

PBA Herald XT[®]

Small red lentil



PBA

PULSE BREEDING AUSTRALIA

Better pulse varieties faster

Herbicide tolerant and disease resistant red lentil



PBA Herald XT[®] (left) compared to Nipper[®] (right)

MAIN ADVANTAGES

PBA Herald XT[®] is the first lentil variety with improved tolerance to the herbicides imazethapyr for use under APVMA permit (PER13249) and flumetsulam (e.g. Broadstrike[®], Multitude[®]), plus reduced sensitivity to some sulfonylurea and imidazolinone herbicide residues from a prior crop.

Note that product label rates, plant-back periods and all label directions for use must still be adhered to.

PBA Herald XT[®] has a good combination of Ascochyta blight and BGM resistance and is a direct replacement for Nipper[®] in medium to higher rainfall areas and early sowing situations where improved herbicide tolerance is beneficial. PBA Herald XT[®] is lower yielding than PBA Flash[®], PBA Blitz[®], PBA Jumbo[®], particularly in drier shorter season areas, but may be preferred where disease and weed control are major issues.

SEED PROTECTION & ROYALTIES

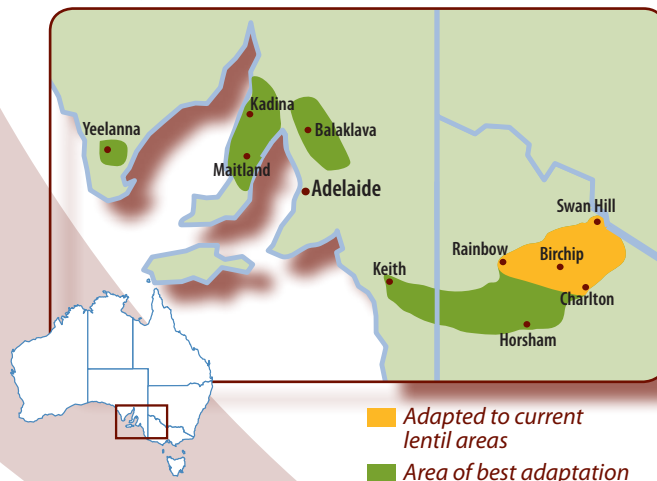
PBA Herald XT[®] is protected under Plant Breeder's Rights (PBR) legislation. A PBR bag licence applies to the seed and a Seed Technology Royalty applies to the seed price. Authorised growers can retain seed from production of PBA Herald XT[®] for their own seed use.

An End Point Royalty (EPR) of \$5.50/t (including GST) applies to this variety when delivered to authorised EPR collectors. Seed is commercialised by PBSeeds and available from 2012.

KEY FEATURES

- First lentil variety featuring;
 - tolerant to applied imazethapyr at label rates.
 - improved tolerant to applied flumetsulam.
 - improved tolerance to residual levels of sulfonylurea and imidazolinone herbicides.
- Sensitivity to metribuzin similar to Nipper[®] and poorer than other varieties.
- Good combination of Ascochyta blight and Botrytis grey mould resistance.
- Suitable for early sowing to maximise yield.
- Average yield similar to Nipper[®] but lower than other varieties, particularly in low rainfall shorter season areas.
- Adaptation is best in longer growing seasons and medium to higher rainfall areas.
- Poor early vigour and mid to late flowering similar to Nipper[®].
- Small sized red lentil with a grey seed coat but flatter than Nipper[®] and PBA Bounty[®].

AREA OF ADAPTATION



another lentil upgrade

YIELD & ADAPTATION

Where the herbicide tolerance of PBA Herald XT[®] is not an advantage, its average yield is similar to Nipper[®], but less than PBA Jumbo[®], PBA Blitz[®], PBA Flash[®] and PBA Bounty[®] in all lentil growing regions of Southern Australia particularly in drier shorter season areas.

PBA Herald XT[®] is similar to Nipper[®] in terms of plant type, vigour and flowering time.

Its time to maturity is later than Nipper[®] but similar to Nugget and therefore performs best in longer growing seasons.

The high level of disease resistance offered by this variety will be beneficial in medium to higher rainfall lentil growing regions and when sowing early similar to Nipper[®].

