

KEY FEATURES of Kaspa[Ⓟ]

- Kaspa[Ⓟ] is broadly adapted and has shown wide adaption 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 split pea markets due to higher splitting efficiency. Its uniform seed colour (light brown/red) and sweet taste is also preferred by whole grain human consumption markets.

Agronomic features & disease resistance

	Seed Type	Plant habit	Plant vigour	Relative flowering time	Maturity	Standing at maturity	Pod shatter resistance	Black Spot	Downy Mildew (1)*	Downy Mildew (2)*	Powdery mildew	**Bacterial Blight (<i>P. Syringae pv. syringae</i>)	PSbMV***
Parafield [Ⓟ]	Dun	C	High	Mid	Mid	Poor	MR	MS	S	S	S	MR	S
Yarrum [Ⓟ]	Dun	SD-SL	Fair	Late	Mid	Poor-Fair	MR	MS	S	S	R	MS	R#
Morgan [Ⓟ]	Dun	Tall-SL	High	Late	Late	Poor-Fair	MR	MS	MR	S	S	MS	S
Kaspa[Ⓟ]	'kaspa'	SD-SL	High	Late	Mid	Fair-Good	R	MS	MR	S	S	S	S
PBA Gonyah [Ⓟ]	'kaspa'	SD-SL	High	Early-Mid	Early	Fair-Good	R	MS	R	S	S	S	S
PBA Twilight [Ⓟ]	'kaspa'	SD-SL	High	Early	Early	Fair-Good	R	MS	R	S	S	S	S
Bundi [Ⓟ]	White	SD-SL	High	Early	Early	Fair-Good	R	MS	R	S	S	S	S/R#
SW Celine [Ⓟ]	White	SD-SL	High	Early	Early	Good	S	MS	S	S	S	S	S
Sturt [Ⓟ]	White	C	High	Early-Mid	Mid	Poor	MR	MS	MS	S	S	MS	S
Excell [Ⓟ]	Blue	SD-SL	High	Early-Mid	Late	Good	S	MS	MR	S	S	S	S
Maki [Ⓟ]	Blue	SD-SL	Low	Early	Early	Poor-Fair	S	S	S	S	R	S	R

* Downy mildew: (1) is 'parafield' strain, (2) is 'kaspa' strain. ** Bacterial Blight testing is based on field screening for yield loss to *Pseudomonas syringae pv. syringae*. *** is 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.

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

	NSW			SA					
	South-east	South-west	North-west	Lower EP	Upper EP	Mid North	Yorke P	South East	Mallee
Parafield ^(D)	99 (73)	100 (40)	104 (48)	97 (19)	96 (9)	93 (44)	90 (26)	95 (26)	99 (7)
Yarrum ^(D)	106 (45)	106 (28)	122 (44)	104 (13)	102 (7)	104 (34)	101 (20)	109 (17)	110 (5)
Morgan ^(D)	90 (64)	92 (32)	98 (18)	89 (3)	89 (3)	84 (7)	-	86 (3)	-
Kaspa^(D)	100 (72)	100 (40)	100 (33)	100 (19)	100 (9)	100 (44)	100 (26)	100 (26)	100 (7)
PBA Gonyah ^(D)	100 (16)	100 (14)	107 (11)	102 (9)	99 (4)	99 (24)	96 (15)	100 (11)	103 (3)
PBA Twilight ^(D)	97 (16)	98 (14)	107 (11)	99 (8)-	99 (4)	97 (22)	93 (13)-	98 (11)	97 (3)
Bundi ^(D)	93 (53)	96 (27)	102 (20)	97 (11)	98 (6)	97 (29)	96 (14)	95 (17)	96 (4)
SW Celine ^(D)	106 (16)	108 (13)	120 (9)	104 (7)	-	101 (8)	99 (8)	102 (9)	-
Sturt ^(D)	100 (65)	105 (36)	113 (27)	102 (13)	101 (9)	99 (38)	95 (20)	100 (21)	109 (5)
Excell ^(D)	83 (38)	83 (22)	88 (18)	87 (8)	86 (6)	85 (21)	84 (11)	87 (12)	89 (3)
Maki ^(D)	97 (11)	100 (9)	115 (14)	-	87 (6)	91 (3)	-	-	-
Kaspa^(D) yield (t/ha)	2.48 (72)	1.75 (40)	1.37 (33)	2.11 (19)	1.74 (9)	2.52 (44)	2.58 (20)	2.98 (26)	1.51 (7)

