

"Pulse Variety Trials"

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Key Outcomes:

- While kasper peas did well in 2010, several new varieties show great potential
- PBA Jumbo is a large-seeded red lentil that performed well in 2010
- PBA Slasher was the highest yielding chickpea in 2010
- PBA Kareema is a large seeded broad bean that has done well in the lower South-East for several years
- Jenabillup lupins performed better than Mandelup in 2010

Trial Objectives: To assess the yield of a range of pulse varieties at several sites

Trial Duration: 2010-11

Location: Various

Farmer Co-operators: Kim Makin, Ross Lutt,

Soil Type: Various

Kraig Johnson, Lachie Seears,

Paddock History: Various

Martin & Kirsty Flower,

James & Chris Gilbertson

Monthly Rainfall:

Rain	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sep	Oct	Nov	Dec	April-Oct	Total
Kath, 2010	15.6	31.3	28.4	55.2	32.4	38.8	40.4	96.2	57	18.8	27.4	137.8	338.8	579.3
Sherwood, 2010	13	33.5	33.5	58.5	33.5	40.5	31.5	113	57.5	30	50	105	364.5	599.5
Wolseley, 2010	14	28.8	26.8	70.8	26.8	35.6	39.8	111	45.8	27	59.6	129.6	355.8	615.6
Frances, 2010	14.4	40.8	26.8	60.6	31.6	57.6	43.8	119.2	55.4	29.8	29.2	92.2	398	601.4
Communa, 2010	18	35.2	24.8	65.2	42	77.4	48.8	146.8	74.8	29.4	27.4	130.2	484.4	720
Milcent, 2010	16	30.8	23.2	89.2	44.4	74	76.2	192.8	83.8	22.4	51.4	105.2	582.8	809.4

Yield Limiting Factors: Early finish

Type of Trial: Replicated Plot Trial

Trial Design: 8m Long Plots x 8 Rows at 15cm Spacings (1.2m);
3 Replicates

Trial Results

Table 1: Yield of peas in 2010 and long term

Variety/line	2010			2000-2010	
Column1	Bool Lagoon	Keith	Mundulla	% Site Mean	# Trials
Kaspa	No Result		102	107	26
Parafield			82	102	26
PBA Gonyah	High variability in trials		91	107	11
PBA Twilight			86	105	11
Sturt				107	21
Yarrum			112	117	17
OZP0703			97	111	11
Site mean yield (t/ha)			2.51	2.78	
% LSD (0.05)			16		
Date sown	18-Jun	13-May	18-Jun		
Soil type	C	LC	L		
A-O rainfall (mm)	430	339	327		
pH (H2O)	6.9	8.2	6.6		
Site stress factors	w, pe	hd	wl, w		

Table 2: Yield of lentils in 2010 and long term

Variety	2010	SOUTH EAST 2004-10	
	Mundulla	% site mean	# Trials
Aldinga	NO VALID RESULT - HIGH VARIABILITY IN TRIALS		
Boomer		102	7
Nipper		95	7
Northfield		89	6
Nugget		98	7
PBA Blitz		101	4
PBA Bounty		99	7
PBA Flash		104	7
PBA Jumbo		107	4
CIPAL702			
Site mean yield (t/ha)			
% LSD (0.05)			

Date sown	18-Jun
Soil type	L
A-O rainfall (mm)	327
pH (H2O)	6.6
Site stress factors	wl, w

SOIL TYPE:
S = Sand L=Loam C=Clay

SITE STRESS FACTORS
wl = temporary waterlogging
w = weed competition

Data source: SARDI/GRDC, PBA & MVT (long term data based on weighted analysis of sites)

Table 3: Yield of chickpeas in 2010 and long term

Variety	2010	SOUTH EAST 2004-2010	
Desi Trials	Mundulla	% Site mean	# Trials
Genesis 509	89	99	10
Genesis 079#	105	110	6
Genesis 090#	97	101	10
Howzat		102	9
PBA HatTrick	112	99	8
PBA Sasher	99	111	8
Sonali		100	7
Site mean yield (t/ha)	1.35	2.26	
% LSD (0.05)	17		

