PBA Royal™
Medium Kabuli Chickpea

The information in this document is current as at September 2019. For updated information after this date, please refer to NVT results.

Better pulse varieties faster

High yielding kabuli chickpea

KEY FEATURES

- Highest yielding medium sized kabuli chickpea in mid to high yield potential environments (greater than 1.5 t/ha) in all kabuli growing areas of Australia
- Predominantly 8 mm (larger than Genesis™090)
- Rated as moderately susceptible to Ascochyta blight (same as Genesis™090) in the southern GRDC cropping region and moderately resistant to Ascochyta blight in the northern GRDC cropping region
- Early to mid-flowering and maturity
- Semi spreading plant type similar to Genesis™090

MAIN ADVANTAGES

PBA Royal™ is a high yielding medium sized kabuli chickpea. It is particularly well adapted to the medium rainfall chickpea growing regions of south eastern Australia. In these regions, it has improved grain yields in mid to high yielding environments (greater than 1.5 t/ha) compared to Genesis™090, PBA Monarch™ and Genesis™Kalkee. In the northern region, PBA Royal™ has higher yields than PBA Monarch™ across a range of yield groups (1.0 to 4.0 t/ha). PBA Royal™ has seed size greater than Genesis™090 but smaller than PBA Monarch™.

SEED PROTECTION & ROYALTIES

PBA Royal™ is protected under Plant Breeder’s rights (PBR) legislation. Growers can only retain seed from their production of PBA Royal™ for their own use. An end point royalty (EPR) of $7.15 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

The information in this document is current as at September 2019. For updated information after this date, please refer to NVT results.
YIELD & ADAPTATION

In south eastern Australia, PBA Royal is the highest yielding kabuli in mid to high yielding environments (1.5 – 2.5 t/ha). PBA Royal has performed particularly well in the Mid North of South Australia and Wimmera of Victoria.

In the northern GRDC region, PBA Royal has higher yields than PBA Monarch across a range of yield groups (1.0 to 4.0 t/ha).

For yield data relevant to your region, please visit NVT Online, https://app.nvtonline.com.au.

DISEASE MANAGEMENT

Ascochyta blight (AB)

- In the southern GRDC region, PBA Royal is rated moderately susceptible (MS) to foliar infections, similar to Genesis™ 090.
- In the northern GRDC region, PBA Royal is rated moderately resistant (MR) to foliar infections.
- A registered seed dressing for the control of Ascochyta blight is highly recommended to protect against seed transmitted Ascochyta blight.

Disease resistance rating and AB yield loss of kabuli chickpea

<table>
<thead>
<tr>
<th>Variety</th>
<th>Botrytis grey mould (BGM) resistance rating</th>
<th>Phytophthora root rot (PRR) resistance rating</th>
<th>Ascochyta blight (AB)</th>
<th>Yield under very high disease (AB) pressure t/ha</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Foliage / Stem</td>
<td></td>
<td>F/nightly</td>
</tr>
<tr>
<td>PBA Royal</td>
<td>S*</td>
<td>MS*</td>
<td>MR*</td>
<td>S*</td>
</tr>
<tr>
<td>Almaz</td>
<td>S</td>
<td>VS</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>Genesis™ Kalkee</td>
<td>S</td>
<td>VS</td>
<td>MS</td>
<td>MR/MS</td>
</tr>
<tr>
<td>Genesis™ 090</td>
<td>S</td>
<td>VS</td>
<td>MS</td>
<td>MR</td>
</tr>
<tr>
<td>Genesis™ 425</td>
<td>S</td>
<td>S</td>
<td>MR</td>
<td>S</td>
</tr>
<tr>
<td>PBA Monarch</td>
<td>S</td>
<td>VS</td>
<td>S</td>
<td>S</td>
</tr>
</tbody>
</table>

*Provisional disease rating.

Source disease ratings: Agriculture Victoria, SARDI, NSW DPI and DAF Q pathology and PBA teams.

Source of yield loss data: PBA, Horsham Victoria 2016, LSD for interaction (P<0.001) = 0.48
Pulse Breeding Australia

AGRONOMY

Agronomic characteristics

Paddock selection and agronomic requirements for growing PBA Royal are similar to those for other kabuli varieties. PBA Royal has the following characteristics:

- Early to mid-flowering, approximately 3 days earlier than Genesis™090 but later than PBA Monarch.
- Mid maturing, similar to Genesis™090 but later than PBA Monarch.
- Plant height and lowest pod height are slightly higher than Genesis™090 but lower than Genesis™Kalkee.
- Lodging resistance is similar to Genesis™090.
- Semi-spreading plant type similar to Genesis™090.
- Intolerant of salt, similar to PBA Monarch.

Sowing

- Target the optimum planting window for kabuli chickpeas in your area. Be aware that early sowing can lead to excess biomass and increases the risk of lodging.
- PBA Royal is prone to lodging when sown on wide (>50 cm) row spacing.
- Sow high quality seed at rates calculated to establish 25 to 35 plants/m².
- Treat seed with a registered fungicide seed treatment.
- Inoculate with Group N Chickpea rhizobium.

Herbicide tolerance

- PBA Royal has performed similarly to Genesis™090 to most registered pre- and post-emergent herbicides when applied at recommended rates in herbicide tolerance screening nurseries on alkaline soils in South Australia.

All chickpea crops will require timely foliar fungicide applications as per label directions to minimise the impact of Ascochyta blight.

Like all varieties, PBA Royal is more susceptible to pod infection than foliar infection hence will also require protection prior to rain events during podding to prevent seed staining and abortion.

