

# PBA Maiden<sup>®</sup>

## Desi Chickpea



# PBA

PULSE BREEDING AUSTRALIA

*Better pulse varieties faster*

## Large seeded, early to mid flowering chickpea



### MAIN ADVANTAGES

PBA Maiden<sup>®</sup> is a large seeded desi chickpea suitable for the medium to low rainfall environments of southern Australia. It is broadly adapted to these regions and has shown similar yields to PBA Slasher<sup>®</sup>.

PBA Maiden<sup>®</sup> is Moderately Resistant (MR) to foliar infection by ascochyta blight (equal to PBA Striker<sup>®</sup>). It has a semi-spreading plant type and height similar to PBA Slasher<sup>®</sup>.

Seed size is greater than current southern desi varieties (28 % larger than PBA Slasher<sup>®</sup>) with a yellow-tan seed coat. Larger uniform seed size is more likely in medium rainfall regions.

PBA Maiden<sup>®</sup> is well suited to whole seed desi markets such as those in Bangladesh.

### SEED PROTECTION & ROYALTIES

PBA Maiden<sup>®</sup> is protected under Plant Breeder's Rights (PBR) legislation. Growers can only retain seed from their production of PBA Maiden<sup>®</sup> for their own use.

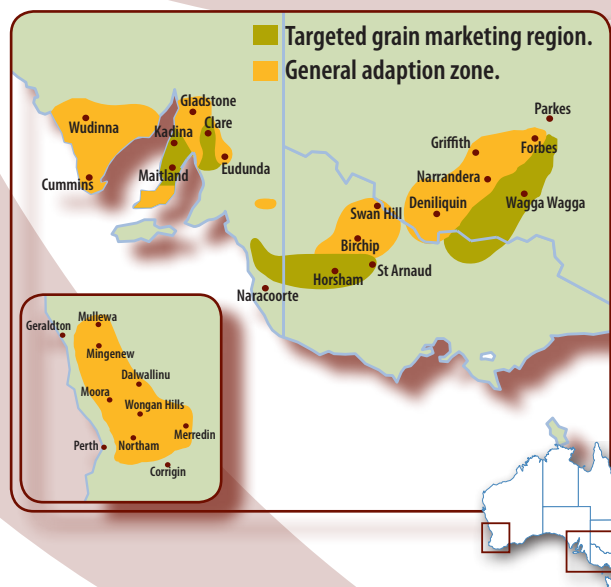
An End Point Royalty (EPR) of \$4.40 per tonne (GST inclusive), which includes breeder royalties, applies upon delivery of this variety.

Seed is available from the commercial partner Seednet.

### KEY FEATURES

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

### AREA OF ADAPTATION



### YIELD & ADAPTATION

PBA Maiden<sup>®</sup> has similar adaptation to PBA Slasher<sup>®</sup> in the medium to low rainfall areas of southern Australia where chickpea is currently or has previously been grown. Yields of PBA Maiden<sup>®</sup> are similar to PBA Striker<sup>®</sup> in south eastern Australia.

PBA Maiden<sup>®</sup> is not recommended in high rainfall regions of south eastern Australia due to its lower resistance to ascochyta blight relative to PBA Slasher<sup>®</sup>.

PBA Maiden<sup>®</sup> is not adapted to northern NSW or southern Qld as it is susceptible to phytophthora root rot.

Long-term yield of desi chickpea (% of PBA Slasher<sup>®</sup>) in Victoria and southern NSW (2005-2012)

Variety	Victoria		Southern NSW	
	Mallee	Wimmera	East	West
<b>PBA Maiden<sup>®</sup></b>	<b>99</b>	<b>100</b>	<b>99</b>	<b>97</b>
PBA Slasher <sup>®</sup>	100	100	100	100
PBA Striker <sup>®</sup>	97	98	100	101
Ambar <sup>®</sup>	96	95	-	-
Neelam <sup>®</sup>	101	101	-	-
PBA Boundary <sup>®</sup>	93	94	99	99
PBA HatTrick <sup>®</sup>	92	93	96	95
Genesis <sup>™</sup> 079*	97	96	99	97
Genesis <sup>™</sup> 090*	92	94	95	94

Long-term yield of desi chickpea (% of PBA Slasher<sup>®</sup>) in South Australia (2005-2012)

Variety	Eyre Peninsula		Yorke	Mid North	South East
	Lower	Upper			
<b>PBA Maiden<sup>®</sup></b>	<b>100</b>	<b>101</b>	<b>102</b>	<b>100</b>	<b>102</b>
PBA Slasher <sup>®</sup>	100	100	100	100	100
PBA Striker <sup>®</sup>	103	105	103	101	101
Ambar <sup>®</sup>	100 <sup>^</sup>	99 <sup>^</sup>	100 <sup>^</sup>	93 <sup>^</sup>	99 <sup>^</sup>
Neelam <sup>®</sup>	101 <sup>^</sup>	102 <sup>^</sup>	100 <sup>^</sup>	99 <sup>^</sup>	100 <sup>^</sup>
Genesis <sup>™</sup> 079*	99	95	101	99	99
Genesis <sup>™</sup> 090*	92	84	92	91	95
PBA Slasher <sup>®</sup> (t/ha)	1.85	0.92	2.08	2.13	2.03

