

New pulse varieties for more profit

Desi Chickpea variety performance in 2013

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

Key messages

- Desi chickpeas yields in trials and commercial paddocks were highly profitable in 2013. Yields were above long term averages with pricing around \$400/t delivered to Perth.
- Growers now have a suite of varieties to choose from who are all high yielding – depending upon their ascochyta disease risk, growing season environment and target market.
- All the newer varieties PBA Striker^A, Neelam^A, Ambar^A and PBA Maiden^A produced high yields.
- PBA Maiden^A yielded less than PBA Striker^A and Neelam^A in 2013 trials.
- GenesisTM836 is a 2004 variety with popularity due to its harvest height. It has demonstrated lower yields in recent years and is now considered to be outdated for Western Australian conditions.

Background

The Department of Agriculture and Food in partnership with Pulse Breeding Australia (PBA) conduct Pulse Variety trials throughout WA, reporting the results back to the National PBA breeding programs and National Variety Trials (NVT).

This paper reports the results of 2 NVT trials and 2 PBA 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

Chickpea yields were about average to above average levels in 2013. Trial yields were significant and are summarised below.

- PBA Striker[Ⓛ] was consistently a high yielding variety at all sites in 2013, this being statistically significant at Carnamah.
- Neelam[Ⓛ] and PBA Slasher[Ⓛ] were the highest yielding ascochyta resistant (R) rated varieties.
- Ambar[Ⓛ] was similar to GenesisTM836, in contrast to previous years data where Ambar[Ⓛ] has been similar to PBA Striker[Ⓛ] and Neelam[Ⓛ].
- Sonali[Ⓛ], a high yielding variety at Carnamah and Bolgart, is susceptible (S) to ascochyta blight.

The following tables describe desi chickpea variety yields in tonnes/hectare (t/ha) and as a % of the site mean yield.

Region	Agzone 2		Agzone 3	
Nearest Town	Carnamah east		Bolgart	
Variety Name	t/ha	%	t/ha	%
PBA Striker [Ⓛ]	1.42	137	2.33	111
Neelam [Ⓛ]	1.24	119	2.19	104
Ambar [Ⓛ]	1.01	97	2.01	96
Genesis™836	1.05	101	2.00	96
Genesis™510	1.08	104	2.29	109
PBA Maiden [Ⓛ]	1.10	106	2.00	95
PBA Slasher [Ⓛ]	1.08	104	2.23	106
Sonali [Ⓛ]	1.48	142	2.45	117
Site Mean (t/ha)	1.04		2.10	
CV (%)	10.42		6.67	
Probability	<0.001		<0.001	
LSD (t/ha)	0.18		0.23	
Harvest Date	19- Nov - 2013		06 - Dec - 2013	
Sowing Date	16- May - 2013		07 - Jun - 2013	
GS Rainfall, 2013, average (mm)	245.5	313.9	323.4	378.2

Region	Agzone2		Agzone 1	
Nearest Town	Walebing (PBA)		Mingenew (PBA)	
Variety Name	t/ha	%	t/ha	%
PBA Striker [Ⓛ]	2.51	112	1.87	120
Neelam [Ⓛ]	2.59	115	1.66	106
Ambar [Ⓛ]	2.00	89	1.46	94
Genesis™836	2.18	97	1.31	84
Genesis™510	-	-	-	-
PBA Maiden [Ⓛ]	2.20	98	1.52	97
PBA Slasher [Ⓛ]	2.37	106	1.65	106
Sonali [Ⓛ]	-	-	-	-
Site Mean (t/ha)	2.24		1.56	
CV (%)	7.15		8.27	
Probability	<0.001		<0.001	
LSD (t/ha)	0.30		0.23	
Harvest Date				
Sowing Date	05 - Jun - 2013		24 - May - 2013	
GS Rainfall, 2013, average (mm)	303.1	348.6	303.7	346.4

Source: NVT 2014 & BoM

Variety descriptions

PBA Striker[Ⓛ]

- Highest yielding across all chickpea growing areas of Western Australia and high yields in the low to medium rainfall areas of southern Australia Moderately Resistant (MR) to Ascochyta blight (resistance is > Genesis™836 but < PBA Slasher[Ⓛ])
- Improved early vigour compared to PBA Slasher[Ⓛ]^A
- Early flowering and maturity (earlier than PBA Slasher[Ⓛ] and Genesis™836)
- Semi spreading plant type (similar to PBA Slasher[Ⓛ])
- Medium sized desi seed with excellent milling quality (larger than PBA Slasher[Ⓛ] and Genesis™836)

Neelam[Ⓛ]

- Highest yielding variety in 2010 NVT
- Ascochyta blight resistance is rated as (R) Resistant
- Mid flowering and mid maturity, adapted to most growing regions of southern Australia
- Medium/tall plant height, taller than PBA Slasher[Ⓛ]
- Seed size is 17g/100g, marginally larger than Genesis™836.

Ambar[Ⓢ]

- Desi chickpea variety that combines early flowering, competitive yield and ascochyta blight resistance
- Ascochyta blight resistance is rated as (R) Resistant
- It is the earliest flowering and earliest maturing of all current varieties making it particularly well suited to short season environments
- Bushy growth habit and profuse branching helps to utilize good growing conditions.
- Seed size is similar to GenesisTM836- 16g/100g
- A uniform seed size and light brown seed coat colour make it attractive for marketing.

PBA Maiden[Ⓢ]

- Largest seed size of current southern desi chickpea varieties (28% larger than PBA Slasher[Ⓢ])
- Targeted for whole seed markets (lower milling quality than PBA Slasher[Ⓢ])
- Moderately Resistant (MR) to ascochyta blight (similar to PBA Striker[Ⓢ] but less than PBA Slasher[Ⓢ])
- Moderate early vigour (better than PBA Slasher[Ⓢ] but less than PBA Striker[Ⓢ])
- Early to mid-flowering and maturity (earlier than PBA Slasher[Ⓢ] but later than PBA Striker[Ⓢ])
- Semi spreading plant type (similar to PBA Slasher[Ⓢ])

Conclusion

Commercial chickpea yields in Western Australia were well above the 5 year average in 2013 in the Geraldton and Kwinana port zones, on a similar area to previous seasons.

The relative variety performance of chickpea varieties met the expectations of industry based on long term data, and demonstrated yield improvement and adaptation to Western Australia. Growers should select varieties based on their ascochyta blight disease pressure/risk and growing season length/ rainfall environment (see variety descriptions and yield tables). PBA Maiden[Ⓢ] should only be considered for the medium to high rainfall/longer growing season environments where it may fully demonstrate its larger seed size.

Seed availability contact:

Seednet: PBA Slasher[Ⓢ] PBA Striker[Ⓢ], PBA Maiden[Ⓢ] E: admin@seednet.com.au

T: 1300 799 246

Heritage Seeds: Neelam[Ⓢ], Ambar[Ⓢ] E: orders@heritageseeds.com.au

T: 1800 007 333

Key words

Chickpea, variety, yield

Paper reviewed by: Caroline Peek, DAFWA