

PBA Jumbo2[®]

Large red lentil



PBA

PULSE BREEDING AUSTRALIA

Better pulse varieties faster

High yielding disease resistant red lentil



MAIN ADVANTAGES

PBA Jumbo2[®] is the highest yielding lentil variety available in Australia, outperforming all other current varieties in medium-rainfall lentil growing regions. It is a broadly adapted large red variety which now outclasses the other two large red types, PBA Jumbo[®] and Aldinga. It has combined resistance to the major diseases of lentils in Australia, ascochyta blight and botrytis grey mould. This will assist in achieving consistent high grain quality for the market.

SEED PROTECTION & ROYALTIES

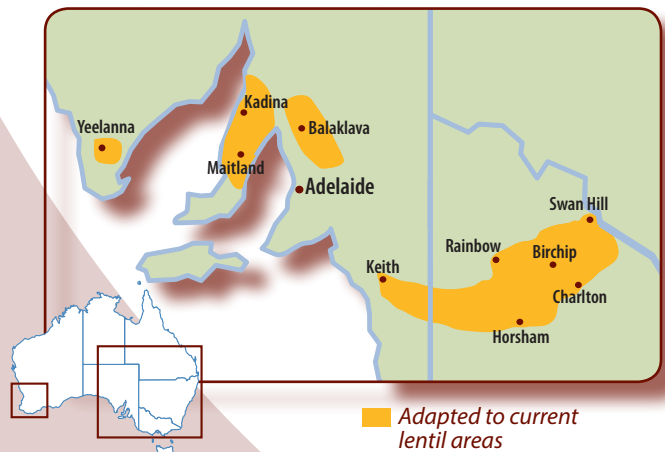
PBA Jumbo2[®] is protected under Plant Breeder's Rights (PBR) legislation. A PBR bag licence and licence fee applies to the seed. Authorised growers can retain seed from production of PBA Jumbo2[®] for their own seed use but not sell seed to other growers.

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.

KEY FEATURES

- High yielding red lentil variety (average yield 9-13% higher than PBA Jumbo[®])
- Higher yielding replacement for PBA Jumbo[®] and Aldinga in all areas
- Mid-maturing, broadly-adapted variety
- Resistant to ascochyta blight and botrytis grey mould
- Suitable for early sowing to maximise yield
- Improved early vigour and improved lodging resistance over PBA Jumbo[®] and Aldinga
- Improved tolerance to soil boron, similar to PBA Jumbo[®], PBA Flash[®] and PBA Bolt[®]
- Large red lentil similar in size to PBA Jumbo[®] and Aldinga
- High quality grain with a grey seed coat
- Well suited to the removal of small broadleaf weed seeds from the harvested sample

AREA OF ADAPTATION



pbseeds
where every seed counts

another lentil upgrade

YIELD & ADAPTATION

PBA Jumbo2[Ⓛ] has a long term average yield advantage of 18% over Nugget in key medium-rainfall lentil growing regions (Wimmera, Yorke Peninsula and Mid-North of South Australia). In these regions, PBA Jumbo2[Ⓛ] also yields significantly better than PBA Jumbo[Ⓛ] on average (9% higher in SA and 13% higher in Victoria).

The high level of disease resistance in this variety will be beneficial in medium to higher rainfall lentil growing regions and in areas where early sowing is required.

The yield potential of PBA Jumbo2[Ⓛ] will be best realised in favourable years where moisture is not limiting. In drier, shorter seasons, varieties such as PBA Bolt[Ⓛ] may be better adapted.

