**KEY FEATURES of Kaspa®**

- Kaspa® is broadly adapted and has shown wide adaptation and high yield potential, but is best suited to longer growing season environments.
- Kaspa® has fair lodging resistance at maturity and is resistant to shattering at harvest.
- High plant populations and early sowing has proved beneficial in dry years
- Downy mildew control is now required in susceptible areas of South Australia & Victoria.
- Kaspa® is more susceptible to Bacterial Blight than conventional pea types, and needs to be managed for blackspot and powdery mildew in disease prone areas.
- Kaspa® is susceptible to Pea Seed-borne Mosaic Virus and seed testing is recommended.
- Crop topping and desiccation is possible with Kaspa®.

Where Kaspa® fits into the farming system:
Kaspa® is very high yielding and has proved to be adapted to most pea growing areas of southern and western Australia. It does however have to be considered carefully against alternatives in low rainfall areas, in areas prone to early high temperatures and drought stress, or in areas prone to frequent and severe vegetative frosts that are likely to exacerbate bacterial blight infection and spread.

**Variety Characteristics:**

**Breeding:** Kaspa® (tested as PSL4) was developed by the Australian Coordinated Field Pea Improvement Program, (now Pulse Breeding Australia). It was bred and subsequently developed at what is now DPI Victoria, Horsham, and released after evaluations in Vic, SA and NSW.

**Agronomic Characteristics:** Kaspa® is a semi-dwarf, semi-leafless variety that has an erect vigorous habit during early growth that shows good harvest-ability, but can lodge at maturity when high yielding or weather conditions are unfavourable. Flowering is approximately 7 days later than Parafield, but is of short duration, but maturation date is similar to Parafield.

Kaspa® was the first variety to have pod shatter resistance (sugar pod) that helps reduce grain loss if harvest is delayed or poor conditions exist at maturity. It produces a uniform large rounded dun pea that is preferred by many whole grain human consumption markets.

**Agronomic features & disease resistance**

<table>
<thead>
<tr>
<th>Variety</th>
<th>Seed Type</th>
<th>Plant habit</th>
<th>Plant vigour</th>
<th>Relative flowering time</th>
<th>Maturity</th>
<th>Standing at maturity</th>
<th>Pod shatter resistance</th>
<th>Black Spot</th>
<th>Downy Mildew (1)*</th>
<th>Downy Mildew (2)*</th>
<th>Powdery mildew</th>
<th><strong>Bacterial Blight (P. syringae pv. syringae)</strong></th>
<th>PSbM***</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parafield</td>
<td>Dun</td>
<td>C</td>
<td>High</td>
<td>Mid</td>
<td>Mid</td>
<td>Poor</td>
<td>MR</td>
<td>MS</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td>R</td>
<td>S</td>
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<tr>
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<td>Dun</td>
<td>SD-SL</td>
<td>Fair</td>
<td>Late</td>
<td>Mid</td>
<td>Poor-Fair</td>
<td>MR</td>
<td>MS</td>
<td>S</td>
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<td>R</td>
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<td>Poor-Fair</td>
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<td>MR</td>
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<tr>
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<td>R</td>
<td>MS</td>
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</table>

* Downey mildew: (1) = ‘parafield’ strain, (2) = ‘kaspa’ strain. ** Bacterial Blight testing is based on field screening for yield loss to *Pseudomonas syringae pv. syringae*. *** = variation depending on pathovar. Shattering: R = resistant; S = susceptible. Plant habit: C = conventional; SL = semi-leafless, SD = semi dwarf. Disease ratings: R = resistant; MR = moderately resistant; MS = moderately susceptible; S= susceptible.

www.pulseaus.com.au
Yield and adaptation

Kaspa® has shown wide spread and high yield potential across a range of environments, but under harsh finishing conditions (as has been experienced in recent years), can suffer and yield poorly due to its late flowering. It has shown its best relative long-term advantage in the medium to higher rainfall southern regions. Kaspa® has proven to be less suited to cold, frosty environments that have bacterial blight problems in field peas.

Note that Kaspa® is less suited to northern Australia because of its susceptibility to Powdery mildew and Pea seed-borne Mosaic Virus.