Long-term yield of desi chickpea (% of Genesis<sup>™</sup> 836) in Western Australia (2005-2012)

Variety	Agzone 1	Agzone 2	Agzone 4
<b>PBA Maiden<sup>®</sup></b>	<b>103</b>	<b>102</b>	<b>100</b>
PBA Slasher <sup>®</sup>	104	104	103
PBA Striker <sup>®</sup>	113	112	111
Ambar <sup>®</sup>	103	102	101
Genesis <sup>™</sup> 836	100	100	100
Neelam <sup>®</sup>	107	109	105
Genesis <sup>™</sup> 836 (t/ha)	1.36	1.14	1.05

Source: Trial results from Pulse Breeding Australia (PBA) and National Variety Trials (NVT) programs

\* Genesis<sup>™</sup> 079 and Genesis<sup>™</sup> 090 are small kabulis

<sup>^</sup> = less than 5 trials in region

## DISEASE MANAGEMENT

### Ascochyta blight (AB)

PBA Maiden<sup>®</sup> is Moderately Resistant (MR) to foliar infections, similar to PBA Striker<sup>®</sup>. Resistance is greater than Genesis<sup>™</sup> 836, but less than Genesis<sup>™</sup> 090 and PBA Slasher<sup>®</sup>.

- PBA Maiden<sup>®</sup> is likely to require at least one fungicide application during the vegetative phase, 8-10 weeks after sowing. Monitor the crop 10-14 days after each rain event. If ascochyta blight is detected, apply a registered fungicide immediately prior to next rain event and continue monitoring.
- In all regions, monitor crops and apply fungicides from the start of podding prior to rainfall to prevent seed infection. PBA Maiden<sup>®</sup> flowers earlier than PBA Slasher<sup>®</sup>, Genesis<sup>™</sup> 836 and Genesis<sup>™</sup> 090, so pod sprays will be required earlier.

### Botrytis grey mould (BGM)

PBA Maiden<sup>®</sup> is Susceptible (S) to BGM similar to PBA Slasher<sup>®</sup>, PBA Striker<sup>®</sup> and Genesis<sup>™</sup> 836.

- Early sowing, coupled with favourable growing conditions in spring can lead to crops with large biomass, making them prone to lodging.
- Apply a preventative fungicide immediately prior to canopy closure in BGM prone areas and continue to monitor in spring as temperatures and humidity rise.
- Apply a registered fungicide if BGM has been identified.

A registered fungicide seed dressing is recommended for early control of seedling root rots, ascochyta blight and botrytis grey mould.

### Agronomic and disease resistance traits of desi and small kabuli chickpea varieties

Variety	Early vigour	Flowering	Maturity	Plant Height	Lodging at Maturity	Botrytis Grey Mould	Ascochyta blight		Yield under very high (AB) pressure (t/ha)		
							Foliage/ Stem	Pod	Fort-nightly	Nil	% Yield loss
PBA Maiden <sup>®</sup>	Mod	Early-Mid	Mid	Short-Med	MS	S	MR	S	1.42	1.28	10
PBA Slasher <sup>®</sup>	Poor/Mod	Mid	Mid	Short-Med	MS	S	R	S	1.85	1.50	19
PBA Striker <sup>®</sup>	Good	Early	Early	Short-Med	MS	S	MR	S	1.53	0.98	36
Ambar <sup>®</sup> #	-	Early	Early	Short-Med	-	S	R	S	-	-	-
Genesis <sup>™</sup> 836	Mod/Good	Mid/Late	Mid/Late	Tall	MR	S	MS	S	1.28	0.60	53
Neelam <sup>®</sup> #	-	Mid	Mid	Med-Tall	-	S	R	S	-	-	-
PBA Boundary <sup>®</sup>	Mod	Mid/Late	Mid/Late	Tall	MR	S	MR	S	1.64	1.03	37
PBA HatTrick <sup>®</sup>	Mod	Mid/Late	Mid/Late	Tall	MR	S	MR	S	1.60	1.01	37
Genesis <sup>™</sup> 079	Good	Early	Early	Short	MS	S	R	S	1.67	1.12	33
Genesis <sup>™</sup> 090	Good	Mid	Mid	Med	MR	S	R	S	1.32	1.29	2

VS = Very Susceptible, S = Susceptible, MS = Moderately Susceptible, MR = Moderately Resistant, R = Resistant

Disease ratings produced by PBA following variety performance in numerous disease nurseries across southern Australia

