

# PBA Giant<sup>®</sup>

## Large green lentil



# PBA

PULSE BREEDING AUSTRALIA

*Better pulse varieties faster*

## High yielding large green lentil



### KEY FEATURES

- High yielding large green lentil variety with improved yield over Boomer<sup>®</sup> in Victoria (5-10% on average) and similar yield in South Australia
- Improved shattering resistance compared to Boomer<sup>®</sup>
- Largest seed size Australian green lentil variety
- Broadly adapted variety, best suited to medium rainfall lentil growing regions
- Good early vigour, similar to PBA Ace<sup>®</sup> and Boomer<sup>®</sup>
- Moderately resistant to ascochyta blight
- Improved tolerance to soil boron, similar to PBA Jumbo<sup>®</sup>, PBA Flash<sup>®</sup> and PBA Bolt<sup>®</sup>
- Well suited to the removal of small broadleaf weed seeds from the harvested sample
- A uniform large seed size green lentil, with an average diameter of 5.8 mm (average grain weight of 7 g/100 seeds)
- Domestic market opportunity

### MAIN ADVANTAGES

PBA Giant<sup>®</sup> is a large seeded green lentil, which fits into the Canadian origin "Laird" market class, a significant category of lentils on the world market.

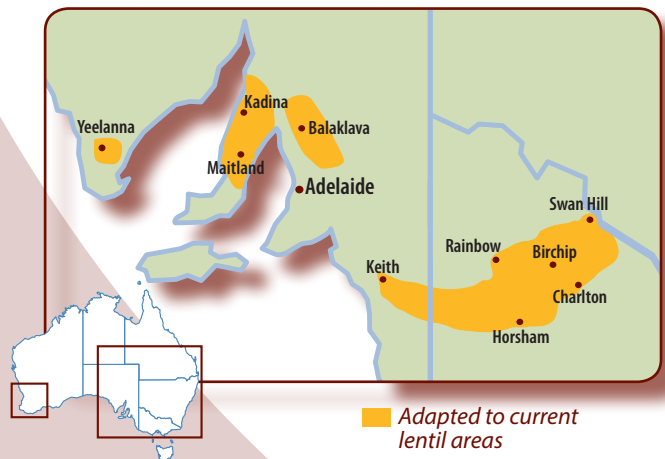
PBA Giant<sup>®</sup> is a significant improvement on the large green lentil variety Boomer<sup>®</sup>, which has only been in limited production. PBA Giant<sup>®</sup> provides an excellent opportunity to Australian growers for green lentil production in Australia, to target our domestic market and replace imported product. There is also potential for export markets. On-farm storage will be important for growers of this variety for strategic marketing.

### SEED PROTECTION & ROYALTIES

PBA Giant<sup>®</sup> is protected under Plant Breeder's Rights (PBR) legislation. A PBR bag licence and licence fee applies to the seed. Authorised growers can retain seed from production of PBA Giant<sup>®</sup> for their own seed use but not sell seed to other growers.

An End Point Royalty (EPR) of \$5.50/t (incl. GST) applies to this variety when delivered to authorised EPR collectors. Seed is commercialised through PBSeeds and available from 2014.

### AREA OF ADAPTATION



### YIELD & ADAPTATION

PBA Giant<sup>®</sup> has a long term average yield advantage of 5% over Nugget and 5-10% over Boomer<sup>®</sup> in lentil growing regions of Victoria. In South Australia, PBA Giant<sup>®</sup> yields similarly or slightly above Boomer<sup>®</sup>, with a consistently larger seed size. PBA Giant<sup>®</sup> has more resistance to seed shattering at maturity, improving harvest reliability.

As this variety is intended for high quality grain markets, viruses, diseases and insect pests will need to be managed vigilantly to protect the visual appearance of the large green seeds. Higher yield potentials will also be achieved in these areas if diseases are adequately managed.

