

PBA Leeman[®]

Australian sweet lupin



PBA

PULSE BREEDING AUSTRALIA

Better pulse varieties faster

High protein, high metribuzin tolerant lupin



KEY FEATURES

- Very tolerant to metribuzin (superior to Mandelup[®] and Coromup[®])
- High protein, on average higher than Coromup[®] by 0.6%
- Early flowering and maturity
- Yields similar to or greater than Coromup[®] in regions of WA.

MAIN ADVANTAGES

PBA Leeman[®], tested as WALAN2428, is a high protein Australian sweet lupin variety suitable for lupin growing areas of Western Australia. It provides an increase in protein and metribuzin tolerance over Coromup[®].

SEED PROTECTION & ROYALTIES

PBA Leeman[®] is protected under Plant Breeder's Rights (PBR) legislation. Growers may only sell seed to each other after this variety has been released for 2 years.

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.

AREA OF ADAPTATION



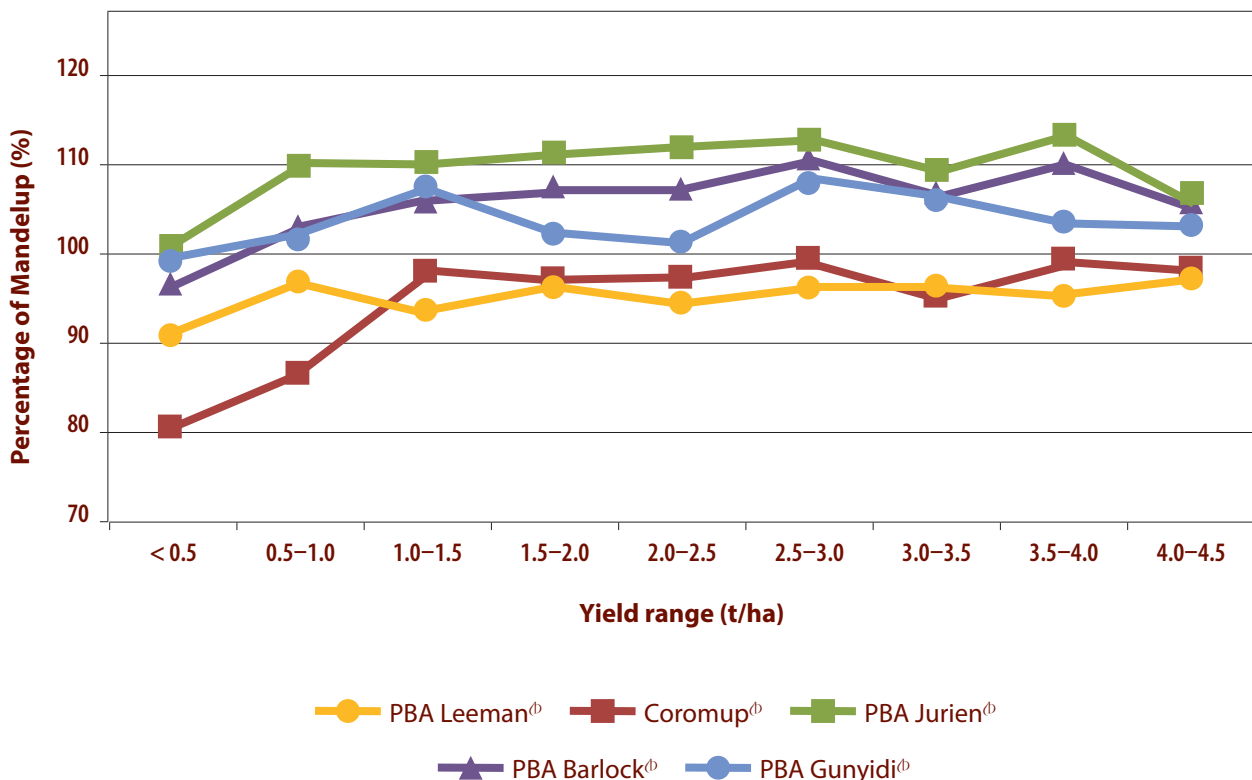
YIELD & ADAPTATION

PBA Leeman[Ⓛ] has performed similarly to Coromup[Ⓛ] across Western Australia for yield, except in Agzones 4 and 8 where it is not recommended.