Source of yield loss data: PBA, Horsham Victoria 2009

#Provisional agronomic and disease ratings produced by COGGO parties

## AGRONOMY

### Agronomic characteristics

Paddock selection and agronomic requirements for growing PBA Maiden<sup>®</sup> are similar to those for other desi chickpea varieties. PBA Maiden<sup>®</sup> has the following characteristics:

- Early to mid flowering, approximately 3-5 days earlier than PBA Slasher<sup>®</sup>.
- Earlier maturing than PBA Slasher<sup>®</sup> and Genesis<sup>™</sup> 836, but later than PBA Striker<sup>®</sup>.
- Plant height and lowest pod height is similar to PBA Slasher<sup>®</sup> but lower than Genesis<sup>™</sup> 836.
- Semi spreading plant type with lodging resistance similar to PBA Slasher<sup>®</sup>.
- Intolerant of salt, similar to Genesis<sup>™</sup> 510, but less tolerant than Genesis<sup>™</sup> 836.

### Herbicide tolerance

- PBA Maiden<sup>®</sup> is equivalent to other chickpea varieties.

### Sowing

- Target the optimum planting window for desi chickpeas in your area, but avoid very early sowing (to minimise the risk of lodging).
- Sow high quality seed at rates calculated to achieve 40 to 50 plants/m<sup>2</sup> establishment.
- Inoculate with Group N chickpea rhizobium.

### Virus

- PBA Maiden<sup>®</sup> is rated as Susceptible (S) to the suite of viruses, similar to other desi varieties.
- Retention of cereal stubble, timely sowing and establishment of the recommended plant population (see above) provide the most effective management in virus-prone districts.

REFER TO DETAILED INFORMATION AT [www.pulseaus.com.au](http://www.pulseaus.com.au)  
 Ute guides, crop and disease management bulletins

# PBA Maiden<sup>®</sup>

## Desi Chickpea



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PBA is an unincorporated joint venture between the GRDC, University of Adelaide, University of Sydney, SARDI, DEPI Victoria, NSW-DPI, DAFF QLD, DAFWA and Pulse Australia. It aims to deliver better pulse varieties faster.

### SEED QUALITY

PBA Maiden<sup>®</sup> is a large angular shaped desi chickpea that has been assessed as suitable for direct consumption use by traders in India and the Middle East. It is much larger in size than PBA Slasher<sup>®</sup> (28% larger) and has a yellow-tan seed colour.

The seed attributes of PBA Maiden<sup>®</sup> are well suited to the specific requirements of whole seed markets (such as Bangladesh) which is a smaller market than the bulk desi split market. Before growing PBA Maiden<sup>®</sup> investigate delivery and marketing options in your region.

PBA Maiden<sup>®</sup> has good milling quality, as measured by dhal yield, it is better than Genesis<sup>™</sup> 509, and Genesis<sup>™</sup> 836 (2-4% higher), but lower than PBA Slasher<sup>®</sup>.

The dhal has the distinct dimpling required by Indian markets to differentiate it from field pea dhal. Dhal colour of PBA Maiden<sup>®</sup> is very similar to that of PBA Slasher<sup>®</sup>.

Variety	Seed weight (g/100 seed)	Seed size (%)		Dhal yield (%)
		7 mm	6 mm	
PBA Maiden <sup>®</sup>	23.7	70	21	66.9
PBA Slasher <sup>®</sup>	18.5	33	60	68.9
PBA Striker <sup>®</sup>	21.9	68	23	68.0
Genesis <sup>™</sup> 509	16.0	17	73	66.6
Genesis <sup>™</sup> 836	18.6	51	46	62.5
Howzat	20.0	55	38	68.2
PBA Boundary <sup>®</sup>	19.1	49	45	67.9

**Source:** Pulse Breeding Australia  
Data is average of 11 sites in southern Australia across 4 years (2009-12)



PBA Maiden<sup>®</sup>



PBA Slasher<sup>®</sup>

### PULSE AGRONOMY

Agronomy management information has been compiled from experiments conducted by the 'Southern region pulse agronomy project' co-funded by GRDC, SARDI, DEPI Victoria and NSW DPI.

### BREEDING

PBA Maiden<sup>®</sup> (evaluated as CICA0717) was developed by the PBA chickpea program (led by NSW Dept of Primary Industries) from a cross between an adapted breeding line (940-105), Howzat and the ascochyta resistant Iranian landrace ICC3996.

Disclaimer: Recommendations have been made from information available to date and considered reliable, and will be updated as further information comes to hand. Readers who act on this information do so at their own risk. No liability or responsibility is accepted for any actions or outcomes arising from use of the material contained in this publication. Reproduction of this brochure in any edited form must be approved by Pulse Breeding Australia © 2013

Version September/2013

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### SEED ENQUIRIES

#### Seednet

#### National Production and Logistics Office

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Seednet's mission is:

***"To deliver high performance seed based genetics to Australian grain growers and end user customers via superior product and service delivery channels".***

Seednet is proud to partner with Pulse Breeding Australia and invest in the improvement of Australian chickpea varieties.

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