Choosing the right pulse for 2017

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ANY choice about a pulse crop or variety will be influenced by several factors including location and rainfall, likely disease pressure, intended market and purpose within the rotation (eg. soil fertility, profit, weed control, forage): Australian pulse breeders have provided growers with a suite of varieties to suit wide ranging purposes and circumstances.

This article will assist with the identification of the pulse crops and varieties that best suit your farm in 2017.

CHICKPEA VARIETIES		
Northern region	**Southern region**	**Western region**
Desi	**Desi**	**Desi**
• Flipper	• Ambar	• Ambar
• Moti	• Genesis 508	• Genesis 510
• PBA Boundary	• Genesis 509	• Genesis 836
• PBA HatTrick	• Neelam	• Neelam
• PBA Pistol	• PBA Maiden	• PBA Slasher
• PBA Seamer	• PBA Slasher	• PBA Striker
• Yorker	• PBA Striker	**Kabuli**
Kabuli	**Kabuli**	• Genesis 079
• Genesis 425	• Almaz	
• PBA Monarch	• Genesis 079	
	• Genesis 090	
	• Genesis 114	
	• Kalkee	
	• PBA Monarch	

Desi types

PBA Boundary (2011): Moderately resistant (MR) to ascochyta blight (AB) but susceptible (S) to phytophthora root rot (PRR). Higher yielding (three per cent) than PBA HatTrick and Jimbour in northern NSW. Also an option for southern NSW where a tall, erect plant type is required, but is lower yielding than PBA Slasher in this environment.

PBA HatTrick (2009): Moderately resistant to PRR. MR to AB. High yielding, medium-seeded line to replace all previous varieties in northern NSW and southern Queensland.

A graphic illustration of PBA Seamer's resistance to AB (right) compared to Jimbour.

PBA pulse zones.

PBA Maiden (2013): Southern adapted variety with early to mid-flowering and maturity. Moderately resistant to AB, susceptible to PRR. Large seed targeted for whole seed markets.

PBA Seamer (2016): Resistant (R) to AB and moderately resistant to PRR. Similar yielding to PBA HatTrick in the absence of disease, but significantly higher in the presence of AB. Semi-erect plant type with good lodging resistance at maturity. Early to mid-flowering and mid-maturity. Not recommended for southern NSW where other current varieties are higher yielding.

PBA Slasher (2009): Resistant to AB and S to PRR. Medium-seeded line. Superior yield to all other varieties in the south.

Kyabra (2005): MS to PRR and S to AB. Tall, lodging resistant and high yielding variety with large seeds highly preferred for the direct human consumption market.

PBA Striker (2012): Southern adapted variety with earlier flowering and earlier maturity than PBA Slasher. Moderately resistant to AB, susceptible to PRR. Medium to large seeded variety. High yielding in short season environments.

Kabuli types

Genesis 090 (2005): Very susceptible (VS) to PRR. R to AB (may still need a pod spray in AB-prone areas). High yielding, small-seeded (mainly 7–8 mm grades) variety potentially well suited to southern NSW. Likely to command a premium over desi types.

Almaz (2005): VS to PRR. MS to AB, therefore requires multiple fungicide applications to control AB. Medium to large seeded (mainly 9 mm grades). May be suitable for southern NSW and northern areas where there is a low risk of PRR.

Genesis 425 (2006): S to PRR (but least susceptible amongst kabuli varieties) and R to AB (may still need a pod spray in AB-

The notes provided are very brief and are primarily aimed at production systems in NSW and Queensland. More extensive notes and links to the variety management packages are available in the 'Growing pulses' section of the Pulse Australia website.

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prone areas). High yielding, small-seeded (mainly 7–8 mm grades) variety for northern NSW. Higher sensitivity to Balance herbicide.

Genesis 114 (2010): VS to PRR. MS to AB. A tall erect, medium-seeded (mainly 8–9 mm grades) line potentially suited to southern NSW and northern areas where there is a low PRR risk.

Genesis Kalkee (2012): Large seed (mainly 9–10 mm grades). VS to PRR and MS to AB. A tall erect variety more suited to irrigation areas of southern NSW and northern areas where there is a low PRR risk.

PBA Monarch (2013): Susceptible to PRR and moderately susceptible to AB. Early flowering and early maturing (earlier than Genesis 090) and higher yielding than Almaz and Genesis Kalkee. Medium seeded (mainly 8–9 mm grades): Suited to southern and northern areas where there is a low PRR risk.