2007-13 LONG-TERM YIELD OF LENTIL VARIETIES (*Yields expressed as a percentage of Nugget)											
	South Australia					Victoria		New South Wales		Western Australia	
	Yorke P	Mid North	Lower EP	Murray Mallee	South East	Wimmera	Mallee	South East	South West	AgZone 1	AgZone 2
<b>Mean Region Yield (t/ha)</b>	<b>2.78</b>	<b>2.28</b>	<b>1.40</b>	<b>1.22</b>	<b>1.59</b>	<b>1.51</b>	<b>1.13</b>	<b>1.15</b>	<b>1.31</b>	<b>1.30</b>	<b>1.31</b>
<b>Green lentils</b>											
PBA Greenfield <sup>®</sup>	111	111		114*	113*	112	114	116*	110*	111*	98*
<b>PBA Giant<sup>®</sup></b>	<b>98*</b>	<b>103*</b>				<b>106*</b>	<b>112*</b>	<b>112*</b>	<b>103*</b>	<b>101*</b>	<b>101*</b>
Boomer <sup>®</sup>	102	102	101	97	103	102	102	102	102	101	90
<b>Small red</b>											
PBA Bounty <sup>®</sup>	102	102	105	105	92	99	103	109	101	109	98
PBA Herald XT <sup>®</sup>	90	92	92	102	98	96	93	89	91	90	121
PBA Hurricane XT <sup>®</sup>	105	107	107*	119	114	110	111	111	104	106	114
Nipper <sup>®</sup>	97	96	100	94	96	95	87	85	90	92	101
Northfield	88	92	90	91	95	93	92	88	89		
<b>Medium red</b>											
PBA Ace <sup>®</sup>	107	111	105	123	119	116	124	124	115	112	114
PBA Blitz <sup>®</sup>	106	106	115	112	99	102	96	101	93	106	100
PBA Bolt <sup>®</sup>	101	109	108	126	120	114	119	119	101	104	109
PBA Flash <sup>®</sup>	105	109	114	116	114	109	103	105	94	102	98
Nugget	100	100	100	100	100	100	100	100	100	100	100
<b>Large red</b>											
PBA Jumbo <sup>®</sup>	110	108	112	107	103	105	102	106	103	109	93
PBA Jumbo2 <sup>®</sup>	119	117	118*	129*	117*	118	121	126*	117*	122*	111*
Aldinga	96	98	99	100	95	97	101	102	97		

#Data courtesy of NVT, PBA, SARDI, DEPI Victoria, NSW-DPI. Includes up to seven years of data, where available.\*Note, these average yields based on <3 years of data

AGRONOMIC AND DISEASE TRAITS OF LENTIL VARIETIES										
	Vigour	Flowering time	Maturity	Lodging resistance	Pod drop	Shattering	Ascochyta blight (foliar)	Botrytis Grey Mould	Boron	Salt
<b>Green lentils</b>										
PBA Greenfield <sup>®</sup>	Good	Mid	Mid/Late	MS	R	MR	MR	MR	I	MI
<b>PBA Giant<sup>®</sup></b>	<b>Good</b>	<b>Mid</b>	<b>Mid/Late</b>	<b>MS</b>	<b>R</b>	<b>MR/MS</b>	<b>MR</b>	<b>MS</b>	<b>MI</b>	<b>I</b>
Boomer <sup>®</sup>	Good	Mid	Mid/Late	S	R	S	MR	MR/MS	MI	I
<b>Small red</b>										
PBA Bounty <sup>®</sup>	Mod	Mid/Late	Mid	S	R	R	MR/MS	MS	I	MI
PBA Herald XT <sup>®</sup>	Mod/Poor	Mid/Late	Mid/Late	MR/MS	MR	MR	R	R	I	I
PBA Hurricane XT <sup>®</sup>	Mod	Mid	Mid	MR	MR	R	MR	MR/MS	I	I
Nipper <sup>®</sup>	Mod/Poor	Mid/Late	Mid	MR	MR	MR	MR/MS	R	I	MT
Northfield	Mod/Poor	Mid	Mid	MR/MS	MR/MS	MR	MR	S	I	I
<b>Medium red</b>										
PBA Ace <sup>®</sup>	Good	Mid	Mid	MR/MS	R	MR/MS	R	MR/MS	I	I
PBA Blitz <sup>®</sup>	Mod/Good	Early	Early	MR	MR	MR	MR	MR	I	I
PBA Bolt <sup>®</sup>	Mod/Good	Early/Mid	Early/Mid	R	R	R	MR	S	MI	MI
PBA Flash <sup>®</sup>	Mod	Early/Mid	Early/Mid	MR	MR	MR	MS	MR/MS	MI	MI
Nugget	Mod	Mid	Mid/Late	MS	R	R	MR/MS	MR/MS	I	I
<b>Large red</b>										
PBA Jumbo <sup>®</sup>	Mod	Mid	Mid	MS	MR	MR	MR/MS	MS	MI	I
PBA Jumbo2 <sup>®</sup>	Mod/Good	Mid	Mid	MR/MS	MR	R	R	R	MI	I
Aldinga	Mod	Mid	Mid	S	R	MR/MS	MR/MS	MS	I	MI

Key: Mod=moderate, S=susceptible, MS=moderately susceptible, MR=moderately resistant, R=resistant, I=intolerant, MI=moderately intolerant, MT=moderately tolerant.