Kabuli Trials	2010	2004-2010	
	Mundulla	% Site mean	# Trials
Almaz	109	96	10
Genesis 079#	88	115	10
Genesis 090#	98	114	10
Genesis 114	111	99	10
Genesis 115	91	99	3*
Site mean yield (t/ha)	0.96	1.99	
% LSD (0.05)	16.7		

Date sown	18-Jun
Soil type	L
A-O rainfall (mm)	327
pH (H ₂ O)	6.6
Site stress factors	wl, w, ct

SOIL TYPE:

S = Sand L=Loam C=Clay

SITE STRESS FACTORS

wl = temporary waterlogging

w = weed competition

ct = low temperatures during flowering

Small kabuli type

* Limited data at these sites, treat with caution.

** = Low and variable yield due to water logging and variable establishment, use caution.

Data source: SARDI/GRDC, PBA & NNT (long term data based on weighted analysis of sites and courtesy National Statistics Program).

Table 4: Yield of beans in 2010 and long term

Variety	SOUTH EAST 2010			Long term average across sites		
Column1	Bordertown	Bool Lagoon	Millicent	t/ha	% of Site Mean	# Trials
Doza	94	102	-	2.44	92	17
Farah	94	85	81	2.61	98	32
Fiesta	104	112	98	2.64	99	32
Fjord	-	99	-	2.48	93	24
Nura	100	98	62	2.57	97	32

Site av yield (t/ha)	4.22	5.41	2.6	2.66
LSD (%)	11	17	22	
Date sown	13-May	20-May	1-Jun	
Soil type	C	C	P	
pH (water)	8.3	7.5	7.9	
Apr-Oct rain (mm)	357	430	483	

SOIL TYPE:

S = Sand L=Loam

C=Clay

P= Peat

Keith MVT Faba Bean site: not released

*Data source: SARDI/GRDC, MVT and PMA - Australian Faba Bean Breeding Program.**2004-2010 MET data analysis by National Statistics Program.***Table 5: Yield of lupins in 2010 and long term**

Variety	SOUTH EAST 2010				Long term average across sites		
Column1	Keith	Mundulla	Kybybolite	Field	t/ha	% of Site Mean	# Trials
Coromup	101	110	96	101	1.89	102	18
Jenabilup	99	116	107	106	2.01	108	14
Jindalee	78	79	73	84	1.73	93	19
Mandelup	100	108	108	107	1.99	107	19
Wonga	76	94	87	84	1.76	95	18

Site Av. Yield (t/ha)	2.99	1.35	1.71	3.85	1.86
LSD (%)	8	16	15	10	
Date sown	4-May	21-Jun	26-May	28-May	
Soil type	S	S	CL	S	
pH (water)	7.4	7.5	7.4	7.4	
Apr-Oct rain (mm)	356	428	431	362	
Site stress factors		es	w, wa		

SOIL TYPE:

S = Sand

L=Loam

CL=Clay Loam

SITE STRESS FACTORS

wa = waterlogging

w = weed competition

em = emergence

Data source: SARDI/GRDC & MVT. 2004-2010 MET data analysis by National Statistics Program.

Comments

Peas

By Mick Lines, Research Officer, SARDI, Lorn McMurray, Research Scientist, SARDI & Tony Leonforte PBA Field Pea Breeder, DPI Victoria

Earlier maturing, recent releases PBA Gonyah and PBA Twilight performed slightly below state average, but still out-yielded Parafield by 11 and 6 percent, respectively, in a season which favoured later maturing varieties. Yarrum was the highest yielding variety, but only 2 percent higher than Kaska in 2010, which outperformed PBA Gonyah and PBA Twilight by 8 percent and 13 percent, respectively.

High growing season rainfall and mild temperatures across the state favoured pulse production in 2010, and yields were generally higher than in 2009. Grain yield of field pea averaged 3.0 t/ha across all NVT and Pulse Breeding Australia (PBA) sites last year, ranging from 2.0 t/ha at Yeelanna and Lameroo to 4.5 t/ha at Riverton.

Diseases were generally not as severe in 2010 as in previous years. Blackspot infections were lower than forecast early in 2010 based on 2009 stubble spore loads. This was most likely due to a combination of high summer and early autumn rainfall, prompting spore releases prior to sowing, followed by a dry start to May, which delayed sowing and therefore reduced blackspot risk.

