PBA Barlock$^{\phi}$
Australian sweet lupin

PBA
PULSE BREEDING AUSTRALIA

Better pulse varieties faster

Anthracnose resistant, metribuzin tolerant

KEY FEATURES

- **High yielding across most lupin growing areas of WA, NSW, Vic and SA**
- **Resistant (R) to anthracnose** (equal to Tanjil$^{\phi}$ and Wonga$^{\phi}$)
- **Tolerant to metribuzin** (superior to Tanjil$^{\phi}$ and equal to Mandelup$^{\phi}$)
- **Improved resistance to pod shattering** (equal to Tanjil$^{\phi}$ and Coromup$^{\phi}$)
- **Moderately resistant (MR) to phomopsis stem blight** (equal to Tanjil$^{\phi}$ and Wonga$^{\phi}$)
- **Early flowering and early maturity**
- **Grain quality parameters that on average meet market requirements**

MAIN ADVANTAGES

PBA Barlock$^{\phi}$ is a high yielding Australian sweet lupin variety suitable as a replacement for Tanjil$^{\phi}$ and Wonga$^{\phi}$ in most lupin growing areas of Western Australia.
PBA Barlock$^{\phi}$ provides a very significant yield improvement in most regions of New South Wales, Victoria and South Australia.

PBA Barlock$^{\phi}$ is a considerable improvement in metribuzin tolerance over the varieties Tanjil$^{\phi}$ and Wonga$^{\phi}$ and will allow growers to use metribuzin as an option for controlling weeds within the lupin crop.

SEED PROTECTION & ROYALTIES

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

An End Point Royalty of $2.75 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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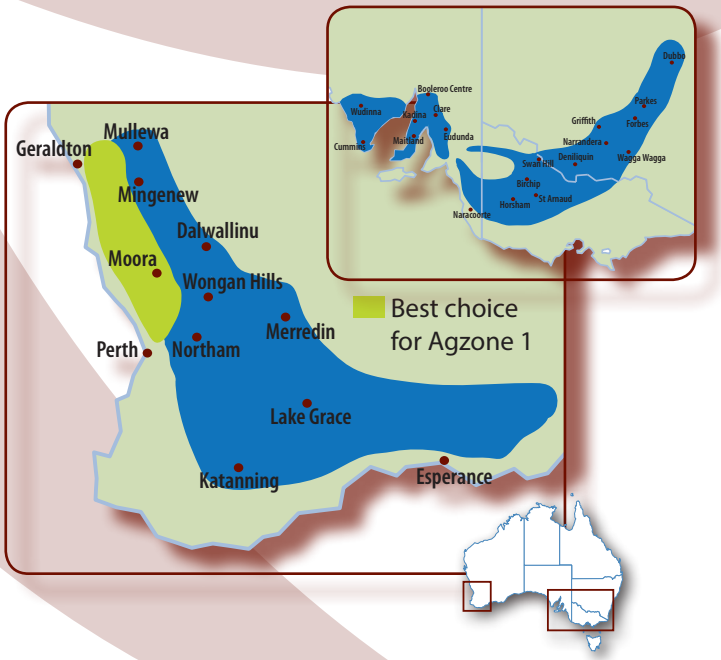
AREA OF ADAPTATION



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YIELD & ADAPTATION

Western Australia

PBA Barlock^{Φ} has performed well across most regions and is suggested as a replacement for Mandelup^{Φ} and Tanjil^{Φ} in all lupin growing zones.

PBA Barlock^{Φ} is the best choice in Agzone 1 due to its resistance to anthracnose.
Jenabillup remains the best choice for Agzone 8 due to its Bean Yellow Mosaic Virus (BYMV) resistance (MR).

