

PBA Monarch[®]

Medium Kabuli Chickpea



PBA

PULSE BREEDING AUSTRALIA

Better pulse varieties faster

High yielding, early flowering kabuli chickpea



KEY FEATURES

- Highest yielding medium sized kabuli chickpea in all kabuli growing areas of Australia
- Predominantly 8 - 9 mm seed size (larger than Genesis™ 090 and similar to Almaz)
- Moderately Susceptible (MS) to ascochyta blight (similar to Almaz and Genesis™ Kalkee but more susceptible than Genesis™ 090)
- Susceptible (S) to phytophthora root rot
- Early flowering and maturity (earlier than Genesis™ 090 and Almaz)
- Semi spreading plant type

MAIN ADVANTAGES

PBA Monarch[®] is a high yielding medium sized kabuli chickpea. It is particularly well adapted to the shorter seasoned, medium rainfall environments of south eastern Australia. With improved adaptation through earlier flowering and maturity compared to Genesis™ 090, Almaz and Genesis™ Kalkee.

It is adapted to the traditional kabuli chickpea growing regions of Australia and has shown a consistent yield advantage of 5 - 13 % over current medium and large seeded kabuli varieties.

It has shown similar yields but larger seed size than the small sized Genesis™ 090.

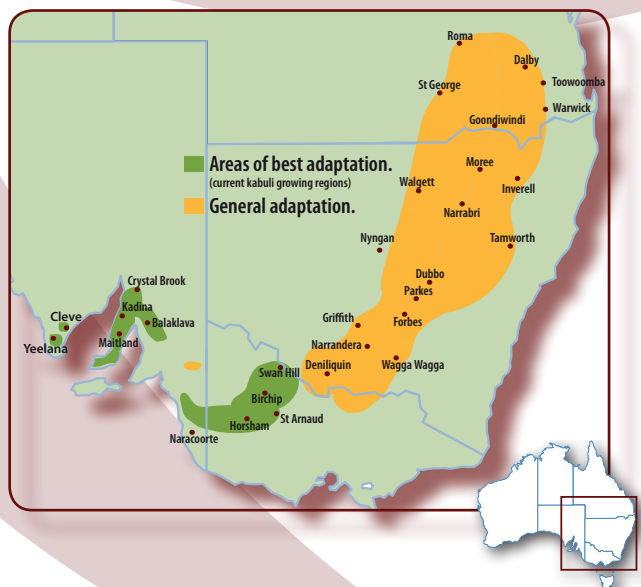
SEED PROTECTION & ROYALTIES

PBA Monarch[®] is protected under Plant Breeder's Rights (PBR) legislation. Growers can only retain seed from their production of PBA Monarch[®] 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 Seednet.

AREA OF ADAPTATION



YIELD & ADAPTATION

PBA Monarch[®] is the highest yielding medium sized kabuli chickpea variety. Yields of PBA Monarch[®] are substantially higher (5-13 %) than Almaz and Genesis™ Kalkee in south eastern Australia. In shorter season chickpea environments (e.g. Yorke Peninsula and Victorian Mallee) PBA Monarch[®] has yielded similarly to Genesis™ 090.

In northern Australia, limited yield evaluation has occurred to date. PBA Monarch[®] has improved adaptability, with flowering and maturity that are comparable to adapted desi varieties. In NSW a 5-7% yield advantage over Almaz has been recorded.

As with all kabuli varieties, PBA Monarch[®] is highly susceptible to phytophthora root rot and vulnerable to weathering at harvest.

Long-term yield of kabuli chickpea (% of Genesis™ 090) in South Australia (2005-2012)

Variety	Seed Size	Eyre Peninsula Lower	Yorke	Mid North	South East
PBA Monarch[®]	Medium	97[^]	101	97	96
Almaz	Medium	85	88	86	87
Genesis™ 114	Medium	83	91	87	88
Genesis™ Kalkee	Large	84 [^]	89	85	87
Genesis™ 079	Small	107	107	104	99
Genesis™ 090	Small	100	100	100	100
Genesis™ 090 (t/ha)	Small	1.43	1.89	1.91	1.96

Long-term yield of kabuli chickpea (% of Genesis™ 090) in Victoria and southern NSW (2005-2012)

Variety	Seed Size	Victoria		Southern NSW East
		Mallee	Wimmera	
PBA Monarch[®]	Medium	99	94	94[^]
Almaz	Medium	82	81	84
Genesis™ 114	Medium	89	89	84
Genesis™ Kalkee	Large	89	90	83 [^]
Genesis™ 079	Small	104	97	97
Genesis™ 090	Small	100	100	100
Genesis™ 425	Small	95	95	95
Genesis™ 090 (t/ha)	Small	1.20	1.30	1.00

Long-term yield of kabuli chickpea (% of Genesis™ 090) in northern NSW and southern Qld (2005-2012)

Variety	Seed Size	Northern NSW		Southern Qld
		East (Region 2)	West (Region 3)	East** (Region 2)
PBA Monarch[®]	Medium	95[^]	90	87
Almaz	Medium	88	85	91
Genesis™ 114	Medium	92	88	92
Genesis™ Kalkee	Large	91 [^]	88	87
Genesis™ 079	Small	97	94	91
Genesis™ 090	Small	100	100	100
Genesis™ 425	Small	95	91	88
Genesis™ 090 (t/ha)	Small	1.94	1.91	3.91

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

[^] = less than 5 trials in region

** One site at Warwick in 2012, treat with caution

DISEASE MANAGEMENT

Ascochyta blight (AB)

PBA Monarch[Ⓢ] is Moderately Susceptible (MS) to foliar infections of ascochyta blight, similar to Almaz.