A wetter than average spring in 2010 meant conditions were conducive for powdery mildew, but in most cases its onset was too late to cause significant yield loss.

The substantial late rain in early December was responsible for a number of issues at harvest. Pod decay and shattering was increased by the rain on mature pods, and caused degradation of pods even in the 'sugar pod' types like Kaska. While this may not have contributed to significant yield loss in these types, as is sometimes observed in the conventional pod types, it may have resulted in seed staining from sunlight or moisture and subsequent downgrading at delivery. Some late harvested crops also showed increased lodging and degradation of the pea vine, making mechanical pickup difficult and resulting in some harvest loss and potentially downgrading from mould.

Yield limiting factors at the various NVT sites were minimal in 2010. Biomass was high in 2010, due to the long and wet growing season. However, the wet season was also responsible for reduced growth due to waterlogging at Yeelanna and Mundulla, and to a lesser extent at Balaklava, all of which yielded 2.5t/ha or less. Moderate blackspot was observed at Balaklava and Snowtown, and low levels of late powdery mildew infection was observed at Balaklava and Turretfield.

The wet season and late finish to 2010 did not favour early maturing recent releases PBA Gonyah and PBA Twilight to the same extent as later flowering varieties. However they managed to perform similarly to Kaska at 8 and 5 of 11 sites, respectively, and outperformed Parafield at 4 and 3 sites, respectively. Long term data shows both varieties yield similarly to Kaska, however PBA Gonyah and PBA Twilight have performed up to 17

and 22 percent higher than Kasper, respectively, in previous seasons. Both provide a more reliable alternative to Kasper in the medium and low rainfall areas across seasons due to their earlier and longer flowering pattern, enabling them to capitalise on short, sharp finishes but still perform well in long growing seasons. This also makes better suited to delayed sowing for disease management and crop-topping, showing less relative yield loss than other varieties from both practices. These varieties also offer the same agronomic benefits as Kasper (eg semi-leafless plant type, improved lodging and pod shattering resistance) and marketing benefits (round shape, improved milling quality). Of the two, PBA Gungah generally offers the most reliability across current field pea growing areas in South Australia, and was 5 percent higher yielding than PBA Twilight in 2010. Adoption of these varieties will also provide the opportunity to eliminate Parafield contamination in Kasper crops.

Yarrum equal topped the NVT and PBA trials for the fourth year in a row. Yarrum is a late flowering, high yielding, powdery mildew resistant dun type pea, with improved resistance to virus. Long term yields show Yarrum has consistently performed well across the state, and provides an alternative to Kasper in areas where powdery mildew and viruses are regular problems. However Yarrum does not have the same round seed and shatter resistance qualities as Kasper, PBA Gungah and PBA Twilight.

Kasper performed relatively well in 2010, performing similarly to the site mean at all sites. It yielded higher than Parafield at 8 of the 11 NVT and PBA sites. Kasper remains the preferred variety in high rainfall areas not prone to bacterial blight, however alternative varieties should be considered if they provide regional advantages.

OZP0703 is a high yielding early flowering dun variety with greater tolerance to bacterial blight (*pv syringae*) than current pea varieties. It averaged 99 percent of site mean yield across all sites in 2010. OZP0703 performed 10 percent higher than Kasper in 2009 and 17 percent higher in 2008 across all sites, and shows a three percent yield advantage over Kasper long term. This demonstrates its suitability across sites and seasons, not necessarily affected by bacterial blight. OZP0703 is expected to be released by AWB Seeds for 2012 sowings.

Lentils

By Matt Dare Research Officer SARDI, Larn McMurray Research Scientist SARDI, & Michael Materne, Pulse Breeding Australia Lentils.

The newly released lentil variety PBA Jumbo performed well in South Australian trials last year, topping the variety yields at three of the seven Pulse Breeding Australia (PBA) and NVT evaluation sites.

A favourable growing season across southern Australia allowed high lentil yields at the majority of sites, averaging 3.8 tonnes per hectare across all sites harvested. Maitland,

Melton and Riverton sites averaged over 4 tonnes per hectare which were historically high levels.