FABA BEAN VARIETIES	
Southern region	**Northern region**
• Farah	• PBA Warda
• Fiesta VF	• PBA Nasma
• Nura	
• PBA Rana	
• PBA Samira	
• PBA Zahra	
• PBA Kareema (broad bean)	

Northern NSW and southern Queensland

PBA Nasma (2015): Higher yielding than PBA Warda. Readily acceptable to the human consumption market. Its flowering and maturity time is similar to PBA Warda. PBA Nasma is similar to PBA Warda for resistance to chocolate spot and tolerance to frost and bean leafroll virus. Its rust resistance is slightly inferior to Doza, but far superior to Cairo.

PBA Warda (2012): Higher yield and bigger seed than Doza. Being superseded by PBA Nasma.

Southern NSW, Victoria and South Australia

While the newly released varieties have steadily improved disease resistance, none have complete resistance to rust, chocolate spot or ascochyta blight. In a disease favourable environment (because of frequent rain or high inoculum) yield losses will occur.

PBA Nasma is a faba bean readily accepted by the human consumption market.

Growers are therefore advised to adhere to the disease management package and apply a fungicide spray earlier in the season. This early spray can control the establishment of disease inoculum in the paddock and will therefore have a season-lasting effect.

Crops of Farah should be monitored carefully for the presence of ascochyta blight. A new pathotype of *Ascochyta fabae* emerged in the Mid North region of South Australia in 2013 and has overcome the resistance of Farah.

This new pathotype has not been reported in NSW, to date, but growers of Farah should be vigilant. Nura and PBA Samira remain resistant while PBA Rana and PBA Zahra are MS/MR to the new pathotype.

Nura (2006): More resistant to chocolate spot and rust than Fiesta and Farah, and similar ascochyta resistance to Farah. Nura is a shorter plant, with better standing ability than Fiesta and Farah, although will still lodge under extreme conditions. It is a later flowering type and best yields are obtained when sown early.

PBA Rana (2011): Medium to large seed, about 20 per cent larger than Fiesta and Farah and well suited to the Middle East market. PBA Rana has a greater level of resistance to ascochyta blight and chocolate spot than Nura and Farah, and is moderately susceptible to rust. Vigorous early growth and good stem strength and standing ability, although could lodge under very high biomass situations.

PBA Samira (2014): Very high yield potential. Resistant to ascochyta blight, and less susceptible to both chocolate spot and rust than Fiesta VF and Farah. It flowers at the same time as Nura and PBA Rana and matures at the same time as Fiesta VF and Farah. Reduced number of early stems and good standing ability. Acceptable to co-mingle with other varieties for the Middle East market.

PBA Zahra (2015): Is particularly responsive to high yielding situations. It is resistant to ascochyta blight in most districts in the southern region, although MS/MR to a new pathotype in the Mid North of South Australia. It is less susceptible to chocolate spot and rust than Fiesta and Farah. Flowers at the same time as Nura and PBA Samira, but can mature slightly later if seasonal conditions are conducive. Can be co-mingled with PBA Rana for a large seeded category in the Middle East market.

Farah (2004): Slightly later maturity than Fiesta. Farah is very similar to Fiesta but with improved ascochyta resistance and more uniform seed characteristics. The ascochyta resistance of Farah has been overcome by a new pathotype of *Ascochyta fabae* in the mid-north of South Australia.

Fiesta VF (1998): Medium seed size aimed at higher value human consumption markets. Medium maturity, susceptible to rust and chocolate spot, good early vigour. Is being superseded by varieties with improved disease resistance and more uniform seed characteristics.

FIELD PEA VARIETIES			
White	**Dun**	**Kaspa-type**	**Forage**
• Bundi	• Maki	• Kaspa	• PBA Hayman
• Moonlight	• PBA Coogee	• PBA Gunyah	• Morgan
• PBA Pearl	• PBA Oura	• PBA Twilight	
• Sturt	• PBA Percy	• PBA Wharton	
• SW Celine	• Yarrum		

For southern and central NSW, preferred varieties are PBA Oura, PBA Percy or PBA Wharton. In areas prone to bacterial blight, choose PBA Percy or PBA Oura. In areas prone to powdery mildew, choose PBA Wharton or Yarrum. For white peas, choose PBA Pearl or Sturt.

Morgan is the preferred forage/brown manure variety.

Maki is the variety for blue pea, but Excell is still grown in certain areas.

For the northern region, Yarrum and PBA Wharton are both powdery mildew resistant, the highest yielding and best performing varieties.

