

B - LENTIL, FIELD PEA AND CHICKPEA VARIETY UPDATE 2020

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TAKE HOME MESSAGES

- 2019 saw the release of two new pulse varieties suitable for production in South Australia:
 - PBA Royal – a medium sized kabuli chickpea with a yield advantage over Genesis090 and PBA Monarch in mid to high yielding environments (greater than 1.5 t/ha).
 - PBA Highland XT – a medium sized red lentil with similar herbicide tolerance characteristics to PBA Hurricane XT and PBA Hallmark XT. PBA Highland XT is well adapted to lower rainfall and Mallee type environments.
- GIA Ourstar and GIA Kastar are two new field pea varieties with improved herbicide tolerance that have recently been developed by Grains Innovation Australia (GIA) and commercialised by AG Schilling & Co.
- PBA Kelpie XT, a large size red lentil with improved tolerance to imidazolinone herbicides, will be released this spring through commercial partner Seednet.

FIELD PEAS

Kaspa® is a semi-leafless, late-flowering variety with resistance to shattering. It has good early-season vigour and moderate resistance to lodging. Kaspa is susceptible to powdery mildew, blackspot and the Kaspa strain of downy mildew. The seed of Kaspa is distinct from traditional dun types (Parafield) in that it is red-brown in colour and almost spherical in shape. Kaspa needs to be considered carefully before use in low-rainfall areas or areas prone to early periods of high temperature and drought stress due to its late and condensed flowering period. Kaspa should be considered carefully in areas prone to frequently severe vegetative frosts due to the yield loss potential of bacterial blight. Kaspa is licensed to Seednet.

PBA Gunyah® is a kaspa seed type field pea with earlier and longer flowering than Kaspa and higher yield in shorter or dry seasons (yield potential below 2.25 t/ha) than this variety. PBA Gunyah is an early to mid-flowering variety with early maturity making it more suitable than Kaspa to the practice of crop topping and better suited to delayed sowing for blackspot disease management. Its disease resistance profile is similar to Kaspa and therefore not well suited to bacterial blight prone environments. Despite being susceptible to powdery mildew it is likely that PBA Gunyah will incur reduced yield loss from this disease than Kaspa, due to earlier maturity. PBA Gunyah is licensed to Seednet.

PBA Oura® is a high yielding early to mid flowering semi-dwarf dun dimpled type field pea with high yields and improved resistance (MR-MS) to bacterial blight (pv syringae) over Kaspa, PBA Gunyah and PBA Wharton. This line

Table 1. Disease ratings of pulses

S	susceptible
MS	moderately susceptible
MR	moderately resistant
R	resistant

has broad adaptation and high yield potential in short growing seasons. It produces non sugar-type pods and has fair to good lodging resistance at maturity. PBA Oura has improved resistance (MR-MS) to the kaspa strain of downy mildew and improved tolerance to metribuzin herbicide over Kaspa. Seed is licensed to Seednet.

PBA Percy is a conventional dun dimpled type field pea with improved resistance (MR) to bacterial blight over all other varieties, making it a preferred option in areas prone to this disease. Its early flowering and early maturity make it well suited to delayed sowing for disease management and crop-topping. It is moderately tolerant to salinity and produces non sugar-type pods similar to PBA Oura. PBA Percy generally produces yields similar to PBA Oura but in low rainfall environments it can be the highest yielding Dun variety in trials. Seed is licensed to Seednet.

PBA Pearl is a semi-leafless white field pea variety that is broadly adapted and the highest yielding field pea in long-term evaluation trials across all areas of SA. It has an erect growth habit, often with excellent lodging resistance at maturity. It is early to mid flowering and produces non sugar-type pods similar to PBA Oura. It has a favourable disease-resistance profile, with good resistance to bean leaf roll virus and is MS to bacterial blight. Seed is available through Seednet and growers are advised to secure markets before deciding to grow white peas as they cannot be delivered to bulk dun or kaspa type export markets.

PBA Wharton is a kaspa seed type field pea offering improved resistance to powdery mildew and various viruses (bean leaf roll and pea seed borne mosaic virus). It provides the same agronomic benefits as Kaspa (lodging and shattering resistance) and has some tolerance to boron toxicity. It is moderately tolerant to salinity and will provide a reliable alternative in those areas where powdery mildew and viruses are regular problems. PBA Wharton is an early to mid flowering and early maturing variety, making it well suited to crop-topping and delayed sowing for blackspot management. Seed is licensed to Seednet.