The wet winter and spring also meant increased crop biomass and disease levels. *Ascochyta Blight* (AB) infected lentil crops and trials on Yorke Peninsula at higher levels than previously observed. High regional cropping intensity, tight lentil rotation and the absence of seed dressings contributed to the severity of this disease outbreak. PBA Flash had higher levels of infection than other varieties in a number of these trials (Melton, Maitland, and Willamulka), but yields were still equal to Nugget. However PBA Flash is now rated moderately susceptible to AB and is likely to require both foliar and podding sprays in disease prone areas.

Botrytis Grey Mould (BGM) also developed in spring as moist conditions and large crop canopies were prevalent. This disease has resulted in large yield penalties in previous seasons conducive to its development however improved vigilance with fungicide application in 2010 prevented it establishing in many crops. Northfield's yield was 34% lower than the site average at Melton in the presence of BGM and with no fungicide protection. It will be important to ensure seed saved for 2011 is tested to ensure it is free from seed-borne diseases that can carryover disease into this year's crops. Seed can still be infected despite having no visible sign of disease.

High prices and demand for lentils leading into the 2010 cropping season led to an increase in area sown to lentils. In some instances lentil crops were sown on soil types that were not necessarily well suited to lentil production and consequently suffered from issues such as water logging and associated soil problems. Yeelanna and Mundulla trial sites suffered transient water logging. Rudall trial was on a sandy soil type with a low pH resulting in poor establishment while the Lamerloo site was affected by weather damage prior to harvest. High variability at these sites meant results have not been included in the state data set.

Many commercial lentil crops had high levels of weeds that became more apparent later in the season. Sowing lentil crops into paddocks with high weed seed-banks, a favourable and wet growing season and post sowing pre-emergent herbicides running out of efficacy and not controlling later weed germinations contributed to high weed populations.

Unfortunately some crops suffered weather damage from multiple rain events prior to harvest resulting in seed discolouration, wrinkled seed coat and in some instances mould. This created problems for receipt at the silo and also affects marketability of the end product. Timely harvest and on-farm storage helped to reduce these issues in 2010.

PBA Blitz and PBA Jumbo were released in 2010. PBA Blitz is a new medium sized red lentil, and is currently the earliest maturing commercial variety. It is particularly suited to short season growing environments, and more suited to the practice of crop-topping for end season weed control than later maturing varieties. In long term trials (2004-10) PBA Blitz has averaged 6% greater than Nugget across all SA sites and in 2009 was 28% higher yielding. It performed similarly to Nugget and PBA Flash in 2010, a good result given the season favoured later maturing varieties.

PBA Jumbo is a large seeded red lentil and a direct replacement for Aldinga. In 2010 it averaged over 4 tonnes per hectare across all sites and was the highest yielding variety at Minlaton, Willamulka and at Maitland. It was 20% higher yielding than the site average at Maitland, yielding at an astonishing 5.4 tonnes per hectare, and was 12 and 14 percent above the site mean yields at Minlaton and Willamulka, respectively. PBA Jumbo due to its shorter plant height, mid maturity and large seed size is most suited to medium to higher rainfall lentil growing areas where it has consistently yielded around 15% higher than Aldinga over long term averages however BGM will need to be controlled.

PBA Flash and PBA Bounty were grown commercially for the first time in 2010. Yields of PBA Flash were similar to Nugget across all sites in 2010. Long term data shows PBA Flash has yielded 8 percent higher than Nugget on average and in 2009 was 23% higher yielding. Its earlier maturity has been better suited to shorter seasons and medium/low rainfall environments although it still performed well in 2010 relative to Nugget despite higher disease levels at a number of sites.

PBA Bounty yielded similarly to Nugget in 2010 across all sites except Riverton where it was lower yielding by 15 percent. In long term trials in SA PBA Bounty has out yielded Nugget by 3 percent across sites. PBA Bounty is a broadly adapted small seeded red lentil with higher yields than Nipper and Northfield. PBA Bounty does not have the equivalent level of foliar disease resistance of Nipper but averages approximately 8% higher yields long term in SA than this variety.