### DISEASE MANAGEMENT

A fungicide seed dressing is beneficial for the early control of seedling root rots and BGM.

#### Ascochyta blight (AB)

- PBA Giant<sup>Ⓛ</sup> has shown a good level of foliar disease resistance to ascochyta blight (AB) and is rated moderately resistant (MR) however disease prevention strategies may be still required to ensure high quality grain. Foliar resistance is similar to PBA Blitz<sup>Ⓛ</sup>, while being significantly better than PBA Flash<sup>Ⓛ</sup>, Nipper<sup>Ⓛ</sup> and PBA Jumbo<sup>Ⓛ</sup>.
- Preliminary results indicate that the large green seed of this variety can be vulnerable to staining by AB, therefore fungicide sprays during the podding stage are recommended. Earlier sprays during flowering may also be required to minimise subsequent pod infection.
- Crops should be monitored in severe disease risk environments and if disease symptoms are detected, fungicide should be applied prior to canopy closure, and before subsequent rainfall events.

#### Botrytis Grey Mould (BGM)

- PBA Giant<sup>Ⓛ</sup> is rated moderately susceptible (MS) to BGM and its susceptibility will mean this disease needs to be managed in areas prone to it.
- In BGM prone areas, monitor crop growth and apply a preventative foliar fungicide just prior to canopy closure. Further monitoring and sprays may be required in areas with long growing seasons and when plant growth is high and/or prolonged wet spring conditions occur.

### VIRUS MANAGEMENT

Virus management is important to avoid grain blemishes, infected seed and yellow stunted plants.

- For viral diseases a threshold of <0.1% seed infection is recommended for sowing in high risk areas, and <0.5% seed infection for sowing in low risk areas. Use virus free seed where possible. Avoid keeping sowing seed from areas of the crop containing plants with virus symptoms.
- The spread of virus can be managed by controlling summer weed hosts for virus, ensuring the crop covers the ground quickly, the early application of insecticide to control aphids, and seasonal monitoring and control of aphids.

### AGRONOMY

#### Agronomic characteristics

Paddock selection and basic requirements for growing PBA Giant<sup>Ⓛ</sup> are similar to other lentil varieties, including the control of insect pests, lucerne seed web moth (*Etiella*) and native budworm (*Helicoverpa*) for high quality grain.

PBA Giant<sup>Ⓛ</sup> has the following specific characteristics:

- Mid-flowering and mid-late maturing.
- PBA Giant<sup>Ⓛ</sup> has good early vigour which may improve weed competition compared to older varieties of lentils.
- PBA Giant<sup>Ⓛ</sup> is rated moderately susceptible (MS) to lodging. Under conditions of high plant biomass, crops can lodge at maturity.

#### Sowing

- PBA Giant<sup>Ⓛ</sup> is suitable for sowing times similar to PBA Flash<sup>Ⓛ</sup>, Boomer<sup>Ⓛ</sup> and Nugget. Target plant densities of 120 plants/m<sup>2</sup> adjusting sowing rates to the large seed size of this variety and germination percentage of seed used each year.
- Sowing into standing stubble may help improve harvestability and grain quality.

#### Herbicide tolerance

- PBA Giant<sup>Ⓛ</sup> has not shown sensitivity to any registered herbicides different to label advice and applied according to label directions.

#### Crop topping and harvest

- As a mid to late maturing variety, PBA Giant<sup>Ⓛ</sup> matures at a similar time to Nugget and Boomer<sup>Ⓛ</sup>.
- Optimising seed quality is critical in green lentils, so correct timing for crop topping, timely harvest and optimum machine setup is important to optimise seed quality. Timely harvest is particularly important for the maintenance of a fresh green coloured seed coat for market appeal.
- PBA Giant<sup>Ⓛ</sup> is rated MR/MS to shattering (dropping seeds at maturity). It is significantly better than Boomer<sup>Ⓛ</sup> for this characteristic, but shattering may be a problem if wet weather occurs at maturity. Timely harvest is necessary to minimise losses to shattering.
- Due to its large seed size, PBA Giant<sup>Ⓛ</sup> is well suited to screening for the removal of small broadleaf weed seeds from the harvested sample.