2004-2011 LONG-TERM YIELD OF LENTIL VARIETIES (* Yields expressed as a % of Nugget's yield)

| | South Australia | | | | Victoria | | New South Wales | | Western Australia | |
|----------------------------------|-----------------|-----------|-----------|------------|-----------|-----------|-----------------|------------|-------------------|-----------|
| | Yorke P | Mid North | Lower EP | South East | Wimmera | Mallee | South East | South West | Zone 1 | Zone 4 |
| Small red | | | | | | | | | | |
| PBA Bounty [®] | 103 | 103 | 104 | 99 | 101 | 102 | 98 | 104 | 102 | 102 |
| PBA Herald XT[®] | 98 | 99 | 97 | 98 | 99 | 98 | 94 | 99 | 92 | 91 |
| Nipper [®] | 100 | 102 | 101 | 102 | 96 | 94 | 93 | 98 | 94 | 89 |
| Northfield | 94 | 93 | 89 | 92 | 90 | 88 | 86 | 91 | - | 85 |
| Medium red | | | | | | | | | | |
| PBA Ace [®] | 110 | 112 | 114 | 117 | 112 | 114 | 118 | 113 | 112 | 114 |
| PBA Blitz [®] | 105 | 107 | 109 | 106 | 102 | 102 | 105 | 103 | 104 | 104 |
| PBA Bolt [®] | 105 | 107 | 109 | 113 | 111 | 111 | 112 | 107 | 106 | 109 |
| PBA Flash [®] | 106 | 109 | 110 | 114 | 101 | 100 | 99 | 104 | 101 | 103 |
| Nugget | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Large red | | | | | | | | | | |
| PBA Jumbo [®] | 108 | 107 | 108 | 108 | 102 | 102 | 104 | 104 | 103 | 102 |
| Aldinga | 98 | 98 | 93 | 97 | 92 | 92 | 95 | 96 | - | 95 |
| Large green | | | | | | | | | | |
| Boomer [®] | 104 | 104 | 105 | 108 | 99 | 99 | 103 | 105 | 100 | 98 |

Data courtesy of NVT, PBA, SARDI, DPI Victoria, NSW-DPI

AGRONOMIC AND DISEASE TRAITS OF LENTIL VARIETIES

| | Vigour | Flower time | Maturity | Lodging resistance | Pod drop | Shattering | Ascochyta blight | | Botrytis grey mould | Boron | Salt |
|----------------------------------|------------|-----------------|-----------------|--------------------|-----------|------------|------------------|----------|---------------------|----------|----------|
| | | | | | | | Foliage | Seed | | | |
| Small red | | | | | | | | | | | |
| PBA Bounty [®] | Mod | Mid/Late | Mid | S | R | R | MR | MR | MS | I | MI |
| PBA Herald XT[®] | Mod | Mid/Late | Mid/Late | MR | MR | R | R | R | MR | I | I |
| Nipper [®] | Poor/Mod | Mid/Late | Mid | MR | MR | MR | MR | R | R | I | MT |
| Northfield | Poor/Mod | Mid | Mid | MR | MR | MR | MR | R | S | I | I |
| Medium red | | | | | | | | | | | |
| PBA Ace [®] | Good | Mid | Mid | MS/MR | R | MS/MR | R | R | MR | I | I |
| PBA Blitz [®] | Mod/Good | Early | Early | MS | MR | MR | MR | MR | R | I | I |
| PBA Bolt [®] | Mod/Good | Early/Mid | Early/Mid | R | R | R | MR | R | MS | MI | MI |
| PBA Flash [®] | Mod | Early/Mid | Early/Mid | MR | MR | MR | MS | MR | MS | MI | MI |
| Nugget | Mod | Mid | Mid/Late | MS | MR | R | MS/MR | MS | MS/MR | I | I |
| Large red | | | | | | | | | | | |
| PBA Jumbo [®] | Mod | Mid | Mid | S | MR | MR | MR | R | MS | MI | I |
| Aldinga | Mod | Mid | Mid | S | R | MR | MR | MS | MS | I | MI |
| Large green | | | | | | | | | | | |
| Boomer [®] | Good | Mid | Mid/Late | S | MR | MS | MR | MS | MR | I | I |

Key: Mod=moderate, Med=medium, S=susceptible, MS=moderately susceptible, MR=moderately resistant, R=resistant, I=intolerant, MI=moderately intolerant, MT=moderately tolerant.