(All varieties susceptible to blackspot, bacterial blight, pea seed-borne mosaic virus (PSbMV) and powdery mildew unless otherwise stated).

Dun

Yarrum (2003): Yarrum is consistently among the top yielding commercial lines across northern and southern NSW. Dimpled dun pea, purple flowered, semi-leafless, medium height. Late flowering but fills pods and finishes quickly. Erect growth, tends to lodge at maturity. Resistant to powdery mildew, R to PSbMV, MR-MS to bacterial blight.

Maki (2008): Higher yielding, better disease resistance and better seed quality compared to Excell, but much shorter. Blue pea, green cotyledons, white-flowered, semi-leafless, medium height. Good resistance to bleaching, mid maturity. Resistance to powdery mildew, PSbMV and BLRV viruses. Will require management for blackspot, bacterial blight and downy mildew in disease-prone areas. Potential for niche blue pea market.

PBA Oura (2011): Early-mid flowering, erect, semi-dwarf, semi-leafless type with good tolerance to bacterial blight (*P. syringae* pv syringae). Note, PBA Oura does develop bacterial blight but is much better able to recover. Early uniform maturity, suited to crop topping. Broad adaptation and is one of the highest yielding varieties across all environments.

PBA Percy (2011): Very early flowering, tall, scrambling, conventional type with excellent tolerance to bacterial blight (*P. syringae* pv syringae), better than PBA Oura. Note, PBA Percy does develop bacterial blight but is much better able to recover. Purple flowers, dimpled dun seed. Broad adaptation and is one of the highest yielding varieties across all environments.

Kaspa-type

PBA Wharton (2013): Kaspa plant and seed type with the added advantages of earliness, resistance to PSbMV and BLRV viruses. Resistant to powdery mildew and higher tolerance to soil boron toxicity. Widely adapted across southern Australia and northern regions of NSW. Superior to PBA Gunyah and PBA Twilight.

White

PBA Pearl (2012): Early-mid flowering, erect, semi-dwarf, semi-leafless type. Broad adaptation and the highest yielding commercial variety across southern Australia. Early uniform maturity, suited to crop topping. Suited to human consumption or for stockfeed. Conventional pods, moderate resistance to pod shattering. Soft seeded, therefore no self-sown plants in following crops.

Sturt (2005): Conventional tall plant type, scrambling growth habit, early to mid-season flowering, small smooth round white seeds. A high yielding white pea in the drier production zones of NSW. MR-MS to bacterial blight.

SW Celine (2003): Main feature is its early flowering, early maturity and superior pod set. This gives it superior drought tolerance and a distinct yield advantage in dry seasons. Best suited variety to crop topping. Conventional pods requiring timely harvest to prevent shattering. MR-MS to downy mildew.

Forage

Morgan (1998): MR to bacterial blight. Very competitive with weeds, best choice for hay, forage, silage and green/brown

manure, lodges at maturity. Holds up well in dry seasons and tight finishes because of its height.

LUPIN VARIETIES	
Albus lupin	**Australian sweet lupin**
• Amira	• Jenabillup
• Luxor	• Mandelup
• Rosetta	• PBA Barlock
	• PBA Gunyidi
	• PBA Jurien

Lupinus albus (broad-leaf or white lupin) types

Luxor (2005): Classed as resistant to pleiochaeta root rot, compared to Kiev-mutant (VS) and Ultra (MS). Luxor is especially suited to all low-rainfall and medium-rainfall areas. It is the variety of choice where pleiochaeta disease pressure is expected to be high (although it is not immune to the disease and good agronomy and suitable rotations should still be practiced). Luxor is susceptible to anthracnose (as are Kiev-mutant and Ultra) but that disease has not been found in NSW lupin crops. Luxor is 100 per cent 'sweet' (low-alkaloid) and has protein content and seed size similar to Kiev-mutant and Ultra. Suited to all existing albus lupin markets.

Rosetta (2005): Rosetta is moderately-resistant to pleiochaeta root rot (less resistant than Luxor, much better than Kiev-mutant, slightly better than Ultra). Is suited to high-rainfall, cool-season sites where maximum yields can be obtained. Rosetta is 100 per cent 'sweet' (low-alkaloid), and has good protein content and seed size. Suited to all existing albus lupin markets.

Amira (2012): An anthracnose resistant albus variety released for Western Australia. Anthracnose has not been found in the main lupin growing regions in eastern Australia. Amira was tested in NSW NVT trials for the first time in 2016.