### QUALITY

#### Seed characteristics

PBA Giant<sup>Ⓛ</sup> is a large sized green lentil (yellow cotyledon with a green seed coat) which is significantly larger than another large green lentil, Boomer<sup>Ⓛ</sup> (20% larger as measured by 100 seed weight). PBA Giant<sup>Ⓛ</sup> also has a more consistent seed size than Boomer<sup>Ⓛ</sup> which will be favourable for marketing. Seed size of any lentil variety may vary between seasons and locations.



PBA Giant<sup>Ⓛ</sup>



PBA Greenfield<sup>Ⓛ</sup>



Boomer<sup>Ⓛ</sup>

# PBA Giant<sup>®</sup>

## Large green lentil



### Quality assurance

Seed purity is very important in lentils with a restriction of 1% for varieties not of the same type. Prevent seed contamination when changing varieties, particularly where cotyledon or seed coat colour differs. Be particularly careful to avoid contamination of PBA Giant<sup>®</sup> with red lentils, as the red seeds will contaminate the product appearance and reduce its value.

Variety	Market category	Seed shape	Seed coat colour	Coty-ledon colour	Seed size (%) relative to Nugget
<b>Green lentils</b>					
PBA Greenfield <sup>®</sup>	MG	Lens	Green	Yellow	130%
<b>PBA Giant<sup>®</sup></b>	<b>LG</b>	<b>Lens</b>	<b>Green</b>	<b>Yellow</b>	<b>170%</b>
Boomer <sup>®</sup>	LG	Lens	Green	Yellow	150%
<b>Small red</b>					
PBA Bounty <sup>®</sup>	SRP	Round	Grey	Red	85%
PBA Herald XT <sup>®</sup>	SRS	Lens	Grey	Red	75%
PBA Hurricane XT <sup>®</sup>	SRP	Round	Grey	Red	85%
Nipper <sup>®</sup>	SRP	Round	Grey	Red	75-80%
Northfield	SRP	Round	Tan	Red	80%
<b>Medium red</b>					
PBA Ace <sup>®</sup>	MRS	Lens	Grey	Red	100%
PBA Blitz <sup>®</sup>	MRS	Lens	Grey	Red	115-120%
PBA Bolt <sup>®</sup>	MRS	Lens	Grey	Red	100%
PBA Flash <sup>®</sup>	MRS	Lens	Green	Red	100-110%
Nugget	MRS	Lens	Grey	Red	100%
<b>Large red</b>					
PBA Jumbo <sup>®</sup>	LRS	Lens	Grey	Red	120%
PBA Jumbo2 <sup>®</sup>	LRS	Lens	Grey	Red	120%
Aldinga	LRS	Lens	Green	Red	120%

Key: SRS=small red (split), SRP=small red (premium round), MRS=medium red (split), MRD=medium red (dual purpose), LRS=large red (split), LG=large green, MG=Medium green

### MARKETING

- PBA Giant<sup>®</sup> is well suited to the human food market for large sized green lentil, mostly to be consumed whole.
- There are excellent prospects for this variety to be sold into the domestic market, replacing imported product, with potential for exports.
- PBA Giant<sup>®</sup> is expected to fit into the Canadian large green "Laird" market class. It should be segregated for marketing unless otherwise stated. As this is an emerging market class for Australian growers, on farm storage prior to marketing is likely to be necessary.
- PBA Giant<sup>®</sup> will be open marketed with an End Point Royalty (EPR) of \$5.50/t (incl. GST), applied upon delivery.

### BREEDING

PBA Giant<sup>®</sup> (evaluated as CIPAL1207) was developed by conventional plant breeding techniques, selected from a cross of the variety Boomer<sup>®</sup> and PBA Flash<sup>®</sup>.

PBA Giant<sup>®</sup> is part of a pipeline of varieties that will be released by PBA. PBA formed a commercial partnership with PBSeeds to multiply, manage and release PBA lentil varieties. PBSeeds and PBA are delivering varieties to growers 2-4 years earlier by fast tracking the identification, multiplication and release of new varieties. The Southern Pulse Agronomy program has been integral to this process.

PBA is an unincorporated joint venture between the GRDC, University of Adelaide, SARDI, DEPI Victoria, I&I NSW, DEEDI, DAFWA and Pulse Australia. It aims to deliver better pulse varieties faster.

### FOR MORE INFORMATION

**Pulse Breeding Australia**  
www.grdc.com.au/pba

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### SEED ENQUIRIES

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At PBSeeds we are leaders in the production of fine quality seed and grains. We take great care and pride in ensuring we match our customer's requirements. PBSeeds is proud to partner with PBA and invests in the improvement of Australian lentil varieties.

### FOR MORE INFORMATION

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