DISEASE MANAGEMENT

PBA Herald XT[®] is targeted towards medium to higher rainfall areas where it is important to consider foliar disease as part of lentil crop management. Its high level of disease resistance may mean that no foliar fungicides are necessary in many seasons, reducing production costs.

However seasonal crop monitoring may still be required.

A recommended fungicide seed dressing is beneficial for the early control of seedling root rots and BGM.

Botrytis grey mould (BGM)

- PBA Herald XT[®] is rated Moderately Resistant (MR) to BGM which will assist in the management of this disease.
- In BGM prone areas monitor crop growth and apply a preventative fungicide just prior to canopy closure. Further monitoring and sprays may be required when either prolonged wet spring conditions occur or in areas with long growing seasons.

Ascochyta blight (AB)

- PBA Herald XT[®] is rated as Resistant (R) to foliar and seed infection. Foliar resistance is better than Nipper[®] and similar to Northfield, PBA Blitz[®] and PBA Jumbo[®].
- In severe disease risk environments; if symptoms are detected after the commencement of podding a fungicide application is required prior to subsequent rainfall events.

AGRONOMY

Agronomic characteristics

Paddock selection and basic requirements for production are similar to other lentil varieties.

PBA Herald XT[®] has the following characteristics;

- Mid-late flowering similar to Nipper[®] and PBA Bounty[®]. Plant height and height of pods is generally higher than Nipper[®] but it can be short compared to varieties such as PBA Flash[®] in dry environments.
- Moderately susceptible to lodging in areas of best adaptation but is mostly resistant to lodging in dry years.
- Intolerant to salinity (NaCl) and more sensitive than PBA Bounty[®], PBA Flash[®], PBA Jumbo[®] and Nipper[®].
- Intolerant of soil boron, similar to Nipper[®] whereas PBA Flash[®] and PBA Jumbo[®] are slightly improved over all other varieties.

Sowing

- PBA Herald XT[®] is suitable for early sowing to maximise grain yield with lower risk of disease development similar to Nipper[®].
- Target plant densities of 120 plants/m² adjusting sowing rates to the small seed size of this variety and germination % of the seed used each year.

Herbicide tolerance

- PBA Herald XT[®] has tolerance to imazethapyr when applied pre or post emergence as per APVMA PER13249.
- PBA Herald XT[®] has improved tolerance to flumetsulam applied in crop.
 - In conventional lentil varieties flumetsulam applied according to label directions may cause height reduction, crop discolouration, delayed flowering and yield loss.
 - Post emergent application of flumetsulam at recommended rates has resulted in yield losses up to 20% in all conventional lentil varieties on alkaline soils.
- Where flumetsulam is applied to PBA Herald XT[®] according to label directions the risk of crop damage and yield loss is minimised.
- PBA Herald XT[®] also shows less sensitivity to sulfonyleurea and imidazolinone herbicide residues from previous crop applications.
- **Growers must adhere to product label rates, plant-back periods and all label directions for use.**
- PBA Herald XT[®] is similar to Nipper[®] in that it is more sensitive to metribuzin than other varieties. Label rates of metribuzin have been used on most of the long term lentil yield trials.

Crop topping and harvest

- PBA Herald XT[®] matures at a similar time to Nugget and later than PBA Flash[®], PBA Blitz[®] and Nipper[®].
- As with all lentils correct timing for crop topping, timely harvest and optimum machine setup will optimise yield and seed quality.

QUALITY

Seed characteristics

PBA Herald XT[®] is a small-sized lens-shaped red lentil with a grey seed coat. Seed size, as measured by 100 seed weight, is similar to Nipper[®] but flatter and slightly larger in diameter.



PBA Herald XT[®]



Nugget



Nipper[®]

PBA Herald XT[®]

Small red lentil



Better pulse varieties faster

PBA is an unincorporated joint venture between the GRDC, University of Adelaide, University of Sydney, SARDI, DPI Victoria, NSW-DPI, DAFF QLD, DAFWA and Pulse Australia. It aims to deliver better pulse varieties faster.

Quality assurance

Seed purity is very important in lentils with a restriction of 1% for varieties not of the same type. Prevent seed contamination when changing varieties, particularly where cotyledon or seed coat colour differs. Be particularly careful to avoid contamination of PBA Herald XT[®] with green lentils such as Boomer[®] as when split the yellow seeds will contaminate and reduce the value of the red lentil split product.