Long term yield expressed as % Mandelup [Ⓛ] in Western Australia (2012–2016)								
Variety	Agzone1 (13)	Agzone2 (5)	Agzone3 (4)	Agzone4 (8)	Agzone5 (12)	Agzone6 (5)	Agzone7 (13)	Agzone8 (1)
PBA Leeman [Ⓛ]	96	99	97	81	94	93	94	81
Coromup [Ⓛ]	100	105	95	98	95	86	90	161
PBA Jurien [Ⓛ]	114	117	105	110	109	108	105	159
PBA Barlock [Ⓛ]	111	114	102	110	106	101	103	163
PBA Gunyidi [Ⓛ]	105	107	97	128	103	103	99	134
Jenabillup [Ⓛ]	99	100	92	125	98	88	95	159
Tanjil [Ⓛ]	95	99	94	91	93	88	91	119
Mandelup [Ⓛ] (t/ha)	2.97	2.83	2.20	2.16	2.53	1.72	1.83	0.80

Source: Trial results from Pulse Breeding Australia (PBA), Agriculture and Food, Department of Primary Industries and Regional Development, WA (DPIRD) and National Variety Trials (NVT) programs, 2012–16.

Figure 1 Relative performance of PBA Leeman[Ⓛ] as a percentage of Mandelup[Ⓛ] across WA sites of similar mean site yields



DISEASE MANAGEMENT

- Moderately resistant (MR) to anthracnose, similar to Coromup[®], PBA Gunyidi[®] and Mandelup[®]. Seed dressings are still recommended to reduce the risk of seed borne infections.
- Resistant (R) to phomopsis stem blight, similar to PBA Gunyidi[®], Coromup[®] and Mandelup[®].
- Moderately susceptible (MS) to brown spot. Recommended practices for this disease should be followed.
- Resistant (R) to grey leaf spot (GLS).

Virus

- Moderately susceptible (MS) to CMV seed transmission, similar to Mandelup[®].
- Moderately susceptible (MS) to BYMV and Black Pod Syndrome (late infection BYMV), similar to Coromup[®] and PBA Barlock[®].

AGRONOMY

Agronomic characteristics

- PBA Leeman[®] has similar agronomic characteristics to PBA Gunyidi[®], with flowering time slightly earlier than PBA Barlock[®] and similar to PBA Gunyidi[®], Coromup[®] and Mandelup[®].
- PBA Leeman[®] has a similar plant height to Mandelup[®] and Coromup[®], but taller than PBA Gunyidi[®] and PBA Barlock[®].

Harvestability

- Harvest height is similar to Coromup[®], and is slightly taller than PBA Barlock[®] and PBA Gunyidi[®].
- Pod shattering is similar to PBA Gunyidi[®], and similar to or slightly less resistant than Coromup[®], but not as susceptible as Mandelup[®].
- PBA Leeman[®] is similar to Coromup[®] and has a slightly higher risk of lodging in high yielding situations than PBA Barlock[®].

Herbicide tolerance

- PBA Leeman[®] shows better tolerance to metribuzin than Coromup[®] and Mandelup[®]. Tolerance to herbicides and herbicide mixtures similar or better than Coromup[®].