PBA Butler is a kaspa seed type field pea with high yields and improved resistance to bacterial blight over Kaspa. It is mid to late flowering, early to mid-maturing and offers the same agronomic benefits of lodging and shattering resistance as Kaspa. PBA Butler has a medium seed size with a yellow split and a uniform tan seed coat colour that is similar to Kaspa. It has a semi-leafless plant type with vigorous plant growth and is rated MS to blackspot and the 'Kaspa strain' of downy mildew. PBA Butler has wide adaptation across southern Australia and performs particularly well in medium to long-growing seasons in SA and may reduce yield losses in regions where bacterial blight is a significant disease. Seed is available from the commercial partner Seednet.

OZP1408 is a kaspa seed type semi-leafless field pea with wide adaptation. It has resistance to viruses including pea seed borne mosaic and bean leaf roll, and is moderately tolerant to salinity. This variety is currently expected to be released in 2022.

OZB1308 is a semi-leafless blue field pea with broad adaptation and grain yield exceeding Excell by 25%, with similar yield to kaspa seed type varieties. OZB1308 has a good level of resistance to downy mildew, resistance to bean leaf roll virus and is moderately tolerant to salinity. This variety is currently expected to be released in 2022.

GIA Ourstar (tested as GIA2002P) is the first dun dimpled type field pea offering improved tolerance to common in-crop and residual Group B herbicides. GIA Ourstar has improved herbicide tolerance to post-emergent imazamox, imazethapyr and flumetsulam applications as well as improved tolerance to commonly used Group B imidazolinone and sulfonylurea herbicides. GIA Ourstar is an early to mid-flowering variety with a relatively long flowering window, and early to mid-maturity suitable for crop topping. It has a semi-leafless plant type with a semi-erect growth habit and moderate resistance to pod shatter at maturity. GIA Ourstar has a disease resistance profile similar to PBA Oura and is rated MS to blackspot and susceptible to bacterial blight. GIA Ourstar was developed by Grains Innovation Australia (GIA) using conventional breeding techniques and commercialised by AG Schilling & Co.

GIA Kastar[®] (tested as GIA2001P) is the first kaspa seed type field pea with improved tolerance to common in-crop and residual IMI herbicides. GIA Kastar has improved tolerance to post-emergent imazamox and imazethapyr applications as well as improved tolerance to commonly used residual Group B imidazolinone herbicides. GIA Kastar response to residual sulfonylurea and post-emergent flumetsulam is similar to that of PBA Wharton. GIA Kastar is a mid-flowering variety with early to mid-maturity suitable for crop topping. It has a semi-leafless plant type, an erect growth habit and is resistant to pod shatter at maturity. GIA Kastar has a disease resistance profile similar to PBA Wharton and is rated R to powdery mildew, MS to blackspot and S to bacterial blight. GIA Kastar was developed by Grains Innovation Australia (GIA) using conventional breeding techniques and commercialised by AG Schilling & Co.

CHICKPEAS

Genesis090[®] is a small to medium seeded kabuli (7 to 8mm). The ascochyta blight (AB) rating for Genesis090 is MS and crops will now require three to four strategic fungicide sprays during the season ahead of rain fronts, the sprays offering two to three weeks protection against infection. Genesis090 has medium height with erect branches and yields similar to PBA Monarch but lower than PBA Slasher and PBA Striker. For seed distribution contact PB Seeds.

Genesis™ Kalkee[®] is a medium to large-seeded kabuli type, with mid-late flowering and late maturity. It is rated MS to AB and will require three to four strategic fungicide sprays during the season ahead of rain fronts. The sprays offer two to three weeks protection against infection. It has the largest seed size of all commercial kabuli types, hence is more able to meet the size requirements of premium high-valued markets. However, yield is inferior to the small kabuli types and PBA Monarch but generally similar to Almaz in SA. For seed distribution contact PB Seeds.

