

Pulse variety performance in 2012

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

KEY MESSAGES

- Yield performance of potential new Lupin varieties confirmed the yield gain required to justify their release
- Yield performance of Chickpea, Lupin, and Field pea varieties was adversely affected by the poor seasonal conditions in some districts
- Early flowering, early maturing pulse varieties were the highest yielding varieties in the short dry 2012 season
- Adoption of these improved varieties will reduce the production risk for pulse crops in WA.

BACKGROUND

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

11 Field pea, 6 chickpea and 16 lupin trials were conducted in 2012. This paper reports the results of trials which were statistically sound with low variability.

CHICKPEA

	Agzone 1 Mingenew		Agzone 4 Mullewa	
	Average Yield (t/ha)	% Site Mean	Average Yield (t/ha)	% Site Mean
PBA Striker^A	0.80	102	1.02	122
Neelam^A	0.75	96	0.86	103
Ambar^A	0.84	107	0.85	102
GenesisTM 836	0.78	99	0.84	100
PBA Slasher^A	0.81	103	0.79	95
Site Mean (t/ha)	0.79		0.83	
LSD (t/ha)	0.1		0.09	
CV%	7.4		5.7	
Sowing date	16 May 2012		25 May 2012	

Source: NVT 2013

PBA Striker^A was the only variety to show statistically significant yield improvement and at only one site, Mullewa. All other varieties were not significantly different or displayed variable performance in a very dry season.

Description of new desi chickpea varieties

PBA Striker^A is the highest yielding across all chickpea growing areas of Western Australia and produces high yields in the low to medium rainfall areas of southern Australia. It has improved early vigour compared to PBA Slasher^A, with early flowering and early maturity. Rated as Moderately Resistant (MR) to Ascochyta blight, it is a semi spreading plant type similar to PBA Slasher^A with medium sized seed.

Neelam^A, is a mid-flowering and mid-maturity variety. It has medium/tall plant height, taller than PBA Slasher^A and similar to GenesisTM 836. Seed size is 17g/100g, marginally larger than GenesisTM 836.

Ambar^A, is the earliest flowering and earliest maturing of all current varieties making it particularly well suited to short season environments. Rated as Resistant (R) to Ascochyta blight, with a bushy growth habit with profuse branching. Seed size is similar to GenesisTM 836 at 16g/100g.

FIELD PEA



The data shows yield performance from the named Field pea varieties currently grown in WA and the most promising unnamed lines with prospects of release in the short term.

Field Pea		Adjusted trial yields in t/ha and expressed as percentage of Site mean									
	Region	Agzone1		Agzone2		Agzone2		Agzone3		State average	State Rank
Nearest Town		Mingenew		Katanning		Wongan Hills		Pingrup			
	Variety Name	t/ha	%	t/ha	%	t/ha	%	t/ha	%	%	
	PBA Gunyah ^A	1.17	102	2.51	107	1.07	114	1.46	110	105	5
	PBA Twilight ^A	1.22	107	2.47	105	1.01	107	1.39	104	107	3
	Kaspa ^A	1.10	96	2.47	105	1.04	111	1.44	108	103	8
	OZP0805	1.11	97	2.35	100	0.97	103	1.10	82	98	15
	Parafield	0.90	79	1.76	75	0.78	83	0.86	65	83	18
	OZP0903	1.36	119	2.69	115	1.12	119	1.56	117	114	1
	OZP1209	1.15	101	2.54	108	1.02	109	1.29	97	107	2
	OZP1210	1.11	97	2.48	106	1.00	106	1.41	106	104	6
	Site Mean (t/ha)	1.14		2.34		0.94		1.33			
	CV (%)	10.44		3.57		6.06		6.91			
	Probability	0.002		<0.001		<0.001		<0.001			
	LSD (t/ha)	0.20		0.15		0.10		0.16			

Field Pea	Adjusted trial yields in t/ha and expressed as percentage of Site mean									
Region	Agzone5		Agzone5		Agzone5		State average	State Rank		
Nearest Town	Holt Rock		Grass Patch		Wittenoom Hills					
Variety Name	t/ha	%	t/ha	%	t/ha	%	%			
PBA Gunyah ^A	1.02	100	1.05	109	1.46	92	105	5		
PBA Twilight ^A	1.04	102	1.08	113	1.74	110	107	3		
Kaspa ^A	1.09	107	0.87	91	1.59	100	103	8		
OZP0805	0.97	95	1.02	107	1.66	105	98	15		
Parafield	0.91	89	0.93	96	1.54	97	83	18		
OZP0903	1.03	100	1.20	125	1.58	100	114	1		
OZP1209	1.13	110	1.18	122	1.61	102	107	2		
OZP1210	1.03	101	1.03	107	1.61	102	104	6		
Site Mean (t/ha)	1.02		0.96		1.58					
CV (%)	10.16		3.66		8.4					
Probability	0.046		<0.001		<0.001					
LSD (t/ha)	0.19		0.07		0.24					
							Source: NVT 2013			

Source: NVT 2013

In the short and dry 2012 season early maturing, early flowering field pea varieties were advantaged. PBA Gunyah^A and PBA Twilight^A, both early flowering varieties were the highest yielding named varieties. OZP0903, also an early flowering line, was the highest yielding line in 2012. OZP0903 is a semi-leafless dun type field pea which is resistant to bacterial blight and a new strain of downy mildew in South Australia. It has a smooth spherical seed which may have potential to market in a dun type segregation.

