PBA Wharton$^{\Phi}$

'Kaspa type' field pea

PBA
PULSE BREEDING AUSTRALIA

Better pulse varieties faster

Virus and powdery mildew resistant

KEY FEATURES

- **Similar seed and plant features to Kaspa$^{\Phi}$**
- **Broader disease resistance;**
  - Pea seed borne mosaic virus
  - Bean leaf roll virus
  - Powdery mildew
- **High yield and broad adaptation**
- **Semi-leafless, semi-dwarf plant type**
- **Improved tolerance to soil boron toxicity**
- **Early flowering and maturing**
- **Pod shatter resistant at maturity**
- **Superior grain quality marketable as "kaspa type"**

MAIN ADVANTAGES

PBA Wharton$^{\Phi}$ (tested as OZP0805) is a superior yielding kaspa type field pea. PBA Wharton$^{\Phi}$ combines disease resistance to powdery mildew and the viruses PSbMV and BLRV with higher soil boron toxicity tolerance.

PBA Wharton$^{\Phi}$ is widely adapted across southern cropping regions of Australia and best suited to districts with a short to medium growing season or those that are prone to powdery mildew and virus diseases (e.g. south east SA).

It is the first kaspa type variety suitable for production in northern regions of New South Wales.

PBA Wharton$^{\Phi}$ is early to mid season flowering and early maturing (e.g. similar PBA Gunyah$^{\Phi}$). It has a semi-leafless erect growth habit, pink flowers and shatter resistant pods like Kaspa$^{\Phi}$. Its grain colour and size is similar to Kaspa$^{\Phi}$ but more spherical and smoother.

PBA Wharton$^{\Phi}$ can be marketed as "kaspa type" grain.

SEED PROTECTION & ROYALTIES

PBA Wharton$^{\Phi}$ is protected under Plant Breeder's Rights (PBR) legislation. Growers can only retain seed from their production of PBA Wharton$^{\Phi}$ for their own seed use.

An End Point Royalty (EPR) of $2.86 per tonne (GST inclusive), which includes breeder royalties, applies upon delivery of this variety.

Seed is available from the commercial partner Seednet.

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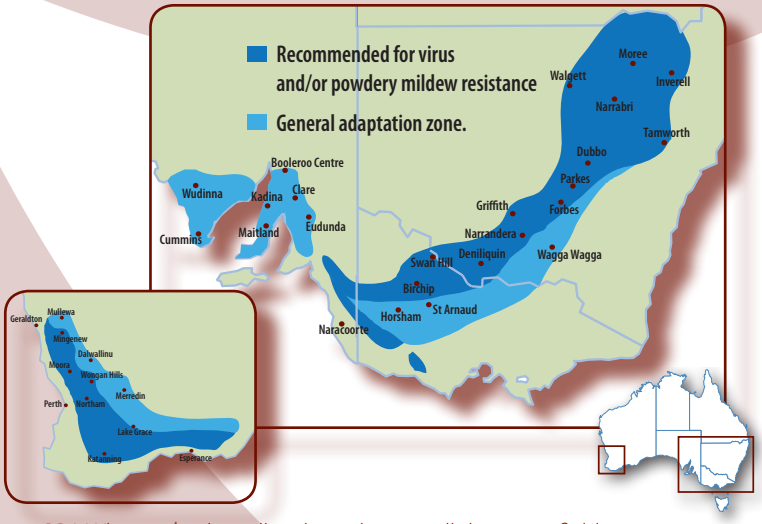
AREA OF ADAPTATION



PBA Wharton$^{\Phi}$ is broadly adapted across all the major field pea production regions. It has significant advantage in regions prone to virus and/or powdery mildew diseases.

PBA Wharton$^{\Phi}$ is susceptible to bacterial blight (similar to Kaspa$^{\Phi}$).

