

PBA Magnus[®]

Large Kabuli Chickpea



PBA

PULSE BREEDING AUSTRALIA

Better pulse varieties faster

Large kabuli with improved yield



MAIN ADVANTAGES

PBA Magnus[®] is a large seeded kabuli chickpea. It is adapted to the medium rainfall chickpea growing regions of south eastern Australia where large seed size can be obtained. In these regions, it has improved grain yields across all yield environments compared to the current large seeded variety Genesis™ Kalkee. In the northern region, PBA Magnus[®] has higher or equal yields than Genesis™ Kalkee across all yield groups (1.0 to 4.0 t/ha). PBA Magnus[®] is the largest sized kabuli variety suitable for production in south eastern Australia, larger than Genesis™ Kalkee.

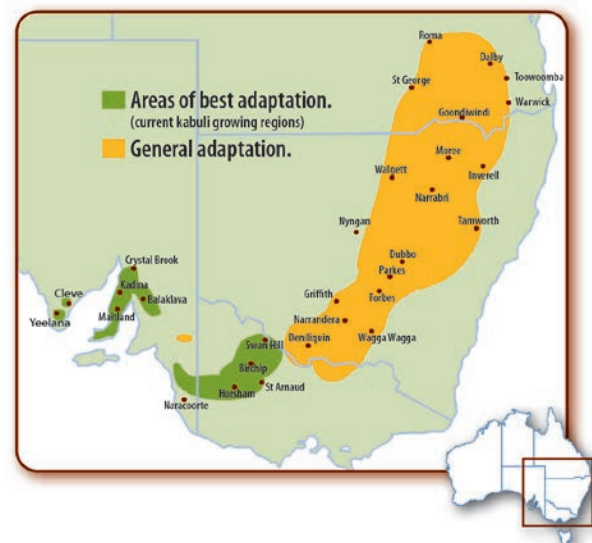
SEED PROTECTION & ROYALTIES

PBA Magnus[®] is protected under Plant Breeder's rights (PBR) legislation. Growers can only retain seed from their production of PBA Magnus[®] for their own use. An end point royalty (EPR) of \$7.15 per tonne (GST inclusive), which includes breeder royalties, applies upon delivery of this variety. Seed is available from the commercial partner PB Seeds.

KEY FEATURES

- Highest yielding large sized kabuli chickpea in medium rainfall environments in kabuli growing areas of Australia.
- Predominantly 9 mm (larger than Genesis™ Kalkee).
- Rated as moderately susceptible to Ascochyta blight (same as Genesis™ 090) in the southern GRDC cropping region and moderately susceptible to Ascochyta blight in the northern GRDC cropping region.
- Early to mid-flowering and maturity.
- Semi spreading plant type similar to Genesis™ 090.

AREA OF ADAPTATION



YIELD & ADAPTATION

In the dominant kabuli production zones of Victoria and South Australia, PBA Magnus[®] is the highest yielding kabuli with a large seed size across low and high yielding environments. It's greatest yield advantage over Genesis[™] Kalkee is in the shorter growing environments of South Australia and the southern Mallee region of Victoria.

This is due to it's earlier flowering and maturity compared to Genesis[™] Kalkee. In the northern region, PBA Magnus[®] has higher or equal yields than Genesis[™] Kalkee across all yield groups (1.0 to 4.0 t/ha). For yield data relevant to your region, please visit NVT Online, <https://app.nvtonline.com.au>. As with all kabuli varieties, PBA Magnus[®] is susceptible to Phythophthora root rot.

2015-2019 NVT long term predicted kabuli chickpea yield in SA and Victoria expressed as a percentage of mean yield.

		South Australia										Victoria									
		Yorke Peninsula					Mid North					Mallee					Wimmera				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Mean yield (t/ha)		1.45	2.27	2.21	1.18	0.71	2.39	1.38	2.96	2.74	1.81	0.40	1.51	1.55	0.52	1.43	0.56	1.94	1.95	1.66	1.35
No. of trials		2	2	2	2	2	2	1	1	1	1	1	2	2	2	2	1	2	3	3	3
Variety	Seed size																				
PBA Magnus[®]	Lge	106	98	100	103	115	107	112	98	109	104	108	98	102	104	104	102	100	96	104	103
Genesis [™] Kalkee	Lge	89	93	95	90	93	94	99	103	96	91	82	84	96	96	92	87	91	95	105	91
PBA Monarch [®]	Med	104	88	100	103	100	99	86	96	101	100	119	112	96	101	103	112	77	90	95	99
PBA Royal [®]	Med	103	120	104	100	110	104	130	105	106	100	80	111	106	92	101	84	129	106	105	103
Genesis [™] 090	Sml	105	110	105	98	117	98	111	112	104	101	115	110	109	109	102	114	116	104	111	103

Source: National Variety Trials (NVT) NVT Online, <https://app.nvtonline.com.au>

2015-2019 NVT long term predicted kabuli chickpea yield in NSW and QLD expressed as a percentage of mean yield.