Nipper did not have the previously seen high yield increases over other varieties at disease infected sites in 2010, and was lower yielding than Nugget at Willamulka, Laura and Riverton. In 2010 MVT sites had strategic applications of fungicide to minimise the impact of disease. Fungicide applications would have benefited varieties with lower levels of disease resistance relative to Nipper. Nipper was the highest yielding variety at the Melton PBA site (106% of site average) where no fungicide was applied.

Boomer had a mixed performance in 2010. It was significantly lower yielding than the site averages at Maitland (8%) and Turretfield (10%) where it produced very high levels of biomass but was the highest yielding variety (11%) at Laura, which was characterised by lower biomass levels.

The PBA lentil breeding team is working with BASF and Pulse Australia to obtain an imidazolinone product registration for use on CIPAL702 (name pending). Commercial seed quantities of CIPAL702 have been produced through PB seeds and will be made available to farmers when progress toward herbicide registration is confirmed. CIPAL702 is a small seeded red lentil with good resistance to foliar and seed AB. It is also moderately resistant to BGM. CIPAL702 is later flowering than Nugget and best suited to more favorable areas. In 2010 CIPAL702 was generally ten percent lower yielding than Nugget across sites.

Chickpeas

By Lorn McMurray, Research Scientist, SARDI, Clare & Kristy Hobson PBA Chickpeas, DPI Victoria

The newly released desi chickpea, PBA Slasher was the highest yielding variety across South Australian National Variety (NVT) and Pulse Breeding Australia (PBA) trials in 2010. PBA Slasher averaged 12% higher than the current recommended ascochyta blight (AB) resistant desi variety, Genesis 509 across all 6 trials. Compared with the small kabuli types it was 6% higher than Genesis 090 (4 trials) and 2% higher than Genesis 079 (5 trials).

Seasonal conditions were generally ideal for chickpea production in most areas in 2010 with high yields, and even record yields achieved. Rainfall was generally above average and fell at the right time throughout the growing season, although in some areas waterlogging was an issue. Temperatures were also favourable for pulse production however for the second year in a row chickpea crops experienced cool conditions during the flowering/pod set period. These conditions were not as limiting on grain yield as seen in 2009 due to the absence of a 'November heat wave' event last year. In fact few or no major heat or frost events occurred in 2010. Despite these favourable conditions the Cockaleechie trial was abandoned due to water logging and weed competition and results from the Rudal trial were considered too variable to use due to poor establishment. The Mundulla trial was affected by water logging and patchy establishment and was the lowest yielding desi trial harvested, at 1.4 t/ha. Of the remaining desi trials, average site yields ranged from 2.2 t/ha at Balaklava, where high and uncontrolled AB disease pressure occurred, to a SA and potentially Australian record of 4.0 t/ha at Riverton. The highest yielding breeding line at this site recorded a staggering 4.7 t/ha.

AB disease infection affected variety performance at Melton, although a podding spray was applied here unlike at Balaklava where no sprays were applied and yield loss occurred in all varieties. Apart from cool temperatures during flowering and early pod fill there were very few other factors influencing variety performance at the remaining sites. Establishment issues occurred in all PBA kabuli chickpea trials in 2010 due to seed of some lines being sourced from sites affected by the 'November heat wave' in 2009. Results from these sites have not been included in the data set. The Cockaleechie kabuli trial, like the desi trial at this site was also abandoned and the Mundulla trial was low yielding (1.0 t/ha) due to waterlogging and poor establishment. Average site yields at the remaining two NVT sites were 2.9 t/ha at Minlaton and 4.1 t/ha at Riverton and variety performance was only influenced by cold temperatures during the reproductive phase. The importance of retaining good quality seed, testing for germination, vigour and disease status and early crop monitoring were highlighted not only in the kabuli trials last year but also in commercial crops as a number needed to be re-sown due to poor establishment.

PBA Slasher is an AB blight resistant desi line from PBA Chickpeas, licensed to AWB Seeds and now widely available. It has long term yields in this state similar to the small seeded kabuli variety Genesis D79 and substantially superior to all other varieties. Along with high yields, PBA Slasher has improved seed quality compared to the desi type Genesis 509, with

larger seed size and superior seed colour. It provides a high yielding desi alternative marketing option to the small seeded kabuli varieties.