National Variety Trials – NSW, SA Regional Long Term Yields as % of Kaspa: 2004-2010

<table>
<thead>
<tr>
<th>Variety</th>
<th>NSW South-east</th>
<th>NSW South-west</th>
<th>NSW North-west</th>
<th>Lower EP</th>
<th>Upper EP</th>
<th>Mid North</th>
<th>Yorke P</th>
<th>South East</th>
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<td>Parafield</td>
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<td>100 (40)</td>
<td>104 (48)</td>
<td>97 (19)</td>
<td>96 (9)</td>
<td>90 (26)</td>
<td>95 (26)</td>
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<tr>
<td>Yarum</td>
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<td>122 (44)</td>
<td>104 (13)</td>
<td>102 (7)</td>
<td>104 (34)</td>
<td>101 (20)</td>
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<td>92 (32)</td>
<td>98 (18)</td>
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<td>89 (3)</td>
<td>84 (7)</td>
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<tr>
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<td>100 (40)</td>
<td>100 (33)</td>
<td>100 (19)</td>
<td>100 (9)</td>
<td>100 (44)</td>
<td>100 (26)</td>
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<td>100 (7)</td>
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</table>

Numbers in ( ) = site years. Yield data courtesy of Aust Crop Accreditation System – National Variety Trials. Data also courtesy of SARDI, DPI Vic, NSW DPI before 2005

National Variety Trials – Vic, WA Regional Long Term Yields as % of Kaspa: 2004-2010

<table>
<thead>
<tr>
<th>Variety</th>
<th>Vic Wimmera</th>
<th>Vic Mallee</th>
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<td>-</td>
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<td>-</td>
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<td>100 (6)</td>
<td>96 (12)</td>
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<td>89 (8)</td>
<td>-</td>
<td>-</td>
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<td>-</td>
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<td>-</td>
</tr>
<tr>
<td>Kaspa</td>
<td>100 (28)</td>
<td>100 (49)</td>
<td>100 (3)</td>
<td>100 (4)</td>
<td>100 (8)</td>
<td>100 (19)</td>
<td>100 (22)</td>
<td>100 (22)</td>
<td>100 (35)</td>
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</table>

Numbers in ( ) = site years. Yield data courtesy of Aust Crop Accreditation System – National Variety Trials. Data also courtesy of SARDI, DPI Vic, NSW DPI before 2005

Quality Characteristics

Kaspa® seeds are considered better quality than other dun type varieties as its seeds are round with few dimples and a more consistent light brown/red in colour rather than variable green/brown. Higher splitting yields combined with a ‘sweeter’ taste compared to traditional dun peas like Parafield has become a desirable marketing feature in human consumption markets such as India.

Kaspa® grain is now described as being of the ‘kaspera’ dun type, along with its earlier flowering equivalents PBA Gunyah® and PBA Twilight® that can be co-mingled with it.

Semi-leafless pea types like Kaspa® are less suited to sprouting markets because of their tendrils.

There is less hard-seeded-ness in Kaspa® than other dun types, which is significant in crop rotations.
This VMP updates and reinforces those management issues with Kaspa\textsuperscript{g} peas that may be different to other pea varieties. Refer to existing guides for other general pea management issues.

**Seeding Rate:** Target 40 – 65 plants/m\textsuperscript{2}. Kaspa\textsuperscript{g} will often suffer significant yield reductions if grown at less than 40 plants/m\textsuperscript{2} principally due to decreased harvesting efficiency. Do not reduce seeding rates to allow a more open canopy for crop-topping. Early canopy closure is critical for controlling herbicide resistant ryegrass.

A 10 to 20\% higher seeding rate than recommended for Parafield can often result in a significant yield increase, and increase Kaspa's competitive-ness against weeds. In low rainfall environments a higher seeding rate with Kaspa\textsuperscript{g} overcomes the problem of poor dry matter being produced, although the resultant increased yield may not always be economic.

**Sowing Date:** The sowing date to target for Kaspa\textsuperscript{g} is similar to Parafield in most areas, aimed at:
- Minimising black spot and other diseases. Early sowing is possible with Kaspa\textsuperscript{g}, but the potential for disease is increased.
- Kaspa\textsuperscript{g} is more sensitive than Parafield to yield loss when sowing is delayed and has shown greater yield response to being sown early in recent years because of dry springs and Kaspa’s greater susceptibility to them.
- In frost prone areas Kaspa\textsuperscript{g} can be sown one to three weeks later than Parafield to avoid late frosts during flowering and early pod fill. Its yield potential is reduced because of the subsequent shorter flowering duration and greater exposure to the risk of late heat stress.

**Row Spacing:** NSW DPI trials have shown it is safe to widen field pea row spacing to 30 cm, however at the wider (50 cm) rows yields were lower and lodging may be greater with an erect variety such as Kaspa\textsuperscript{g}.

**Herbicide Sensitivity:**
- Kaspa\textsuperscript{g} suffers less yield loss than Parafield to Broadstrike, Raptor and Spinnaker.
- Kaspa\textsuperscript{g} shows a similar level of susceptibility as Parafield to metribuzin (PSPE and Post), Brodal, Brodal+MCPA, Simazine+Duron and MCPA-Na treatments.

**Disease Management:** Kaspa\textsuperscript{g} is no longer resistant to Downy Mildew because a new strain has developed. A metal-axyl seed dressing is now required in susceptible areas.

Greater emphasis on Bacterial Blight prevention and control is needed in Kaspa\textsuperscript{g} than with Parafield and other conventional pea varieties. Sow clean seed, and avoid damaging the crop with herbicides or physical practices such as rolling or wheel tracks during cold, frosty or wet periods.