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YIELD & ADAPTATION

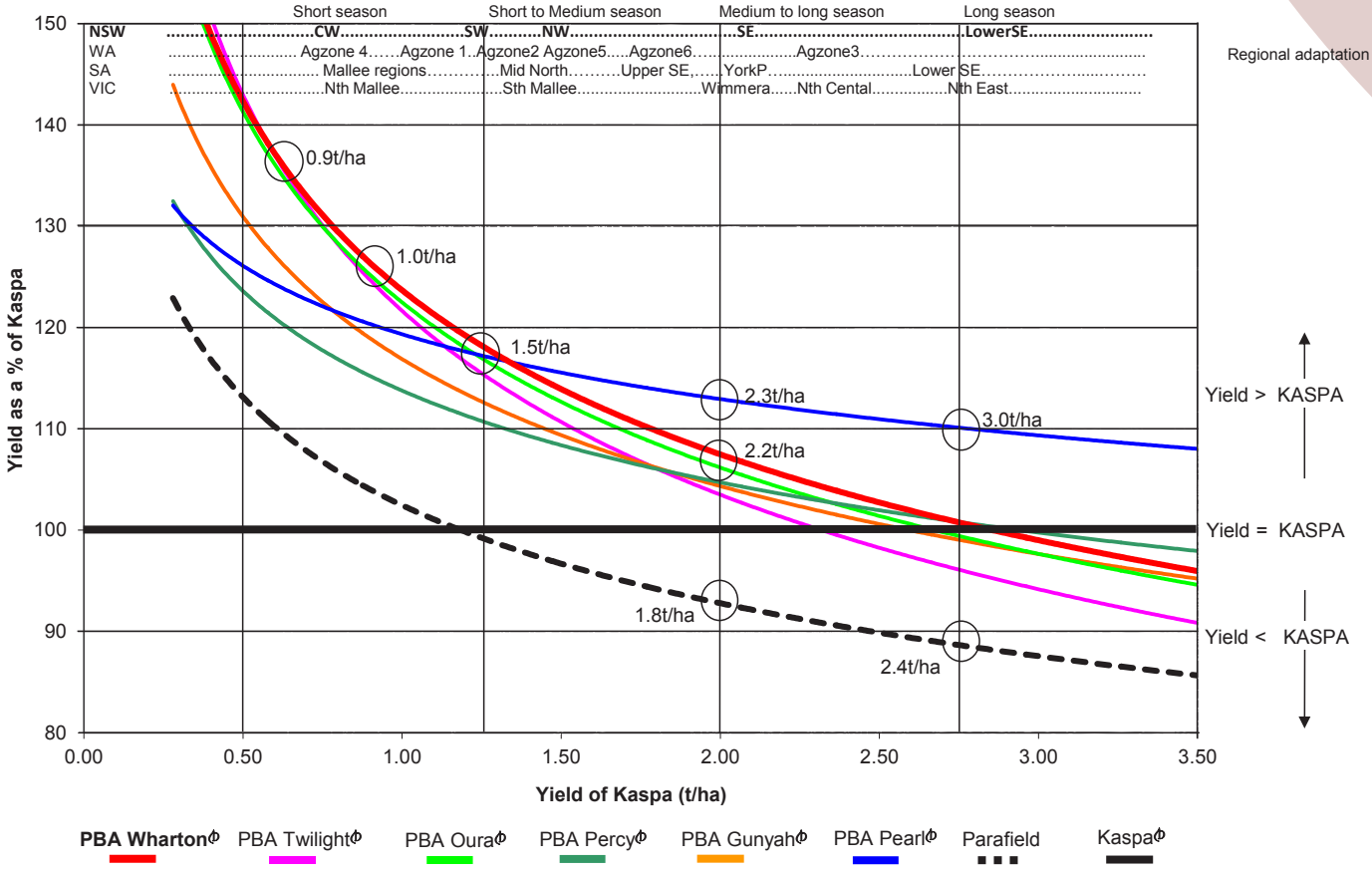
PBA Wharton$^{\Phi}$ is high yielding and broadly adapted. It generally performs best in short to medium growing season climates and in regions prone to virus and powdery mildew diseases.

PBA Wharton$^{\Phi}$ yields similarly to PBA Oura$^{\Phi}$ and PBA Twilight$^{\Phi}$ in short to medium growing seasons. However, its virus and powdery mildew resistance gives PBA Wharton$^{\Phi}$ a distinct advantage.