Long-term yields expressed as a % of Mandelup^{Φ} in Western Australia (2008-2012)

Variety	Agzone 1 (9)	Agzone 2 (15)	Agzone 3 (9)	Agzone 4 (11)	Agzone 5 (11)	Agzone 6 (2)	Agzone 7 (9)	Agzone 8 (4)
PBA Barlock^{Φ}	**104**	**105**	**102**	**102**	**100**	**112**	**95**	**100**
PBA Gunyidi^{Φ}	103	103	103	106	99	112	93	102
Coromup^{Φ}	98	88	101	85	97	94	86	93
Jenabillup^{Φ}	102	104	101	103	104	101	93	99
Tanjil^{Φ}	92	93	84	90	91	91	87	91
Mandelup^{Φ} (t/ha)	3.03	2.66	2.10	2.16	1.60	1.72	1.53	2.84

New South Wales

PBA Barlock^{Φ} has performed significantly better than other varieties in most regions and is suggested as a replacement for Mandelup^{Φ} and Wonga^{Φ}.

Long-term yield of expressed as a % of Mandelup^{Φ} in New South Wales (2008-2012)

Variety	Northeast (2)	Northwest (5)	Southeast (27)	Southwest (3)
PBA Barlock^{Φ}	**101**	**102**	**99**	**103**
PBA Gunyidi^{Φ}	89	90	98	101
Jenabillup^{Φ}	92	99	100	105
Jindalee^{Φ}	89	87	88	93
Wonga^{Φ}	93	99	89	97
Mandelup^{Φ} (t/ha)	2.58	2.26	2.98	2.02

Victoria and South Australia

PBA Barlock^{Φ} provides significantly higher yields on the Upper and Lower Eyre Peninsula and performs well in the Murray mallee. It is recommended as a replacement for Mandelup^{Φ} in these regions.

Long-term yield of expressed as a % of Mandelup^{Φ} in Victoria and South Australia (2009-2012)

Variety	Upper Eyre Pen (5)	Lower Eyre Pen (7)	Mid North (3)	Southeast (12)	Murray mallee (3)	Vic. mallee (7)
PBA Barlock^{Φ}	**114**	**110**	**90**	**95**	**104**	**94**
PBA Gunyidi^{Φ}	104	103	98	93	106	90
Jenabillup^{Φ}	109	104	97	100	115	95
Wonga^{Φ}	99	96	87	87	86	83
Mandelup^{Φ} (t/ha)	1.82	2.57	2.03	2.11	2.03	1.16

Source: Trial results from Pulse Breeding Australia (PBA) and National Variety Trials (NVT) programs
The number in brackets ( ) shows the number of trials

Seednet
Planting Productivity

PBA PULSE BREEDING AUSTRALIA

PBA Barlock^{Ф} Australian sweet lupin

DISEASE MANAGEMENT

- Resistant (R) to anthracnose similar to Tanjil^{Ф}. Seed dressings are still recommended to reduce the risk of seed borne infections.
- Moderately susceptible (MS) to brown spot and the full agronomic package for this disease should be implemented.
- Resistance to phomopsis stem blight is equivalent to Tanjil^{Ф} and Mandelup^{Ф}
- Resistant (R) to grey spot.

Virus

- Moderately resistant (MR) to resistant (R) to CMV seed transmission which is better than Mandelup^{Ф} but not as good as Tanjil^{Ф}.
- Moderately susceptible (MS) to late infection of BYMV. Equivalent to Mandelup^{Ф} but not as good as Jenabillup^{Ф} and Quilinock^{Ф}.
- Jenabillup^{Ф} is the preferred variety in WA Agzone 8 to manage the risk from BYMV.

Plant disease resistance of PBA Barlock^{Ф} in comparison to other Australian sweet lupin varieties

Variety	Lodging (High Rainfall)	Brown spot	Phomopsis (stem)	Anthracnose	Grey spot	CMV (seed)	BYMV	Aphid
PBA Barlock^{Ф}	**MR**	**MS**	**MR**	**R**	**R**	**MR/R**	MS	**R**
PBA Gunyidi^{Ф}	MR	MS	R	MR/R	S	MR/R	MS/MR	R
Coromup^{Ф}	MS/MR	MS	R	MR	R	MR	MS	R
Jenabillup^{Ф}	MS/MR	MS/MR	MS	MS	R	-	MR	R
Jindalee^{Ф}	-	-	R	MS	R	MS	-	-
Mandelup^{Ф}	MS	MS	R	MR	R	MR	MS	R
Quilinock^{Ф}	MS	MS	MR	VS/S	R	MR	MR	MS
Tanjil^{Ф}	MR	MS	MR	R	R	R	MS	R
Wonga^{Ф}	MR	MS	MR	R	R	R	MS	R