OZP1209 and OZP1210 are both early maturing, early flowering Kaspa^A types which are viewed as possible replacements for PBA Gunyah^A and PBA Twilight^A.

Planned Variety Releases

- **OZP0805** - A high yielding kaspa type line, likely to be released because it is resistant to Powdery Mildew, PSbMV and BLRV with improved tolerance to boron toxicity. It is early to mid season flowering and early maturing (similar to PBA Gunyah^A) and appears to be broadly adapted, yielding particularly well in WA. Likely release in 2013.

LUPIN

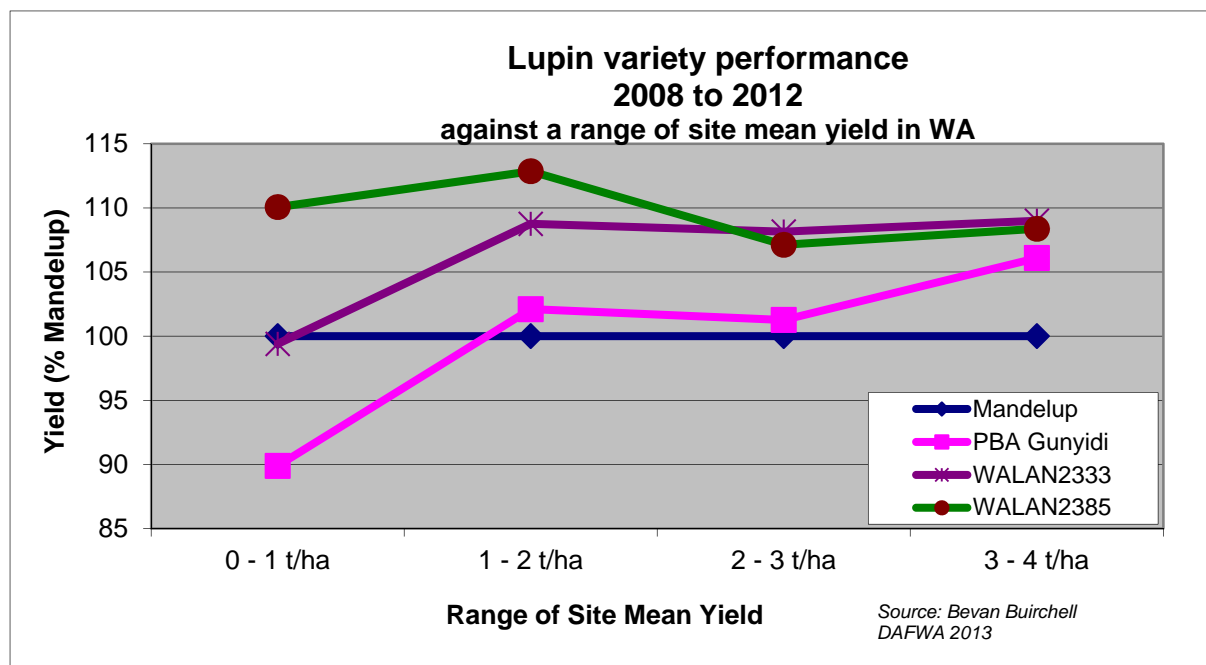
Lupin yields were well below average levels in most Lupin Zones in 2012. Despite this, trial yields were significant and are summarised below. (For an explanation of Lupin Zones in WA, which differ from Agzones, see figure 1.13, page 18 of 'Producing Lupins'- DAFWA Bulletin 4720.)

- PBA Gunyidi^A was the higher yielding than Mandelup in Lupin Zones 3 & 4.
- Advanced line WALAN2325, which has Tanjil^A resistance to Anthracnose, was significantly higher yielding than Tanjil^A in Lupin Zone 1.
- Advanced lines WALAN2333, 2383 and 2385 all show significant yield improvement in a range of Lupin Zones.