Genesis 079 like in 2009 was similar yielding to PBA Slasher in SA last year. It surprisingly was also higher yielding than Genesis 090 in last years long and favourable conditions with yield advantages ranging from 5-10% across all desi trials. Genesis 079 offers high yields in SA particularly in short growing seasons or environments. It is less suited to high rainfall and/or long growing season districts due to its early and more determinate maturity pattern and its increased susceptibility to botrytis grey mould over other varieties. Genesis 079 produces small 6-7mm sized grain compared with Genesis 090 which produces seed sized 7-8mm. Indications of grain price for Genesis 079 are that it will be at the lower end of the Genesis 090 price range.

Genesis 090, like in 2009 was lower yielding than PBA Slasher and 079 last year however it was slightly higher than Genesis 509 at most sites.

In the kabuli chickpea trials (where all varieties are sown at 35 plants per sq. m unlike 50 in the desi trials) Genesis 090 was the highest yielding variety averaging 2% higher than Genesis 079 and 6 and 7% higher than the medium to large sized varieties, Almaz and Genesis 114 respectively. The large seeded selection from Genesis 114, Genesis 115 was generally 5% lower yielding than its parent variety. The medium to large seeded varieties have generally been 15-25% lower yielding than Genesis 090 in SA and their improved performance last year highlights their need for favourable growing conditions to obtain good yield and seed size in this state. The lower relative yields of the larger seeded kabuli types compared with desi and small seeded kabulis needs to be considered along with the chances of obtaining large seed size before deciding to grow these higher valued types in SA.

Beans

Andrew Ware, SARDI, Port Lincoln

Fiesta VF narrowly topped NVT and PBA Faba Bean trials in South Australia in 2010. Nura followed closely behind, averaging 1% less than Fiesta across all trials in SA, with 2009 top variety, Farah, 3% behind Fiesta.

The majority of faba bean trials were sown in mid - late May, and established well. Where there was a lack of disease, conditions for Faba Bean growth in 2010 were excellent. Faba Beans proved better than other pulse crops in being able to survive waterlogged soils.

Average site yields ranged from the 2.3 t/ha at chocolate spot affected Cockaleechie, on Lower Eyre Peninsula to 5.4t/ha at Bool Lagoon, in the South East.

Frequent rain events during spring, meant that Chocolate Spot (CS) was the biggest disease challenge in faba beans in 2010. High disease pressure was observed in field trials located

at Saddleworth, Tarlee, and Cockaleechee. Most NVT and breeding trials had foliar fungicide(s) applied to control CS and were very effective when applied during early flowering.

Disease assessments showed many high yielding well-adapted lines developed by the Australian Faba Bean Breeding Program, based at the University of Adelaide, exhibit improved resistance to CS. These lines rated 3.0 compared to current cultivars rated at 5.5 in a high disease pressure field trial at Saddleworth in 2010 (received one application of fungicide).

Severity of cercospora leaf spot, ascochyta and chocolate observed in field trials was variable and reflected the influence of paddock history, proximity to infested residues, the timing of fungicide applications and their interactions with local weather conditions.

Lodging was an issue at several sites where excellent growth had occurred (Tarlee, Maitland, and Bool Lagoon). Nura had slightly better standing ability at these sites compared to Farah and Fiesta.

Trials that were harvested after the significant rainfall events in late November and early December experienced high levels of seed staining and discolouration. At the Tarlee site Fiesta experienced the highest levels of seed staining, followed by Doza and Farah, with Nura having the lowest levels.

Fiesta was the top performing commercial variety at six of the 14 Faba Bean evaluation sites in SA in 2010, and was highest yielding at all three sites in the South East. Nura performed the best at five sites, including on the Upper Eyre Peninsula, the Mallee, and three sites in the Mid-North/ Central district. Farah performed well at both sites on Yorke Peninsula.

Long term averages show that Farah and Fiesta are the most consistent performers in terms of grain yield over a number of years across South Australia, with Nura only 1% behind.

Notes on newly released Broad Bean variety

PBA Kareema

PBA Kareema was selected from Aquadulce with similar adaptation to this variety but with larger and more uniform seed, and no “evergreens”. It is well adapted to the very high rainfall, broad bean districts in the lower south-east of SA.