Source: Pulse Breeding Australia South Perth, WA 2012
VS = Very Susceptible, S = Susceptible, MS = Moderately Susceptible, MR = Moderately Resistant, R = Resistant

AGRONOMY

Agronomic characteristics

- PBA Barlock^{Ф} has similar agronomic characteristics when compared to Tanjil^{Ф}.
- PBA Barlock^{Ф} is slightly later flowering and maturing than Mandelup^{Ф}.
- Moderately Resistant (MR) to lodging in high rainfall regions, equivalent to Tanjil^{Ф}.

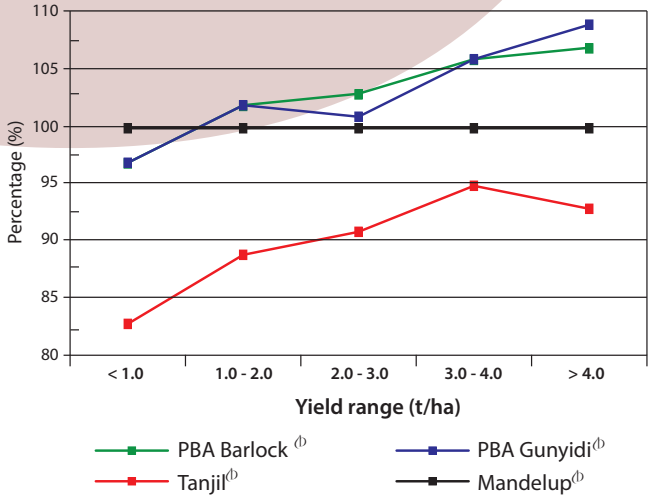
Herbicide tolerance

- PBA Barlock^{Ф} shows equivalent tolerance to all registered herbicides including metribuzin in comparison with Mandelup^{Ф}.

Harvestability

- Harvest height is equivalent to Tanjil^{Ф} and is shorter than Mandelup^{Ф}
- Harvest grain loss risk is reduced with PBA Barlock^{Ф} being more resistant to pod shattering than Mandelup^{Ф}.

Figure 1: Relative performance of PBA Barlock^{Ф} as a percentage of Mandelup^{Ф} across Western Australian sites of similar mean site yields



Source: Western Australian National Variety Trials (NVT) 2008 - 2012

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

PULSE VMP Pulse Variety Management Package

PBA Barlock Φ
Australian sweet lupin

SEED QUALITY

PBA Barlock Φ has small seed similar to Tanjil Φ. The protein content is similar to Mandelup Φ and the alkaloid content, on average, is similar to Mandelup Φ. The alkaloid content may fluctuate from season to season, but the relative value compared to Mandelup Φ will remain similar.

Seed quality of PBA Barlock Φ in comparison to other Australian sweet lupin varieties as a percentage of Mandelup Φ

Variety	Seed weight	Seed protein	Seed alkaloid
Mandelup Φ	142. mg	31.2 %	0.012 %
PBA Barlock Φ	**92**	**100**	**92**
PBA Gunyidi Φ	90	104	100
Belara Φ	99	99	75
Coromup Φ	104	110	92
Danja Φ	86	103	125
Jenabillup Φ	103	102	75
Mandelup Φ	100	100	100
Quilinock Φ	97	104	92
Tanjil Φ	92	105	117

Source: Pulse Breeding Australia
Data is an average of 9 sites across 3 years (2009 - 2011)

PBA Barlock Φ

PBA Gunyidi Φ

BREEDING

PBA Barlock Φ (tested as WALAN2325) was bred by Dr Bevan Buirchell, in cooperation with the Department of Agriculture and Food's lupin breeding team under the umbrella of Pulse Breeding Australia.
It is from a 2000 cross between 97L122-1 and 89A169-11-11.

PBA Barlock Φ is named after 'Barlock', one of many indigenous names for the Native Grass Tree, which is widespread on the coastal sands of the west coast of Western Australia.

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.

FOR MORE INFORMATION

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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 lupin varieties.

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