Abiotic spotting on leaves and stems can be confused with Ascochyta blight. Abiotic spots are often small, and create a regular pattern on leaves and or stems. No disease has been associated with this feature, and no management is required. If unsure, contact your state based pulse pathologist for diagnostics.

Botrytis grey mould (BGM)

- PBA Royal is susceptible (S) to BGM.
- Early sowing coupled with favourable growth conditions in spring can lead to crops with large biomass. High biomass crops are more prone to lodging which increases the BGM risk. Under these conditions, PBA Royal can also be prone to lodging like other kabuli varieties.
- Apply a preventative fungicide prior to canopy closure in high risk BGM situations i.e high biomass and average temperature of 15 °C and above and high humidity. BGM is rare in the southern GRDC region.

Phytophthora root rot (PRR)

- PBA Royal is very susceptible (VS) to PRR.
- Avoid paddocks that have: a) PRR in previous chickpea or lucerne crops; b) history of lucerne or medic; c) areas prone to waterlogging.

Virus

- PBA Royal is susceptible (S) to the suite of viruses, similar to other kabuli varieties.
- Planting into paddocks with standing cereal (or other crop) stubble, timely sowing and successful establishment of a uniform recommended plant population (see below) provide the most effective management in virus-prone districts.

Herbicide tolerance

- PBA Royal has performed similarly to Genesis™090 to most registered pre- and post-emergent herbicides when applied at recommended rates in herbicide tolerance screening nurseries on alkaline soils in South Australia.

<table>
<thead>
<tr>
<th>Variety</th>
<th>Early vigour</th>
<th>Flowering</th>
<th>Maturity</th>
<th>Plant height</th>
<th>Lodging resistance</th>
</tr>
</thead>
<tbody>
<tr>
<td>PBA Royal</td>
<td>Moderate</td>
<td>Early–Mid</td>
<td>Mid</td>
<td>Medium</td>
<td>MR</td>
</tr>
<tr>
<td>Almaz</td>
<td>Moderate</td>
<td>Mid</td>
<td>Mid–Late</td>
<td>Medium–Tall</td>
<td>MR</td>
</tr>
<tr>
<td>Genesis™Kalkee</td>
<td>Good</td>
<td>Mid–Late</td>
<td>Late</td>
<td>Tall</td>
<td>R</td>
</tr>
<tr>
<td>Genesis™090</td>
<td>Good</td>
<td>Mid</td>
<td>Mid</td>
<td>Medium</td>
<td>MR</td>
</tr>
<tr>
<td>Genesis™42S</td>
<td>Mod–Good</td>
<td>Mid</td>
<td>Mid</td>
<td>Medium</td>
<td>MR</td>
</tr>
<tr>
<td>PBA Monarch</td>
<td>Poor–Mod</td>
<td>Early</td>
<td>Early</td>
<td>Medium</td>
<td>MS</td>
</tr>
</tbody>
</table>

Source: Pulse Breeding Australia

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

Ute guides, crop and disease management bulletins
PBA Royal
Medium Kabuli Chickpea

SEED QUALITY

PBA Royal® is a medium seeded (predominantly 8 mm) kabuli chickpea. It has a light cream-beige seed coat which has a defined kabuli seed shape with good wrinkling characteristics. It is larger in size than Genesis™090 but smaller than PBA Monarch® and Genesis™Kalkee.

<table>
<thead>
<tr>
<th>Variety</th>
<th>Seed weight (g/100)</th>
<th>10 mm</th>
<th>9 mm</th>
<th>8 mm</th>
<th>7 mm</th>
<th>6 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>PBA Royal®</td>
<td>38.8</td>
<td>0</td>
<td>24.5</td>
<td>58.2</td>
<td>16.6</td>
<td>0.6</td>
</tr>
<tr>
<td>Almaz®</td>
<td>39.7</td>
<td>0.2</td>
<td>25.5</td>
<td>40.1</td>
<td>30.8</td>
<td>3.1</td>
</tr>
<tr>
<td>Genesis™ Kalkee</td>
<td>41.5</td>
<td>0.8</td>
<td>0.8</td>
<td>33.7</td>
<td>50.4</td>
<td>14.3</td>
</tr>
<tr>
<td>Genesis™090</td>
<td>32.8</td>
<td>0</td>
<td>1.5</td>
<td>44.4</td>
<td>52.7</td>
<td>1.3</td>
</tr>
<tr>
<td>Genesis™425</td>
<td>31.6</td>
<td>0</td>
<td>1.7</td>
<td>43.3</td>
<td>52.6</td>
<td>2.2</td>
</tr>
<tr>
<td>PBA Monarch®</td>
<td>39.7</td>
<td>0.2</td>
<td>25.6</td>
<td>46.0</td>
<td>25.4</td>
<td>2.8</td>
</tr>
</tbody>
</table>

Source: Pulse Breeding Australia
Data is average of 6 sites, southern (4 sites) and northern (2 sites) Australia across 2 years (2016-17)

MARKETING

Favourable feedback on the seed quality of PBA Royal® by both domestic and international traders has been received.

BREEDING

PBA Royal® (evaluated as CICA1156) was developed by the PBA chickpea breeding program (led by NSW DPI) from a cross between Genesis™079 and FLIP97-530C.

PULSE BREEDING AUSTRALIA

Better pulse varieties faster

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

PULSE AGRONOMY

Agronomy and disease management information has been developed with the assistance of the ‘Southern region pulse agronomy project’ a co-investment by GRDC, Agriculture Victoria and SARDI, and previously NSW DPI.

FOR MORE INFORMATION

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NORRENDA RRRNI

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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 kabuli chickpea varieties.

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