This resistance is less than Genesis[™] 090 and PBA HatTrick[Ⓢ].

- PBA Monarch[Ⓢ] requires preventative fungicide applications, commencing 6 - 8 weeks after sowing, throughout the vegetative and podding phases. Monitor the crop 10 - 14 days after each rain event. If AB is detected, apply a registered fungicide immediately prior to the 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 Monarch[Ⓢ] flowers and pods earlier than Genesis[™] 090 and Almaz, so podding sprays will be required earlier.

Botrytis grey mould (BGM)

PBA Monarch[Ⓢ] is Susceptible (S) to BGM, similar to Genesis[™] 090, Almaz and Genesis[™] Kalkee.

- Early sowing coupled with favourable growing conditions in spring can lead to crops with large biomass which are prone to lodging and have increased susceptibility to BGM.
- Apply a preventative fungicide immediately prior to canopy closure in BGM prone areas and in favourable seasons. Continue to monitor in spring as temperatures and humidity rise.
- Apply a registered fungicide if BGM has been identified.

Phytophthora root rot (PRR)

PBA Monarch[Ⓢ] is Susceptible (S) to PRR.

- Avoid paddocks that have: a) PRR in previous chickpea or lucerne crops; b) history of lucerne or medics; c) are not free draining or are prone to waterlogging.

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

Agronomic and disease traits of PBA Monarch[Ⓢ] in comparison to other 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 Monarch [Ⓢ]	Poor-Mod	Early	Early	Medium	MS	S	MS	S	1.44	0.66	54
Almaz	Mod	Mid	Mid-Late	Medium-Tall	MR	S	MS	S	1.31	0.45	65
Genesis [™] 114	Good	Mid	Mid-Late	Tall	R	S	MS	S	1.16	0.71	39
Genesis [™] Kalkee	Good	Mid-Late	Late	Tall	R	S	MS	S	1.08	0.59	45
Genesis [™] 079	Good	Early	Early	Short	MR	MS	R	S	1.69	1.13	33
Genesis [™] 090	Good	Mid	Mid	Medium	MR	S	R	S	1.31	1.28	2
Genesis [™] 425	Mod-Good	Mid	Mid	Medium	MR	S	R	S	1.37	1.34	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

AGRONOMY

Agronomic characteristics

Paddock selection and agronomic requirements for growing PBA Monarch[Ⓢ] are similar to those for other kabuli chickpea varieties. PBA Monarch[Ⓢ] has the following characteristics:

- Early flowering; approximately 5 - 7 days earlier than Genesis[™] 090.
- Earlier maturing than Genesis[™] 090 and Almaz.
- Plant height and lowest pod height is similar to Genesis[™] 090 but lower than Almaz and Genesis[™] Kalkee.
- Lodging resistance is less than Genesis[™] 090, particularly when biomass is high.
- Semi-spreading plant type similar to southern desi chickpea varieties such as PBA Slasher[Ⓢ].
- Intolerant of salt, similar to Almaz, but less tolerant than Genesis[™] 836.

Virus

- PBA Monarch[Ⓢ] is rated as Susceptible (S) to the suite of viruses, similar to other kabuli chickpea varieties.

Sowing

- Target the optimum planting window for kabuli chickpea in your area. Early sowing can lead to production of excess biomass and increase the risk of lodging.
- Sow high quality seed at rates calculated to achieve 25-35 plants/m² (southern regions) and 20-30 plants/m² (northern regions) establishment.
- Inoculate with Group N chickpea rhizobium.

Herbicide tolerance

- PBA Monarch[Ⓢ] has performed similarly to Genesis[™] 090 to most registered pre- and post-emergent herbicides.
- Preliminary results suggest PBA Monarch[Ⓢ] is more sensitive than Genesis[™] 090 to post emergent applications of flumetsulum but less sensitive than Genesis[™] 079.

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

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SEED QUALITY

PBA Monarch[®] is a medium seeded (predominantly 8-9 mm) kabuli chickpea. It has a light cream-beige seed coat which has a defined kabuli seed shape with good wrinkling characteristics. It is larger in size than Genesis[™] 090, smaller than Genesis[™] Kalkee and similar to Almaz.

In shorter growing seasons, PBA Monarch[®] may have larger and more consistent seed size than Almaz due to its earlier pod filling. Favourable feedback on the seed quality of PBA Monarch[®] by both domestic and international traders has been received.

Variety	Seed weight (g/100)	Seed size (%)			
		10 mm	9 mm	8 mm	7 mm
PBA Monarch [®]	40.5	0	21	55	21
Almaz	38.0	0	18	53	25
Genesis [™] 114	38.0	0	20	54	23
Genesis [™] Kalkee	45.0	2	41	47	9
Genesis [™] 079	24.1	0	0	6	66
Genesis [™] 090	31.3	0	1	36	56
Genesis [™] 425	30.6	0	1	44	51

Source: Pulse Breeding Australia
Data is average of 9 sites, southern (7 sites) and northern (2 sites) Australia across 4 years (2009-12)



PBA Monarch[®]



Almaz



Genesis[™] 090

BREEDING & PULSE AGRONOMY

PBA Monarch[®] (evaluated as CICA0857) was developed by the PBA chickpea breeding program (led by NSW Dept of Primary Industries) from a cross between S95342 and the ascochyta blight resistant FLIP90-016C.

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.

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

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Better pulse varieties faster

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.

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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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