2007-2013 LONG-TERM YIELD OF LENTIL VARIETIES (#Yields expressed as a percentage of Nugget's yield)											
	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
Mean Region Yield (t/ha)	2.78	2.28	1.40	1.22	1.59	1.51	1.13	1.15	1.31	1.30	1.31
Small red											
PBA Bounty [Ⓛ]	102	102	105	105	92	99	103	109	101	109	98
PBA Herald XT [Ⓛ]	90	92	92	102	98	96	93	89	91	90	121
PBA Hurricane XT [Ⓛ]	105	107	107*	119	114	110	111	111	104	106	114
Nipper [Ⓛ]	97	96	100	94	96	95	87	85	90	92	101
Northfield	88	92	90	91	95	93	92	88	89		
Medium red											
PBA Ace [Ⓛ]	107	111	105	123	119	116	124	124	115	112	114
PBA Blitz [Ⓛ]	106	106	115	112	99	102	96	101	93	106	100
PBA Bolt [Ⓛ]	101	109	108	126	120	114	119	119	101	104	109
PBA Flash [Ⓛ]	105	109	114	116	114	109	103	105	94	102	98
Nugget	100	100	100	100	100	100	100	100	100	100	100
Large red											
PBA Jumbo [Ⓛ]	110	108	112	107	103	105	102	106	103	109	93
PBA Jumbo2[Ⓛ]	119	117	118*	129*	117*	118	121	126*	117*	122*	111*
Aldinga	96	98	99	100	95	97	101	102	97		
Green lentils											
PBA Greenfield [Ⓛ]	111	111		114*	113*	112	114	116*	110*	111*	98*
PBA Giant [Ⓛ]	98*	103*				106*	112*	112*	103*	101*	101*
Boomer [Ⓛ]	102	102	101	97	103	102	102	102	102	101	90

#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	Flower time	Maturity	Lodging resistance	Pod drop	Shattering	Ascochyta blight (foliar)	Botrytis Grey Mould	Boron	Salt
Small red										
PBA Bounty [Ⓛ]	Mod	Mid/Late	Mid	S	R	R	MR/MS	MS	I	MI
PBA Herald XT [Ⓛ]	Mod/Poor	Mid/Late	Mid/Late	MR/MS	MR	MR	R	R	I	I
PBA Hurricane XT [Ⓛ]	Mod	Mid	Mid	MR	MR	R	MR	MR/MS	I	I
Nipper [Ⓛ]	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
Medium red										
PBA Ace [Ⓛ]	Good	Mid	Mid	MR/MS	R	MR/MS	R	MR/MS	I	I
PBA Blitz [Ⓛ]	Mod/Good	Early	Early	MR	MR	MR	MR	MR	I	I
PBA Bolt [Ⓛ]	Mod/Good	Early/Mid	Early/Mid	R	R	R	MR	S	MI	MI
PBA Flash [Ⓛ]	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
Large red										
PBA Jumbo [Ⓛ]	Mod	Mid	Mid	MS	MR	MR	MR/MS	MS	MI	I
PBA Jumbo2[Ⓛ]	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
Green lentils										
PBA Greenfield [Ⓛ]	Good	Mid	Mid/Late	MS	R	MR	MR	MR	I	MI
PBA Giant [Ⓛ]	Good	Mid	Mid/Late	MS	R	MR/MS	MR	MS	MI	I
Boomer [Ⓛ]	Good	Mid	Mid/Late	S	R	S	MR	MR/MS	MI	I

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

DISEASE MANAGEMENT

PBA Jumbo2[®] has shown high levels of disease resistance to the two major diseases of lentil (ascochyta blight and botrytis grey mould). Its high level of disease resistance will mean that fungicides may not be required in many seasons therefore reducing production costs, however seasonal monitoring is still required.

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

Ascochyta blight (AB)

- PBA Jumbo2[®] is rated as resistant (R) to foliar AB. Foliar resistance is better than Nipper[®] and similar to PBA Ace[®] and PBA Herald XT[®]. Seed resistance to AB is still to be validated.
- Crops should be monitored in severe disease risk environments and if disease symptoms are detected, fungicide should be applied from the start of podding, prior to subsequent rainfall events.