To minimise yield losses from Black spot, Bacterial blight and Powdery mildew follow best management guidelines for your region (see ‘Other reading’ below).

Paddock inspections of certified seed crops and seed tests for bacterial blight freedom on Kaspa seed are conducted and provided by Seednet on all commercially bought seed.

**Rolling:** Kaspa\textsuperscript{g} paddocks may still need to be rolled post sowing to enhance harvest efficiency, or avoid contamination with dirt, stones etc, particularly in areas or seasons where pod height is low or lodging occurs. Beware of rolling after emergence as crop damage can increase bacterial blight risk.

**Insect control:** Monitoring and early budworm control is more critical with Kaspa\textsuperscript{g} because of its later flowering time and short flowering duration. Higher moth numbers are present, and grub pressure is usually higher at this time compared with varieties with earlier flowering and longer duration.

Sweep netting is more difficult in a semi leafless pea because of tendrils and their erect biomass. Threshold levels may need to be lowered, or use of a beat-sheet to be more accurate in assessing actual grub numbers and size.

**Frost and heat:** The later flowering of Kaspa\textsuperscript{g} and its short flowering and podding duration can often help escape normal frost periods, however a late frost or heat event may cause more significant yield loss than in conventional varieties such as Parafield or Sturt\textsuperscript{c}. Impact of frost in the vegetative stages can be exaggerated by the presence of bacterial blight in conjunction with crop stress or physical damage.

**Crop topping:** Kaspa\textsuperscript{g} matures early enough to be crop-topped to prevent weed seed set, particularly ryegrass. Even in high yielding bulky crops, ryegrass seed heads will emerge above the canopy.

**Windrowing:** Windrowing has been successful with Kaspa\textsuperscript{g}, aided by its tendrils, but with similar flow problems and modification needs as required with belt front harvesters. Windrows must be rolled immediately after swathing.

Harvest Kaspa® as soon as seed moisture falls to 14% and avoid cool damp conditions. Its non-shattering trait reduces the comparative risk of seed loss before and during harvest, but delayed harvest leads to seed quality decline. Crop lifters are usually not required for harvesting Kaspa®, unless the crop is very short. A flex front is ideal. In very dense crops, side cutters or coulters may be needed to ‘break open’ the crop to prevent yield loss. Harvesting problems with Kaspa® are mostly associated with draper fronts or excessive ground speed.

A raised cross auger with paddles fitted above broad elevator intake can be fitted on draper fronts to greatly help crop intake. Lupin breakers on the cross and/or table auger will keep material flowing. Pea pluckers can throw Kaspa® peas over the back of the comb, guards or backward facing rods can be fitted.


Marketing:
An End Point Royalty of $2.20 per tonne (GST inclusive) applies to Kaspa®. Segregation of Kaspa® from other ‘dimpled’ dun type peas is now common as Kaspa® seeds are considered better quality than other dimpled dun variety types in food markets. It can however be co-mingled with other dun types if required or intended for stockfeed use.

Seed Availability and PBR:
Kaspa® is protected by Plant Breeders Rights, any unauthorised commercial propagation or any sale, conditioning, export, import or stocking of propagating material of his variety is an infringement under the Plant Breeder’s rights Act, 1994. Growers are allowed to retain seed from production of this variety for their own use as seed.

Kaspa®
Seed Supply enquiries:

<table>
<thead>
<tr>
<th>Contact</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wayne Hawthorne (Pulse Aust) 0429 647455; Alan Meldrum (Pulse Aust) 0427 384 760; Larn McMurray (SARDI) 08 8842 6265; Peter Matthews, NSW DPI. 02 6977 3333;</td>
<td>(03) 5389 0150</td>
</tr>
<tr>
<td>Trevor Bray (Pulse Aust) 0428 606 886; Tony Leonforte (Vic DPI) 03 5362 2111; Jason Brand DPI Vic 03 5362 2341; Ian Pritchard, DAFWA 08 9368 3515.</td>
<td><a href="mailto:admin@seednet.com.au">admin@seednet.com.au</a></td>
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Other Reading: For field pea management guidelines, see:
- Grain Legume Handbook 2008
- Pulse Australia publications: “Field pea disease management strategy for southern region GRDC” and “Pulse seed treatments and foliar fungicides” ([www.pulseaus.com.au](http://www.pulseaus.com.au))
- “Desiccation and harvest of field peas”.

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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.

This VMP has been jointly prepared by: Wayne Hawthorne, Pulse Australia; Tony Leonforte and Jason Brand, Vic DPI; Larn McMurray, SARDI on information and data from, SARDI, DPI Victoria, NSW DPI, DAFWA and NVT. Reproduction of this VMP in any edited form must be approved by Pulse Australia © 2005.