2008 to 2012 Lupin variety yields expressed as % of Mandelup

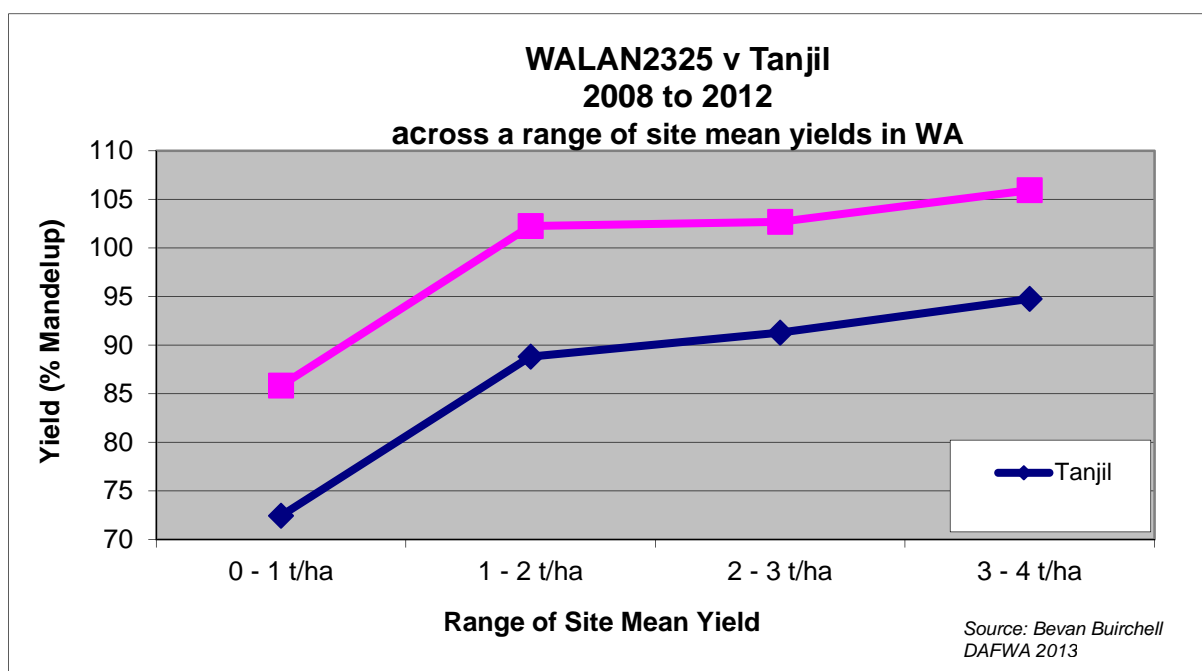
Lupin Zone	1	2	3	4	5	6	7	8	Overall
Coromup ^A	98	88	101	85	97	78	86	93	91
Danja	82	82	81	84	89	63	74	82	80
Jenabillup ^A	102	104	101	103	104	80	93	99	98
Mandelup ^A	100	100	100	100	100	100	100	100	100
PBA Gunyidi ^A	103	103	103	106	99	96	90	102	100
Quilinock ^A	93	90	93	101	91	74	91	99	91
Tanjil ^A	92	93	84	90	91	70	81	91	87
WALAN2325	104	105	102	102	100	84	91	100	99
WALAN2333	108	111	112	111	111	86	100	106	106
WALAN2383	111	114	106	109	100	91	97	107	104
WALAN2385	104	110	124	105	112	103	112	101	109

Analysis of relative yields in a range of yield potentials, shows PBA Gunyidi outperforms Mandelup in all but low yield scenarios. WALAN2333 provides a significant yield gain where yields are above 1 t/ha while WALAN2385 shows significant yield improvements in all yield scenarios.



Potential Lupin Variety Releases

WALAN2325 Continues to be one of the best performing lines in trials. It is very likely to be released in 2013 as a replacement for Tanjil^A. It has metribuzin tolerance and is rated R for anthracnose, similar to Tanjil^A. The graph demonstrates a significant yield improvement on Tanjil^A. If combined with metribuzin, the yield improvement is nearly twice that shown below.



WALAN2333 Outstanding performance across 2008 – 2012 compared to current varieties. It shows improved yield performance over Mandelup^A for Lupin Zones 1 to 5 and 8. It will not be recommended in Lupin Zone 1 as it is less tolerant to Anthracnose (MS similar to Belara^A) than WALAN2325. While higher yielding than Jenabillup in Lupin Agzone 8, the tolerance of BYMV by Jenabillup^A is important for yield protection from this disease in the south coast region.

WALAN2325 and WALAN2333, combined with PBA Gunyidi^A, will replace Mandelup^A and Tanjil^A.

From a 1,000 tonne harvest, approximately 300 tonnes of PBA Gunyidi^A seed remains available for the 2013 season.

WALAN2385 also shows improved yield performance against all current varieties. It requires further testing before being considered for release. It is among a suite of varieties with promise of continuing yield gain in years to come.

CONCLUSION

Pulse production in Western Australia was well below average in 2012 in most regions. The Esperance region was about average, except for poor yields in the Mallee.

Variety performance of lupin, chickpea and field pea varieties was mostly in line with previous years data, and industry expectations.

New and future releases from Seednet and Heritage Seeds demonstrated yield improvement and adaptation to Western Australia.

Contact:

Seednet:	PBA Gunyidi ^A , PBA Striker ^A	E: admin@seednet.com.au	T: 1300 799 246
Heritage Seeds:	Neelam ^A , Ambar ^A	E: orders@heritageseeds.com.au	T: 1800 007 333

KEY WORDS

Field pea, Chickpea, Lupin, variety, yield

Paper reviewed by: David Kessell