zone was above average except for the northern and far eastern districts which were below average. The East Kwinana Port zone recorded low yields.

The relative variety performance of lupin varieties met the expectations of industry based on long term data, and demonstrated yield improvement and adaptation to Western Australia. The lupin breeding program continues to deliver high yielding varieties and holds promise of releasing higher yielding varieties in the near future.

Lupin Foods Australia, a CBH owned company, announced major improvements to the lupin de-hulling plant at Forrestfield in December. The plant now has an automatic bagging facility to enable de-hulled lupins to be sent to markets with improved cleanliness and efficiency.

This step will allow Lupin Foods Australia to fully use the capacity of the de-hulling plant, around 150,000 tonnes, without increasing the costs of handling. The quality of the lupin kernels is also better with the recent upgrade to the machinery.

The prospect of lupins becoming a food commodity rather than just a stockfeed commodity is becoming a reality. While the goal of achieving strong demand for lupin as a food product still has some way to go, growers can be confident that progress is being achieved.

Seed availability Contact:

Seednet: PBA Barlock[Ⓢ], PBA Gunyidi[Ⓢ] E: admin@seednet.com.au T: 1300 799 246

Key words

Lupin, variety, yield

Paper reviewed by: Jon Clements