PBA Wharton$^{\Phi}$ is the suggested variety for all other regions where a kaspa type field pea is preferred and where virus and powdery mildew are significant problems.

The relative experimental grain yield for key field pea varieties are graphically presented in Figure 1. This graph is based on data from 173 experiments grown across Australia's wheat belt cropping zone from 2006 to 2011. Allowing growers to relate relative performances of newer PBA varieties against the standard Kaspa$^{\Phi}$ (100%).

Figure 1: Average relative grain yields of PBA Wharton$^{\Phi}$ compared to other field pea varieties in southern Australia



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

Seednet
Planting Productivity

PBA PULSE BREEDING AUSTRALIA

PBA Wharton(Ф)

'Kaspa type' field pea

AGRONOMY

PBA Wharton(Ф) allows more flexibility to delay sowing because it is both early flowering and is resistant to powdery mildew (which can occur late in the growing season). Growers should follow the same regional sowing, harvest and weed management recommendations for kaspa type varieties such as PBA Gunyah(Ф) to achieve optimal yields.

- Vigorous early plant growth.
- Early to mid season flowering and early maturing.
- Improved tolerance to soil boron toxicity.
- Pod shattering resistance at maturity.

Variety	Plant habit	Plant vigour (early season)	Erect growth habit	Flowering time	Maturity time	Pod shattering (at maturity)	Soil tolerance		Seed weight (g/100)
							Boron	Salinity	
Kaspa type									
PBA Wharton(Ф)	**SD-SL**	**High**	**Fair-Good**	**Early-Mid**	**Early**	**R: *(SP)***	**MT**	**MS**	**22.8**
Kaspa(Ф)	SD-SL	High	Fair-Good	Late	Mid	R: *(SP)*	S	S	23.6
PBA Gunyah(Ф)	SD-SL	High	Fair-Good	Early-Mid	Early	R: *(SP)*	S	S/MS	23.7
PBA Twilight(Ф)	SD-SL	High	Fair-Good	Early	Early	R: *(SP)*	S	S	23.1
Australian dun type									
Morgan(Ф)	Tall-SL	High	Poor-Fair	Late	Late	MR: *(NSP)*	S	S	18.7
Parafield	C	High	Poor	Mid	Mid	MR: *(NSP)*	S	MS	20.0
PBA Coogee(Ф)	C	High	Poor	Mid-Late	Mid	MR: *(NSP)*	T	MT	24.7
PBA Oura(Ф)	SD-SL	High	Fair-Good	Early-Mid	Early	MR: *(NSP)*	MS	S	23.6
PBA Percy(Ф)	C	High	Poor	Early	Early	MR: *(NSP)*	S	MR	25.6
Yarrum(Ф)	SD-SL	Fair	Poor-Fair	Late	Mid	MR: *(NSP)*	S	MS	21.8
Niche grain type									
Excell	SD-SL	High	Good	Early-Mid	Late	S: *(NSP)*	S	S	23.0
PBA Hayman(Ф)	Multi-branch	Moderate	Fair -Good	Very late	Very late	MR: *(NSP)*	MS	MS	13.4
PBA Pearl(Ф)	SD-SL	High	Good	Early-Mid	Early	MR: *(NSP)*	MS	MS	22.3
Sturt(Ф)	C	High	Poor	Early-Mid	Mid	MR: *(NSP)*	S	MS	20.3
SW Celine(Ф)	SD-SL	High	Fair-Good	Early	Early	S: *(NSP)*	S	S	26.2

Key: SD = Semi-dwarf, C = Conventional, SL = Semi-leafless, S = Susceptible, M = Moderately, R = Resistant, T = Tolerant. SP = Sugar pod type, NSP = Non sugar pod type.

DISEASE MANAGEMENT

PBA Wharton(Ф) is resistant to PSbMV and BLRV virus and powdery mildew. It has similar susceptibility to bacterial blight as Kaspa(Ф).