Plant disease resistance and plant traits of PBA Leeman[®] in comparison to other Australian sweet lupin varieties

Variety	Lodging	Brown spot	Phomopsis stem	Phomopsis pod	Anthracnose	GLS	CMV (seed)	BYMV	Aphid	Metribuzin	Pod shatter
PBA Leeman [®]	MS/MR	MS	R	MRMS	MR	R	MS	MS	R	VT	MR
Coromup [®]	MS/MR	MS	R	MR	MR	R	MR	MS	R	T	R
PBA Jurien [®]	MS	MS	R	MRMS	R	R	MS	MR	R	T	MRMS
PBA Barlock [®]	MR	MS	MR	R	R	R	MR	MS	R	T	MRMS
PBA Gunyidi [®]	MR	MS	R	MR	MR	S	MS	MS	R	T	MR
Jenabillup [®]	MS/MR	MS/MR	MS	R	S	R	MS	MR	R	IT	MS
Mandelup [®]	MS	MS	R	MRMS	MR	R	MS	S	R	T	MS
Tanjil [®]	MR	MS	R	R	R	R	R	MS	R	IT	R

Source: Agriculture and Food, DPIRD Western Australia and PBA Lupin Breeding Program, South Perth, WA, 2013–16.

M=moderately, S=susceptible, R=resistant, VT=very tolerant, T=tolerant, IT=intolerant; CMV = cucumber mosaic virus; BYMV = bean yellow mosaic virus; GLS = grey leaf spot.

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SEED QUALITY

PBA Leeman[Ⓛ] has on average, higher seed protein than Coromup[Ⓛ] with medium to large seed, similar to Mandelup[Ⓛ] and the alkaloid content, on average, similar to Mandelup[Ⓛ]. Protein and alkaloid contents fluctuate across years, sites and seasonal conditions.

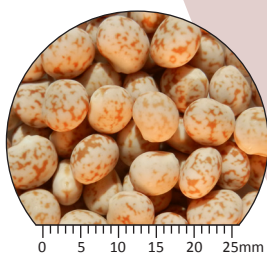
Grain quality of PBA Leeman[Ⓛ] in comparison to other Australian sweet lupin varieties as a percentage of Mandelup[Ⓛ]

Variety	Seed weight	Seed protein	Seed alkaloid
PBA Leeman [Ⓛ]	99	110	100
Coromup [Ⓛ]	103	108	116
PBA Jurien [Ⓛ]	99	101	100
PBA Barlock [Ⓛ]	90	96	105
PBA Gunyidi [Ⓛ]	89	102	100
Jenabilup [Ⓛ]	100	103	74
Tanjil [Ⓛ]	88	101	116
Mandelup [Ⓛ]	147 mg	32.1%	0.019%

Source: Seed weight data is average of 3 sites in WA 2014–16; Protein and alkaloid is per cent As Received on whole seed basis from multiple sites in 2010–2015 (chemical analyses by ChemCentre, Bentley, WA).



PBA Leeman[Ⓛ]



Coromup[Ⓛ]



PBA Barlock[Ⓛ]

BREEDING

PBA Leeman[Ⓛ] (tested as WALAN2428) was bred and progressed by Dr Bevan Buirchell, Dr Jon Clements, Dr Hua'an Yang, Geoff Thomas and the Lupin Breeding technical team at Agriculture and Food, DPIRD, WA. Valuable collaboration from Mark Richards (NSW DPI), Amanda Pearce (PIRSA-SARDI), Alan Meldrum (Pulse Australia) and Dr Harmohinder Dhammu is acknowledged. PBA Leeman[Ⓛ] is from a 2003



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PBA is an unincorporated joint venture between the GRDC, University of Adelaide, University of Sydney, SARDI SA, DEDJTR Victoria, NSW DPI, DAF QLD, DPIRD WA and Pulse Australia.

cross (03L251-14) between seed parent, 01L576-108, and pollen parent, 'Coromup'. It was selected as a high protein, highly metribuzin tolerant, early flowering and well adapted lupin to assist industry in the exploration of new markets. PBA Leeman[Ⓛ] is named after the coastal town of Leeman, which is adjacent to lupin growing regions in WA. The word 'Leeman' is an English surname deriving from the pre-7th century elements 'Leof-mann' with 'leof' meaning 'beloved' and 'mann', meaning 'a friend'.

FOR MORE INFORMATION

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SEED ENQUIRIES

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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.

AGRONOMIC ENQUIRIES

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