It has significantly improved resistance to ascochyta blight (MR-R) and better rust resistance (MR) than Aquadulce and is slightly less susceptible to chocolate spot than other faba beans.

The yield of PBA Kareema has been similar to, or slightly greater than, Aquadulce in trials in the South East of SA over the past 9 years. It is licensed to PGG Wrightson Seeds and an end point royalty applies. Refer to PBA Kareema variety brochure at www.grdc.com.au/director/events/grdcpublications/pba or <http://www.pulseaus.com.au/pdf/PBA%20Kareema%20Website%20Final.pdf>

The contribution of data and information for this report from the Pulse Breeding Australia Faba Bean Breeding Program by Dr Jeff Paul, University of Adelaide, and Rohan Kimber, SARDI, is gratefully acknowledged.

Lupins

Andrew Ware, SARDI New Variety Agronomy, Port Lincoln

Jenabillup enjoyed the seasonal conditions in 2010, performing exceptionally well at all breeding and NVT sites in South Australia, eclipsing Mandelup yields by 7%, averaged across all SA sites. Jenabillup is available to growers in eastern Australia for the first time in 2011 with seed available through Viterro Seeds.

Five named varieties and 13 advanced breeding lines were evaluated at nine breeding and NVT sites in SA in 2010. The mean site grain yields ranged from 1.4 t/ha at Mundulla, to 3.9 t/ha at Field, both in the South East.

The majority of the NVT lupin sites were planted as close to the break of the season as possible. Starting in late April/early May at Spalding and Keith, through to late May on Eyre Peninsula and into June at Mundulla. Establishment was good at all sites, except the later sown Mundulla site.

Excellent rainfall at all sites, coupled with cool temperatures during grain fill gave lupins at the majority of sites an opportunity to grow unchecked through out the season.

As with many commercial crops, water logging, and bulky growth, which returned a poor pod set, arose as issues in 2010 lupin trials. This coupled with field mould on grain and the risk of lupinosis to sock grazing lupin stubbles resulted in a frustrating year for lupin producers in some areas.

The issue of bulky growth returning poor yields is the subject of an ongoing trial work in SA. Results so far have not provided clear solutions, but will continue in 2011.

Unseasonal rainfalls, humidity combined with below average summer temperatures, are ideal conditions for extremely high lupinosis causing toxin levels to develop in lupin stubbles. Care must be taken when grazing lupin stubbles or when feeding affected grain to stock.

Mandelup continued to perform well at most sites but with a shorter flowering window it wasn't able to take full advantage of the long growing season, and yielded lower than Jenabillup at most sites.

The growing season in 2010 was thought to be ideal for late flowering variety Jindalee, but harvest results proved otherwise. Jindalee averaged only 81% of the site mean across all SA sites and was consistently was the poorest performer of all lines evaluated.

Wonga still provides the best level of anthracnose resistance available of the current commercial varieties but yields were well below Jenabillup and Mandelup at all sites in 2010 and 9% below Mandelup long term.

Coromup hasn't been commercially released in eastern Australia, and was developed for specialty markets. With long term yields 5% lower than Mandelup its future role in South Australia is uncertain.

Long term averages (2004-2010) show that there is only 1% yield difference between Jenabillup and Mandelup across all SA regions. For growers looking to upgrade varieties in 2011 and beyond Jenabillup should provide a consistent yield advantage over Mandelup in environments where annual rainfall is 450mm or higher. For growers in the low to medium rainfall zones Mandelup remains the most consistent performer.

Notes on newly released variety

Jenabillup has been extensively trailed in SA for five years with a long term average 1% higher than Mandelup across all South Australian sites. It has a typically has an advantage over Mandelup at the longer growing season sites such as Wanilla on Lower EP and the South East sites. Jenabillup flowers slightly later and for a longer period than Mandelup, making it less suitable to crop topping. Jenabillup does have resistance to black pod syndrome, although rarely seen in South Australia. Jenabillup does not have tolerance to metribuzin herbicide. It has a low anthracnose rating (MS), similar to Merrit. Seed is available through Viterro Seeds.

Acknowledgements

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Funding Body



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