		New South Wales															Queensland					
		South East					North West					North East					South East					
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	
Mean yield (t/ha)		1.30	2.66	1.87	1.25	0.51	1.72	1.96	0.85	1.01	1.33	2.14	2.76	1.41	1.14	-	-	-	-	1.82	-	1.87
No. of trials		1	1	1	1	1	3	2	3	2	2	2	2	1	1	0	0	0	0	1	-	1
Variety	Seed size																					
PBA Magnus[®]	Lge	106	110	99	97	104	99	110	88	93	97	101	105	104	100	-	-	-	-	101	-	97
Genesis [™] Kalkee	Lge	91	93	100	100	97	88	89	79	92	90	92	101	98	112	-	-	-	-	102	-	84
PBA Monarch [®]	Med	96	106	95	99	110	103	119	89	92	99	105	108	107	97	-	-	-	-	102	-	100
PBA Royal [®]	Med	106	110	97	94	85	104	119	86	91	99	106	111	108	103	-	-	-	-	105	-	98
Genesis [™] 090	Sml	102	114	101	104	106	111	110	103	102	106	108	107	105	104	-	-	-	-	106	-	105

Source: National Variety Trials (NVT) NVT Online, <https://app.nvtonline.com.au>

DISEASE MANAGEMENT

Ascochyta blight

- In the southern GRDC region, PBA Magnus[Ⓛ] is rated moderately susceptible (MS) to foliar infections, similar to Genesis™ 090.
- In the northern GRDC region, PBA Magnus[Ⓛ] is rated moderately susceptible (MS) to foliar infections.
- A registered seed dressing for the control of Ascochyta blight is highly recommended to protect against seed transmitted Ascochyta blight, seedling root rots, and botrytis seedling disease.
- Like all varieties, PBA Magnus[Ⓛ] is more susceptible to pod infection than foliar infection and will require protection prior to rain events during podding to prevent seed staining and abortion.
- All chickpea crops will require timely fungicide applications as per label directions to minimise the impact of Ascochyta blight.
- Abiotic spotting on leaves and stems can be confused with Ascochyta blight. Abiotic spots are often small, and create a regular pattern on leaves and or stems. No disease has been associated with this feature, and no management is required. If unsure, contact your state based pulse pathologist for diagnostics.

Botrytis Grey Mould (BGM)

- PBA Magnus[Ⓛ] is susceptible (S) to BGM.
- Early sowing coupled with favourable growth conditions in spring can lead to crops with large biomass. High biomass crops are more prone to lodging which increases the BGM risk. Under these conditions, PBA Magnus[Ⓛ] can also be prone to lodging like other kabuli varieties.
- Apply a preventative fungicide prior to canopy closure in high risk BGM situations ie high biomass and average temperature of 15 °C and above and high humidity. BGM is rare in the southern GRDC region.

Phytophthora root rot (PRR)

- PBA Magnus[Ⓛ] is very susceptible (VS) to PRR.
- Avoid paddocks that have: a) PRR in previous chickpea or lucerne crops; b) history of lucerne or medics; c) areas prone to waterlogging.

Virus

- PBA Magnus[Ⓛ] is susceptible (S) to the suite of viruses, similar to other kabuli varieties.
- Planting into paddocks with standing cereal (or other crop) stubble, timely sowing and successful establishment of a uniform recommended plant population (see below) provide the most effective management in virus-prone districts.