- Follow recommended crop rotation practices & sowing times.
- Avoid sowing disease infected seed.
- Use predictive models to manage blackspot (e.g. blackspot manager, www.agric.wa.gov.au/cropdisease).
- Minimise risks of bacterial blight through crop hygiene, sowing date and stubble management.
- Use regionally recommended seed and foliar fungicides to control downy mildew and blackspot.

Variety	Blackspot (ascochyta)	Bacterial blight (field rating)	Downy mildew (Parafield strain)	Downy mildew (Kaspa strain)	Powdery mildew	PSbMV	BLRV (field rating)
Kaspa type							
PBA Wharton(Ф)	**MS**	**S**	**R**	**S**	**R**	**R**	**R**
Kaspa(Ф)	MS	S	MR	S	S	S	S
PBA Gunyah(Ф)	MS	S	R	S	S	S	S
PBA Twilight(Ф)	MS	S	R	S	S	S	S
Australian dun type							
Morgan(Ф)	MS	MS	MR	S	S	S	S*
Parafield	MS	MS	S	S	S	S	S
PBA Coogee(Ф)	MS	MS/MR	*	*	R	*	MS/MR*
PBA Oura(Ф)	MS	MS/MR	MR	MS/MR	S	S	MS/MR*
PBA Percy(Ф)	MS	R	S	S	S	S	S
Yarrum(Ф)	MS	MS	S	S	R	R	R
Niche grain type							
Excell	MS	S	MR	S	S	S	S
PBA Hayman(Ф)	MS	MR	MR-R	*	R	*	*
PBA Pearl(Ф)	MS	MS	R	*	S	S	R
Sturt(Ф)	MS	MS	MS	S	S	S	MS/MR*
SW Celine(Ф)	MS	S	S	S	S	S	S

*Key: S = Susceptible, M = Moderately, R = Resistance. PSbMV = Pea seed borne mosaic virus. BLRV = Bean leaf roll virus * Requires validation*

REFER TO DETAILED INFORMATION AT www.pulseaus.com.au

Ute guides, crop and disease management bulletins

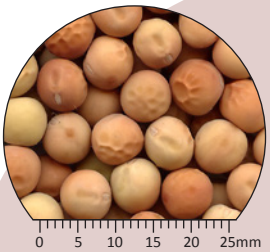
PULSE VMP Pulse Variety Management Package

PBA Wharton^{Φ}
'Kaspa type' field pea

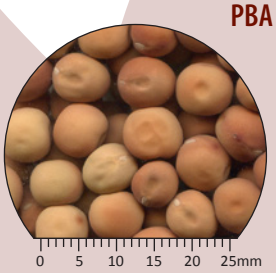
GRAIN QUALITY

PBA Wharton^{Φ} produces a medium sized "Kaspa type" grain with a yellow split (22 g/100 seeds).

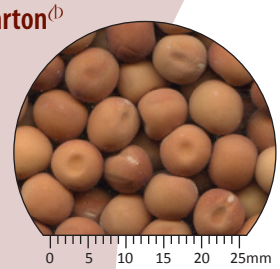
The seed coat has a uniform tan colour similar to Kaspa^{Φ} and is suitable for dhal or split pea production.



PBA Wharton^{Φ}



PBA Gunyah^{Φ}



Kaspa^{Φ}

MARKETING

The grain is marketable as "Kaspa type" which is exported to the Asian sub-continent for production of dhal, flour and roasted snack foods.

The grain is also suitable for stockfeed.

BREEDING

PBA Wharton^{Φ} (OZP0805) was bred, extensively evaluated and selected for adaptation and performance in a range of climates across southern Australia by the PBA field pea team.

Initial crosses and early generation selections were made at DEPI Victoria - Horsham. The objectives were to combine the Kaspa plant type with early flowering, powdery mildew and virus disease resistance and improved grain splitting efficiency.

The variety is named after Wharton beach in Western Australia.

PULSE AGRONOMY

Agronomy and disease management information has been developed with the assistance of the 'Southern region pulse agronomy project' co-funded by GRDC, SARDI, DEPI Victoria and NSW-DPI.

Version September/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 field pea varieties.

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Field pea Blackspot Sowing Guides;
www.agric.wa.gov.au/cropdisease