Kiev-mutant (1982): Now outclassed. Existing seed stocks must be checked annually for bitter seed contamination.

Ultra (1976): Still a popular variety in central and northern NSW. Now outclassed. Existing seed stocks must be checked annually for bitter seed contamination.

Note: To maintain the seed quality standards for sweet albus (low seed alkaloid), growers are reminded to get their sowing seed tested for possible bitter seed contamination. Contaminated seed should not be used for sowing and must be delivered or used for feed. An ultraviolet lamp test is available which rapidly detects high-alkaloid ('bitter') seeds in a grain sample.

Growers can get seed tested through Futari Grain Technology Services (Ph: 02 6792 4588).

Lupin beans are 100 per cent bitter, must only be grown in isolation, and cannot be fed to stock.

Lupinus angustifolius (narrow-leaf lupin) types

PBA Jurien (2015): A high yielding, early flowering variety, with both phomopsis and anthracnose resistance. It also is tolerant to metribuzin herbicide.

PBA Gunyidi (2011): Replaces Mandelup as a high yielding narrow-leafed lupin variety with good resistance to pod shatter.

PBA Barlock (2013): It is resistant to anthracnose and tolerant to metribuzin herbicide. Yielding similar to Mandelup, it has good lodging resistance and moderate phomopsis resistance. It is shorter in height than Mandelup, with slightly later flowering and maturity. It has improved resistance to pod shattering over Mandelup.

Jindalee (2001): Jindalee is a late flowering variety and provides an early-sowing option after good April rains. High yielding in high-rainfall or long-season areas, combined with very good phomopsis resistance and excellent lodging resistance. It is susceptible to brown leaf spot, and has poor CMV seed transmission resistance.

Jenabillup (2007): Jenabillup has moderate resistance BYMV infection. BYMV can cause significant damage in eastern states when seasons are suitable, such as 2014. Jenabillup has performed very well in NSW. MR to anthracnose and intolerant of metribuzin herbicide. It is also MS to phomopsis stem infection.

Wonga (1996): The most anthracnose-resistant variety (although anthracnose is not present in NSW lupin crops): Earlier flowering than Jindalee but later than Mandelup, Quilinock and Jenabillup. Wonga has phomopsis resistance, brown leaf spot resistance, and CMV seed transmission resistance in good combination. Can be lower yielding than earlier maturing varieties in short seasons, and is intolerant of metribuzin.

Mandelup (2004): High yield, phomopsis resistance and large grain size. Moderately resistant to anthracnose. The earliest flowering and maturing of current varieties. Prone to frost damage if sown earlier than normal sowing window as it is a non-vernalising type. Tolerant of metribuzin herbicide. Prone to pod shattering if harvest is delayed after reaching maturity.

Quilinock (1999): High-yielding line with large seed size but now outclassed.

LENTILS	
Red lentil VMP	**Green lentil VMP**
• Nipper	• Boomer
• Nugget	• PBA Giant
• PBA Ace	• PBA Greenfield
• PBA Blitz	
• PBA Bolt	
• PBA Bounty	
• PBA Flash	
• PBA Herald XT	
• PBA Hurricane XT	
• PBA Jumbo	
• PBA Jumbo2	

Lentil varieties with ascochyta blight and botrytis grey mould resistance, including PBA Ace, PBA Herald XT and PBA Jumbo2, are suited to localities prone to foliar diseases.

PBA Blitz, PBA Bolt and PBA Flash are earlier maturing than some older varieties and suit shorter growing season areas or delayed sowing. PBA Hurricane XT, Herald XT, PBA Bounty are small-seeded red lentils that also handle a quick seasonal finish.

PBA Jumbo2 and PBA Jumbo have superseded Aldinga as large-seeded red lentils.

PBA Hurricane XT and PBA Herald XT are agronomically similar to Nipper but have improved herbicide tolerance to applied flumetsulan and residuals of some 'SU' and 'imi' herbicides.

PBA Greenfield and Boomer are medium-sized green lentils with improved seed size, growth and disease resistance over Matilda. Tiara, a long season green lentil with very large seed size, is not widely grown and is only suitable for spring sowing in high rainfall areas. PBA Giant is the only large-sized green lentil variety, which opens up new market opportunities for growers.

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Full descriptions of available pulse varieties, including most variety management packages (VMP) are available on the Pulse Australia website www.pulseaus.com. The NSW DPI Winter Crop Variety Sowing Guide 2017 will be published in April, including NVT performance data. ■