For the purpose of seed cleaning PBA Herald XT[®] has a seed size similar to Nipper[®].

| Variety | Market category | Seed shape | Seed coat colour | Cotyledon colour | Seed size relative to Nugget |
|----------------------------------|-----------------|-------------|------------------|------------------|------------------------------|
| Small red | | | | | |
| PBA Bounty [®] | SRP | Round | Grey | Red | 10% < |
| PBA Herald XT[®] | SRS | Lens | Grey | Red | 20% < |
| Nipper [®] | SRP | Round | Grey | Red | 20% < |
| Northfield | SRP | Round | Tan | Red | 20% < |
| Medium red | | | | | |
| PBA Ace [®] | MRS | Lens | Grey | Red | equal |
| PBA Blitz [®] | MRS | Lens | Grey | Red | 15-20% > |
| PBA Bolt [®] | MRS | Lens | Grey | Red | equal |
| PBA Flash [®] | MRS | Lens | Green | Red | 0-10% > |
| Nugget | MRS | Lens | Grey | Red | - |
| Large red | | | | | |
| PBA Jumbo [®] | LRS | Lens | Grey | Red | 20% > |
| Aldinga | LRS | Lens | Green | Red | 20% > |
| Large green | | | | | |
| Boomer [®] | LG | Lens | Green | Yellow | 50% > |

Key: SRS=small red (split), SRP=small red (premium round), MRS=medium red (split), MRD=medium red (dual purpose), LRS=large red (split), LG=large green, < = seed size less than Nugget, > = seed size greater than Nugget

MARKETING

- PBA Herald XT[®] fits into the human food market for small sized red lentil, particularly to be consumed whole or split. The disease resistance of this variety will assist it achieve high grain quality from receipt point to market.
- PBA Herald XT[®] should be segregated from all other varieties for marketing, unless otherwise stated.
- PBA Herald XT[®] will be open marketed with an End Point Royalty (EPR) of \$5.50/t (including GST), applied upon delivery.

BREEDING

PBA Herald XT[®] (evaluated as CIPAL0702) was developed by conventional mutation plant breeding techniques using the PBA breeding line 96-047L*99R060.

It was developed by Agriculture Victoria Services Pty Ltd (AVS) through the work of PBA staff.

PBA Herald XT[®] is part of a pipeline of varieties that will be released by PBA. Pulse Breeding Australia formed a commercial partnership with PBSeeds to multiply, manage and release PBA lentil varieties. PBSeeds and PBA are delivering varieties to growers 2-4 years earlier by fast tracking the identification, multiplication, generation of information and release of new varieties.

The Southern Pulse Agronomy program has been integral to the process.

FOR MORE INFORMATION

Pulse Breeding Australia

Brondwen MacLean

GRDC

PO Box 5367

Kingston ACT 2604

Ph: 02 6166 4500

brondwen.maclean@grdc.com.au

www.grdc.com.au/pba

PBA Lentils

Dr Michael Materne

DPI Victoria

Private Bag 260

Horsham Vic 3401

Ph: 03 5362 2312

michael.materne@dpi.vic.gov.au

SEED ENQUIRIES

VIC / SA / NSW / WA

PBSeeds - Head Office

1324 Blue Ribbon Rd

Kalkee Vic 3401

Ph: 03 5383 2213

Fax: 03 5383 2208

info@pbseeds.com.au

www.pbseeds.com.au



At PBSeeds we are leaders in the production of fine quality seed and grains. We take great care and pride in ensuring we match our customer's requirements. PBSeeds is proud to partner with PBA and invests in the improvement of Australian lentil varieties.

FOR MORE INFORMATION

Janine Sounness, PBSeeds Ph: 03 5382 7292

AGRONOMIC ENQUIRIES

VICTORIA

Jason Brand, DPI Victoria, Ph: 03 5362 2341

Wayne Hawthorne, Pulse Australia, Ph: 0429 647 455

SOUTH AUSTRALIA

Larn McMurray, SARDI, Ph: 08 8842 6265

Wayne Hawthorne, Pulse Australia, Ph: 0429 647 455

NEW SOUTH WALES

Luke Gayner, NSW-DPI, Ph: 02 6938 1657

Trevor Bray, Pulse Australia, Ph: 0428 606 886

WESTERN AUSTRALIA

Ian Pritchard, DAFWA, Ph: 08 9368 3515

Alan Meldrum, Pulse Australia, Ph: 0427 384 760

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 © 2011

Version September/2012