Botrytis Grey Mould (BGM)

- PBA Jumbo2[®] is rated resistant (R) to BGM which will assist in the management of this disease.
- In BGM prone areas, monitor crop growth and apply a preventative fungicide just prior to canopy closure. Further monitoring and sprays may be required when prolonged wet spring conditions occur and in areas with long growing seasons.

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 (sow early and avoid low sowing rates), the early application of insecticide to control aphids, and monitoring and control of aphids during the season.

AGRONOMY

Agronomic characteristics

Paddock selection and basic requirements for growing PBA Jumbo2[®] are similar to other lentil varieties.

PBA Jumbo2[®] has the following specific characteristics:

- Mid-flowering and maturing.
- Intolerant to salinity (NaCl) and is more sensitive than PBA Bolt[®], PBA Flash[®] and Nipper[®].

- Moderately intolerant of high soil boron, similar to PBA Jumbo[®], PBA Flash[®] and PBA Bolt[®].
- PBA Jumbo2[®] has a more upright plant type and is more resistant to lodging than PBA Jumbo[®] and Aldinga.

Sowing

- PBA Jumbo2[®] is likely to be suitable for early sowing to maximise grain yield at lower risk of disease.
- Target plant densities of 120 plants/m² adjusting sowing rates to the large seed size of this variety and germination % of seed used each year.

Herbicide tolerance

- PBA Jumbo2[®] has not shown sensitivity to any registered herbicides different to label advice and applied according to label directions.
- PBA Jumbo2[®] is not tolerant to imazethapyr herbicide. PBA Hurricane XT[®] and PBA Herald XT[®] are the only current lentil varieties tolerant of imazethapyr.

Crop topping and harvest

- PBA Jumbo2[®] matures at a similar time to PBA Hurricane XT[®], PBA Ace[®], PBA Jumbo[®] and Aldinga, but later than PBA Bolt[®], PBA Flash[®] and PBA Blitz[®].
- As with all lentils, correct timing for crop topping, timely harvest and optimum machine setup will optimise yield and seed quality.
- Due to its large seed size, PBA Jumbo2[®] is well suited to screening for the removal of small broadleaf weed seeds from the harvested sample.

QUALITY

Seed characteristics

PBA Jumbo2[®] is a large-sized red lentil with a grey seed coat. Seed size is 20% larger than PBA Ace[®] and Nugget (as measured by 100 seed weight). It is similar in size to Aldinga and PBA Jumbo[®]. Seed size of any lentil variety may vary between seasons and locations.

Quality testing has found that PBA Jumbo2[®] has good milling characteristics (dehulling and splitting efficiencies), similar to PBA Jumbo[®] and PBA Flash[®]. Cooking times for the split lentil product have been found to be similar to those of the variety Aldinga.



PBA Jumbo2[®]



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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 Jumbo2[Ⓛ] with green lentils, such as PBA Giant[Ⓛ], PBA Greenfield[Ⓛ] and Boomer[Ⓛ], as when split the yellow seeds will contaminate and reduce the value of the red lentil split product.

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

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 Jumbo2[Ⓛ] fits into the human food market for large-sized red lentil, particularly to be consumed whole or split. It is well placed to suit export markets which have traditionally bought the PBA Jumbo[Ⓛ] and Aldinga varieties.
- The disease resistance of this variety will assist it achieve high grain quality from receipt point to market.
- PBA Jumbo2[Ⓛ] should be segregated for marketing unless otherwise stated.
- PBA Jumbo2[Ⓛ] will be open marketed with an End Point Royalty (EPR) of \$5.50/t (incl. GST), applied upon delivery.

BREEDING

PBA Jumbo2[Ⓛ] (evaluated as CIPAL1203) was developed by conventional plant breeding techniques, selected from a cross of the variety Boomer[Ⓛ] with two PBA breeding lines, CIPAL205 and CIPAL401.

PBA Jumbo2[Ⓛ] 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

PBA Lentils

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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.

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