PBA Leeman™
Australian sweet lupin

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

Seednet
Planting Productivity
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.

<table>
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<td>81</td>
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<td>Coromup®</td>
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<td>95</td>
<td>86</td>
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<td>Jenabillup®</td>
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<tr>
<td>Mandelup® (t/ha)</td>
<td>2.97</td>
<td>2.83</td>
<td>2.20</td>
<td>2.16</td>
<td>2.53</td>
<td>1.72</td>
<td>1.83</td>
<td>0.80</td>
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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.
**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® and Mandelup®. 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®.

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

<table>
<thead>
<tr>
<th>Variety</th>
<th>Lodging</th>
<th>Brown spot</th>
<th>Phomopsis stem</th>
<th>Phomopsis pod</th>
<th>Anthracnose</th>
<th>GLS</th>
<th>CMV (seed)</th>
<th>BYMV</th>
<th>Aphid</th>
<th>Metribuzin</th>
<th>Pod shatter</th>
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</thead>
<tbody>
<tr>
<td>PBA Leeman®</td>
<td>MS/MS</td>
<td>MS</td>
<td>R</td>
<td>MR</td>
<td>RMS</td>
<td>R</td>
<td>MS</td>
<td>MS</td>
<td>R</td>
<td>VT</td>
<td>MR</td>
</tr>
<tr>
<td>Coromup®</td>
<td>MS/MS</td>
<td>MS</td>
<td>R</td>
<td>MR</td>
<td>R</td>
<td>R</td>
<td>MS</td>
<td>MS</td>
<td>R</td>
<td>T</td>
<td>R</td>
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<tr>
<td>PBA Jurien®</td>
<td>MS</td>
<td>MS</td>
<td>R</td>
<td>MR</td>
<td>R</td>
<td>R</td>
<td>MS</td>
<td>MR</td>
<td>R</td>
<td>T</td>
<td>MR</td>
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<tr>
<td>PBA Barlock®</td>
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<td>MS</td>
<td>MR</td>
<td>R</td>
<td>R</td>
<td>R</td>
<td>MR</td>
<td>MS</td>
<td>R</td>
<td>T</td>
<td>MR</td>
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<td>PBA Gunyidi®</td>
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<td>MS</td>
<td>MR</td>
<td>R</td>
<td>MR</td>
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<td>R</td>
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<td>Jenabillup®</td>
<td>MS/MS</td>
<td>MS/MS</td>
<td>R</td>
<td>S</td>
<td>R</td>
<td>R</td>
<td>MS</td>
<td>MR</td>
<td>R</td>
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<td>R</td>
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<td>MS</td>
<td>S</td>
<td>R</td>
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<td>Tanjil®</td>
<td>MR</td>
<td>MS</td>
<td>R</td>
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<td>MS</td>
<td>R</td>
<td>IT</td>
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</tbody>
</table>

**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.
PBA Leeman

Australian sweet lupin

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

<table>
<thead>
<tr>
<th>Variety</th>
<th>Seed weight</th>
<th>Seed protein</th>
<th>Seed alkaloid</th>
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<tbody>
<tr>
<td>PBA Leeman</td>
<td>99</td>
<td>110</td>
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<tr>
<td>Coromup</td>
<td>103</td>
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<tr>
<td>Mandelup</td>
<td>147 mg</td>
<td>32.1%</td>
<td>0.019%</td>
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</table>

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).

BREEDING

PBA Leeman (tested as WALAN2428) was bred and progressed by Dr Bevan Buichell, 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 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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Western Australia
David Clegg
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David.Clegg@seednet.com.au

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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