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

	Vic				WA				
	Wimmera	Mallee	North-East	South-West	Agzone 1	Agzone 2	Agzone 3	Agzone 4	Agzone 5
Parafield ^(D)	94 (28)	95 (49)	97 (3)	92 (3)	90 (11)	90 (21)	89 (28)	87 (29)	89 (42)
Dunwa ^(D)	94 (11)	96 (17)	-	-	95 (11)	97 (17)	95 (22)	96 (24)	97 (32)
Yarrum ^(D)	100 (10)	99 (25)	-	99 (3)	100 (6)	96 (12)	97 (14)	94 (15)	98 (26)
Morgan ^(D)	91 (4)	89 (8)	-	-	-	-	-	-	-
Kaspa^(D)	100 (28)	100 (49)	100 (3)	100 (4)	100 (8)	100 (19)	100 (22)	100 (22)	100 (35)
PBA Gonyah ^(D)	102 (10)	101 (21)	-	-	102 (5)	104 (5)	101 (11)	102 (8)	103 (13)
PBA Twilight ^(D)	100 (10)	101 (22)	-	-	98 (3)	99 (9)	98 (12)	99 (13)-	100 (15)-
Bundi ^(D)	99 (21)	101 (35)	-	99 (4)	98 (4)	99 (12)	96 (12)	101 (6)	99 (22)
SW Celine ^(D)	106 (5)	105 (8)	-	-	-	-	-	-	101 (4)-
Sturt ^(D)	105 (28)	104 (48)	101 (3)	101 (3)	98 (6)	101 (17)	97 (19)	94 (20)	97 (29)
Helena ^(D)	94 (4)	94 (15)	-	-	96 (12)	101 (21)	96 (27)	98 (28)	97 (41)
Excell ^(D)	86 (19)	88 (32)	-	-	-	-	75 (5)	74 (9)	77 (7)
Maki ^(D)	-	-	-	-	-	-	-	-	-
Kaspa^(D) yield (t/ha)	1.89 (28)	1.78 (49)	2.51 (3)	1.65 (4)	2.01 (8)	1.26 (19)	1.69 (22)	1.20 (22)	1.64 (35)

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 'kaspa' dun type, along with its earlier flowering equivalents PBA Gonyah[®] 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.

Management Package

(Consult local grower guides for more detailed information)

This VMP updates and reinforces those management issues with Kaska[®] 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/m². Kaska[®] will often suffer significant yield reductions if grown at less than 40 plants/m², 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 Kaska's competitive-ness against weeds. In low rainfall environments a higher seeding rate with Kaska[®] 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 Kaska[®] is similar to Parafield in most areas, aimed at:

- Minimising black spot and other diseases. Early sowing is possible with Kaska[®], but the potential for disease is increased.
- Consult regional publications and the “Blackspot Manager” computer model for recommended sowing times in your district see: http://www.agric.wa.gov.au/content/PW/PH/DIS/crop_disease_forecast.htm.
- Kaska[®] 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 Kaska's greater susceptibility to them.
- In frost prone areas Kaska[®] 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 Kaska[®].

Herbicide Sensitivity:

- Kaska[®] suffers less yield loss than Parafield to Broadstrike, Raptor and Spinnaker.
- Kaska[®] shows a similar level of susceptibility as Parafield to metribuzin (PSPE and Post), Brodal, Brodal+MCPA, Simazine+Diuron and MCPA-Na treatments.

Disease Management: Kaska[®] 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 Kaska[®] 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 Kaska seed are conducted and provided by Seednet on all commercially bought seed.

Rolling: Kaska[®] 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 Kaska[®] 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 Kaska[®] 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[®]. 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: Kaska[®] 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 Kaska[®], 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.

Desiccation and Harvest: Desiccate when seed moisture drops to around 30%. To collect seed for this, randomly pick 10-20 stems or more across the paddock. See Pulse Point 5 “*Desiccation and Harvest of Field Peas*” at <http://www.dpi.nsw.gov.au/agriculture/field/field-crops/pulses/peas/field-peas>.

Harvest Kaska[®] 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 Kaska[®], 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 Kaska[®] 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 Kaska[®] peas over the back of the comb, guards or backward facing rods can be fitted.

See <http://www.agric.wa.gov.au/content/fcp/lp/fp/cp/harvsemileafless.pdf> or view the DVD “Successfully harvesting semi-leafless field pea” available from DAFWA.

Marketing:

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

Seed Availability and PBR:

Kaska[®] 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.

Kaska[®]
Seed Supply enquiries:

Seednet 

Phone (03) 5389 0150
admin@seednet.com.au
www.seednet.com.au

Agronomic Enquiries: Contact:

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;

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.

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)
- SARDI fact sheet “Field pea variety sowing guide 2011” (www.sardi.sa.gov.au)
- NSW DPI publications (www.agric.nsw.gov.au): “Winter Crop Variety Sowing Guide 2009”; Pulse Point 20 “Germination testing and seed rate calculation”; “Weed Control in Winter Crops 2009”; “Insect and Mite Control in Winter Crops”; “Desiccation and harvest of field peas”.
- Vic DPI “Winter Crop Summary 2011” and fact sheets (www.dpi.vic.gov.au).

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