PBA Monarch[®] is a high-yielding medium-sized kabuli chickpea with adaptation to all kabuli growing areas of Australia. The AB rating for PBA Monarch is S and crops will require regular vegetative and reproductive foliar fungicide sprays

every two to three weeks. It is particularly well suited to the shorter seasoned medium rainfall environments of south-eastern Australia due to improved adaptation through earlier flowering and maturity compared to Genesis090, Almaz and Genesis™ Kalkee. It is adapted to the traditional kabuli chickpea-growing regions and has shown a consistent and significant yield advantage over all current medium and large-seeded kabuli varieties, providing AB can be managed. It has similar yields and larger seed size than Genesis090 although is higher yielding than this variety in low-yielding (<1 t/ha) situations. In shorter growing seasons, PBA Monarch may have larger and more consistent seed size than other medium-sized varieties due to its earlier pod filling timing. Seed is licensed to Seednet.

PBA Royal[®] is a high yielding medium seed size (predominantly 8 mm) kabuli chickpea. It is well adapted to medium rainfall chickpea growing regions of south eastern Australia and has a yield advantage in mid to high yielding environments (greater than 1.5 t/ha) compared to Genesis090 and PBA Monarch. PBA Royal has early to mid-flowering and maturity characteristics and has a semi-spreading plant type similar to Genesis090. PBA Royal is rated MS to foliar AB infections in the southern region and will require three to four strategic fungicide sprays during the season ahead of rain fronts. Sprays offer two to three weeks protection against infection. Seed is licensed to Seednet.

PBA Slasher[®] is rated MS to AB and will require three to four strategic fungicide sprays during the season ahead of rain fronts, with sprays offering two to three weeks protection against infection. PBA Slasher is high yielding in all chickpea-growing areas of SA, providing AB can be managed. It has a semi-spreading plant type with mid flowering and mid maturity. PBA Slasher is suitable for both the split and whole seed markets. Seed is licensed to Seednet.

PBA Striker[®] is susceptible to AB and will require regular vegetative and reproductive foliar fungicide sprays every two to three weeks. PBA Striker is a high-yielding desi chickpea with very good early vigour. It is an early-flowering and maturing variety which provides a

high-yielding alternative to all chickpea varieties in the medium to low-rainfall environments of western and southern Australia, providing AB can be managed. PBA Striker has a similar plant type to PBA Slasher but with larger seed size than all other southern desi varieties. Seed of PBA Striker is also light in colour and has good milling characteristics. Due to its early maturity and AB susceptibility, PBA Striker is not recommended for high-rainfall and long-growing season districts. Seed is licensed to Seednet.

PBA Maiden® is rated as S to foliar AB infection and will require regular vegetative and reproductive foliar fungicide sprays every two to three weeks. PBA Maiden is a large-seeded high-quality desi chickpea for the medium to low-rainfall environments of southern Australia. It is broadly adapted to these regions and has shown similar yields to PBA Slasher. PBA Maiden has a semi-spreading plant type and height similar to PBA Slasher. It has a seed size greater than current southern desi varieties (approximately 30 per cent larger than PBA Slasher) with a yellow-tan seed coat. This variety is targeted for whole-seed markets where its large, angular shaped and bright yellow-tan coloured seed coat are well suited to the specific requirements of these markets. Growers are advised to investigate delivery and marketing options for PBA Maiden prior to growing this variety, due to its unique and favourable seed characteristics. Larger uniform seed size is more likely in medium rainfall regions. Seed is licensed to Seednet.

CICA1521 is a desi type chickpea with broad adaptation and a medium seed size. It has good grain yields in South Australia, in particular in the Mid-North region. CICA1521 has excellent harvestability with improved plant height and height to the lowest pod compared to all other desi varieties adapted to the southern region. It is a mid-flowering and mid-maturing variety, similar to Genesis090. CICA1521 is rated as S to ascochyta blight and will require regular vegetative and reproductive foliar fungicide sprays every two to three weeks. This variety is expected to be commercially released in spring 2020.

Note: All chickpea seed should be treated with a thiram-based fungicide to prevent seed transmission of AB on to the emerging seedlings.