AGRONOMY

Agronomic characteristics

Paddock selection and agronomic requirements for growing PBA Magnus[Ⓛ] are similar to those for other large seed size kabuli varieties. PBA Magnus[Ⓛ] has the following characteristics:

- Early to mid-flowering, approximately 6 days earlier than Genesis™ 090 but later than PBA Monarch[Ⓛ]
- Early to mid maturing, approximately 3 days earlier than Genesis™ 090 but later than PBA Monarch[Ⓛ]
- Plant height and lowest pod height are slightly higher than Genesis™ 090 but lower than Genesis™ Kalkee
- Lodging resistance is similar to PBA Monarch[Ⓛ]
- Semi-spreading to semi-erect plant type, less erect than Genesis™ Kalkee
- Intolerant of salt, similar to PBA Monarch[Ⓛ]

Sowing

- Target the optimum planting window for large kabuli chickpeas in your area. Be aware that early sowing can lead to excess biomass and increases the risk of lodging.
- PBA Magnus[Ⓛ] is prone to lodging when sown on wide (>50 cm) row spacing
- Sow high quality seed at rates calculated to establish 20 to 30 plants/m².
- Treat seed with a registered fungicide seed treatment.
- Inoculate with Group N Chickpea rhizobium.

Herbicide Tolerance

- PBA Magnus[Ⓛ] has performed similarly to Genesis™ 090 to most registered pre- and post-emergent herbicides when applied at recommended rates in herbicide tolerance screening nurseries on alkaline soils in South Australia.

Agronomic Traits table									Ascochyta blight			Yield under very high disease (AB) pressure t/ha		% Yield loss
Variety	Seed size	Early vigour	Flowering	Maturity	Plant Height	Lodging at Maturity	Botrytis Grey Mould	Phytophthora Root Rot	Foliage/Stem		Pod	Fungicide treatment		
									South SA/VIC	North NSW/QLD		Fortnightly	Nil	
PBA Magnus [Ⓛ]	Lge	Poor-Mod	Early-Mid	Early-Mid	Med	MS	S	VS	MS	MS	S	3.59	2.22	38
Genesis™ Kalkee	Lge	Good	Mid-Late	Late	Tall	R	S	VS	MS	MS	S	3.21	2.31	45
PBA Monarch [Ⓛ]	Med	Poor-Mod	Early	Early	Med	MS	S	VS	S	MS	S	3.48	0.72	79
PBA Royal [Ⓛ]	Med	Moderate	Early-Mid	Mid	Med	MR	S	VS	MS	MR	S	3.87	2.85	26
Genesis™090	Sml	Good	Mid	Mid	Med	MR	S	VS	MS	R/MR	S	3.42	2.22	39

Source of yield loss data: PBA, Horsham Victoria 2016, LSD for interaction (P<0.001) = 0.48

Key: VS= very susceptible, S=susceptible, MS=moderately susceptible, MR=moderately resistant, R=resistant

REFER TO DETAILED INFORMATION AT www.pulseaus.com.au
 Ute guides, crop and disease management bulletins

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SEED QUALITY

- PBA Magnus[®] is a large seeded (predominantly 9 mm) kabuli chickpea. It has a cream-beige seed coat which has a defined kabuli seed shape with good wrinkling characteristics. It is larger in size than Genesis™ Kalkee.
- Favourable feedback on the seed quality of PBA Magnus[®] by both domestic and international traders has been received.

Variety	Seed weight (g/100 seed)	% 10 MM	% 9 MM	% 8 MM	% 7 MM
PBA Magnus[®]	47.8	0.6	59.6	34.1	4.4
Genesis™ Kalkee	36.9	0.0	16.0	53.5	27.7
PBA Monarch [®]	33.7	0.0	6.2	34.3	49.5
PBA Royal [®]	34.4	0.0	9.9	53.6	30.6
Genesis™ 090	29.4	0.0	0.6	21.1	71.0

Source PBA. Data is average of 5 sites in southern (3 sites) and northern (2 sites) Australia across 2 years (2018-19)



PBA Magnus[®]

BREEDING

PBA Magnus[®] (evaluated as CICA1352) was developed by the PBA chickpea breeding program (led by NSW DPI) from a cross between FLIP97-159C, Macarena and Genesis™ 114.

PULSE AGRONOMY

Agromony and disease management information has been developed with the assistance of the 'Southern region pulse agronomy project' a co-investment by GRDC, Agriculture Victoria and SARDI, and previously NSW DPI.

PBA is an unincorporated joint venture between the GRDC, University of Adelaide, University of Sydney, SARDI, Agriculture Victoria, NSW DPI, DAF (QLD), DPIRD WA and Pulse Australia. It aims to deliver better pulse varieties faster.

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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 pulse varieties.

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