LENTILS

PBA Blitz is suited to all current lentil growing areas, with particular adaptation to shorter season areas. The combination of early to mid-flowering, early maturity, moderate disease-resistance to ascochyta blight (AB) and botrytis grey mould (BGM) and medium seed size will improve lentil reliability and economics of production. PBA Blitz is the earliest maturing lentil variety and the best option where crop-topping or delayed sowing are practised. It has a good level of early vigour and is an erect plant type. PBA Blitz is a medium-sized red lentil (larger than PBA Flash and Nugget) with a grey-coloured seed coat. PBA Blitz has a low level of 'pale coat Blitz' seeds that still have red cotyledons and are a natural part of the genetic make-up of the variety. These do not affect the splitting or cooking characteristics of this variety. These 'pale coat Blitz' seeds are classified at receival point as seeds of contrasting colour with a limit of one per cent allowed. PBA Blitz is commercialised by PB Seeds.

PBA Bolt is a mid-flowering but early to mid-maturing lentil with excellent lodging resistance at maturity and high yield in drought years and dry areas. It provides an alternative to PBA Flash in all areas, particularly in areas where AB, harvestability and drought tolerance are major issues. Like PBA Flash, it has improved tolerance to boron and salt over most other varieties. PBA Bolt is rated MR to AB but is susceptible to BGM, and this disease will need to be carefully managed in disease prone areas. It has a grey seed coat colour and is licensed to PB Seeds.

PBA Jumbo2® is the highest yielding red lentil available for SA. PBA Jumbo2 was released as a direct replacement for PBA Jumbo although grain size is almost the only similarity. It has improved agronomic characteristics over PBA Jumbo, including greater early vigour, improved lodging, shattering and disease resistance. PBA Jumbo2 is rated R for AB and R-MR for BGM, but disease monitoring and a fungicide application prior to canopy closure are still recommended for BGM.

PBA Jumbo2 has a large seed size and a grey seed coat. As with other large-seeded varieties PBA Jumbo2 is well suited to the post-harvest removal of small broadleaf weed seeds. PBA Jumbo2 is licensed to PB Seeds.

PBA Hurricane XT[®] was the second lentil variety to be released with improved tolerance to the herbicides imazethapyr and flumetsulam, including reduced sensitivity to some sulfonylurea and imidazolinone herbicide residues. However, it is important to note that product label rates, plant-back periods and directions for use must still be adhered to. It is a mid-flowering, mid-maturing variety with small red seed and a grey seed coat. PBA Hurricane XT has a MR-MS rating for foliar AB in South Australia, and severe lesions have occurred in seedling crops in 2018, so may require a podding spray to prevent seed and pod infection. PBA Hurricane XT has a MR-MS rating for BGM and in disease-prone areas a strategic fungicide programme for BGM will be required and early sowing should be avoided. Plant height and early vigour are improved over Nipper and PBA Herald XT, improving weed competition and harvestability. Like PBA Herald XT and Nipper, PBA Hurricane XT has been found to be more sensitive to Group C herbicides such as metribuzin and simazine than other lentil varieties; however, label rates of these herbicides have been used on most evaluation trials. It is important to be cautious when applying these herbicides on variable soil types, especially if weather conditions conducive to crop damage are forecast. PBA Hurricane XT is the highest yielding small red lentil and is commercialised by PB Seeds.

PBA Hallmark XT[®] was the third lentil variety to be released with improved tolerance to the herbicides imazethapyr and flumetsulam, plus reduced sensitivity to some sulfonylurea and imidazolinone herbicide residues. However, it is important to note that product label rates, plant-back periods and directions for use must still be adhered to. PBA Hallmark XT builds on PBA Herald XT and PBA Hurricane XT, with higher grain yields and a different size market class. It is a mid-flowering, mid-maturing variety with medium red seed and a grey seed coat. The seed size is slightly larger than PBA Ace and PBA Bolt but less than PBA Flash and PBA Blitz. PBA Hallmark XT

has a high resistance rating for BGM, and is rated MR-MS for AB in South Australia where it may require a podding spray to prevent seed and pod infection. Like PBA Herald XT, Nipper and PBA Hurricane XT, PBA Hallmark XT has been found to be more sensitive to Group C herbicides such as metribuzin and simazine than other lentil varieties; however, label rates of these herbicides have been used on most evaluation trials. It is important to be cautious when applying these herbicides on variable soil types, especially if weather conditions conducive to crop damage are forecast. Vigour and plant height are slightly improved over PBA Hurricane XT. PBA Hallmark XT is a high-yielding medium red lentil and is commercialised by PB Seeds.

GIA Leader[®] (tested as GIA1701L) is a new imidazolinone tolerant red lentil developed for favourable lentil growing areas with good soil types in medium to higher rainfall zones. This variety has similar IMI herbicide tolerance and tolerance to residual levels of sulfonylurea (SU) herbicide from prior crops to current XT lentil varieties (e.g. PBA Hurricane XT). GIA Leader has good disease resistance and mid to late flowering and maturity, making it well suited to early sowing. GIA Leader has a medium seed size with a grey seed coat. GIA Leader was developed by Grains Innovation Australia and is planned for commercial release in early 2021 with seed available through commercial partner PB Seeds.

PBA Kelpie[®] XT (tested as CIPAL1721) is a large seeded red lentil with improved tolerance to the herbicides imazethapyr and flumetsulam. It also has reduced sensitivity to some sulfonylurea and imidazolinone herbicide residues. PBA Kelpie XT is an early to mid-flowering and maturing variety with moderate to good vigour. PBA Kelpie is MR to pod drop and resistant to shattering at maturity. Provisional data shows that PBA Kelpie XT is MR to AB infection and is moderately resistant to BGM.

These disease ratings are subject to change when more data becomes available. PBA Kelpie XT has a large seed size (slightly smaller than PBA Jumbo2) and a grey seed coat. This variety is expected to be released in spring 2020 through the commercial partner Seednet.

PBA Highland XT (tested as CIPAL1621) ↗

was the fourth lentil variety to be released with improved tolerance to the herbicides imazethapyr and flumetsulam, plus reduced sensitivity to some sulfonylurea and imidazolinone herbicide residues. PBA Highland XT offers an improved herbicide-tolerant lentil that is showing adaptation to drier lentil growing regions of the Victorian Mallee and South Australia. It has medium seed size, high early vigour with early flowering and early to mid-maturity features. PBA Highland XT has a provisional disease rating for AB of MR and MR-MS to BGM. These disease ratings are subjected to changes when more data become available. Seed is licensed to PB Seeds.

Note: It is important to note that product label rates, plant-back periods and directions for use must still be adhered to.

Refer to the South Australian Crop Sowing Guide for further detailed yield and agronomic information on all varieties: <https://grdc.com.au/resources-and-publications/all-publications/publications/2020/2020-south-australian-crop-sowing-guide>

For seed enquiries please contact the commercial seed distributor.

Contact details:

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Pulse variety demonstration trial plan

1	Faba Bean	Nura
2		PBA Zahra
3		PBA Samira
4		PBA Bendoc
5		PBA Marne
6		AF11023
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13	Field pea	Parafield
14		Kaspa
15		PBA Gunyah
16		PBA Oura
17		PBA Percy
18		PBA Pearl
19		PBA Wharton
20		PBA Butler
21		OZP1408
22		OZP1308
23		
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25	Chickpea	Genesis090
26		Genesis™ Kalkee
27		PBA Monarch
28		CICA1156
29		PBA Slasher
30		PBA Striker
31		PBA Maiden
32		CICA1521
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37	Lentil	PBA Blitz
38		PBA Bolt
39		PBA Jumbo 2
40		PBA Hurricane XT
41		PBA Hallmark XT
42		GIA Leader
43		CIPAL1721
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Seeding date: May 18, 2020
Fertiliser: MAP
Fertiliser rate: 80 kg/ha

Lentil and field pea variety trial plan

1	buffer	buffer	buffer
2	Kaspa	PBA Butler	Kaspa
3	GIA Ourstar	PBA Wharton	Oura
4	Oura	GIA Kastar	GIA Kastar
5	PBA Butler	Oura	PBA Butler
6	PBA Wharton	GIA Ourstar	GIA Ourstar
7	GIA Kastar	Kaspa	PBA Wharton
8	buffer	buffer	buffer
9	buffer	buffer	buffer
10	PBA Kelpie XT	Hurricane	Hallmark
11	Hallmark	GIA LeaderL	Jumbo 2
12	Hurricane	PBA Kelpie XT	GIA Leader
13	Highland XT	Highland XT	Highland XT
14	Jumbo 2	Hallmark	Hurricane
15	GIA Leader	Jumbo 2	PBA Kelpie XT
16	buffer	buffer	buffer

Key:

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Field pea = 2m

Seeding date: May 18, 2020

Lentil = 1.75m

Fertiliser: MAP

Fertiliser rate: 80 kg/ha

