

PBA Rana[®]

Faba bean



PBA

PULSE BREEDING AUSTRALIA

Better pulse varieties faster

Improved quality faba bean



MAIN ADVANTAGES

PBA Rana[®] represents a new grain quality category for Australian faba bean production and is not produced by any other major faba bean exporter. Its seed is larger than current faba bean varieties, and is considered to be of high quality by the major Egyptian market.

PBA Rana[®] is a relatively late flowering and maturing variety and is particularly suited to higher rainfall, long season faba bean production regions.

The overall disease resistance profile of PBA Rana[®] is superior to current Australian faba bean varieties. Including a greater level of Ascochyta blight resistance increasing the reliability of production in higher disease risk regions.

SEED PROTECTION & ROYALTIES

PBA Rana[®] is protected under Plant Breeder's Rights (PBR) legislation. Growers can only retain seed from production of PBA Rana[®] for their own seed use.

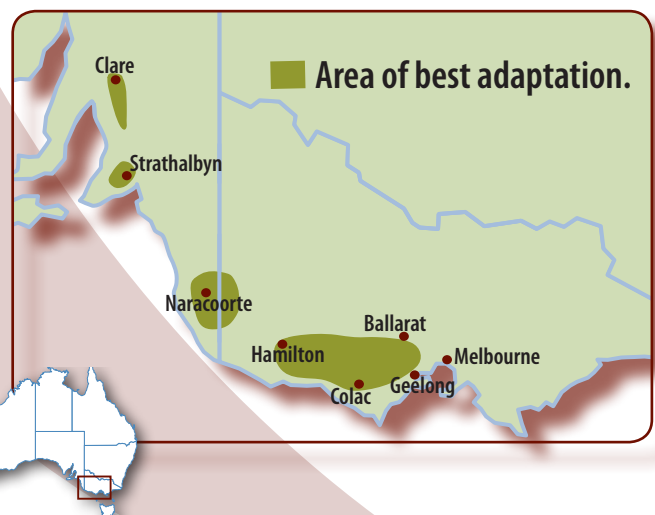
An End Point Royalty (EPR) of \$3.85 per tonne (GST inclusive), which includes breeder royalties, applies upon delivery of this variety.

Seed is available from the commercial partner;

KEY FEATURES

- Adapted to high rainfall, long season regions.
- Vigorous plant with good stem strength.
- Mid to late flowering and mid maturity.
- Resistant (R) to both foliar and seed Ascochyta blight.
- Improved resistance to chocolate spot compared with Fiesta VF and Farah[®].
- Very low level of Pea Seed borne Mosaic Virus (PSbMV) seed staining.
- Improved tolerance to iron deficiency chlorosis.
- Large, plump and light brown seed suited to the major Egyptian market.
- Greater yield than broad bean varieties at most high rainfall, long season sites.

AREA OF ADAPTATION



YIELD & ADAPTATION

PBA Rana[®] is a relatively late flowering variety and produces the highest yields in high rainfall and long season districts of southern Australia.

It has a good overall disease resistance profile. Resistance to Ascochyta blight is greater than current Australian faba bean varieties and its reaction to chocolate spot is comparable to the broad bean varieties.

Yield of PBA Rana[®] in lower rainfall and shorter season districts is generally less than Fiesta VF and Farah[®].

South Australia: highest yields have been achieved in the Lower South East, Central Hills/Fleurieu Peninsula and at high rainfall sites in the Lower Mid North.

Victoria: long-term yields are less than Fiesta VF and Farah[®], particularly in recent drought years. There has been limited evaluation in the Western Districts, but the longer growing season in this region should suit PBA Rana[®].

Agronomic trials in the Mid North and South-East of South Australia and the Wimmera in Victoria indicate that yields of PBA Rana[®] are at least comparable with Nura[®], Fiesta VF and Farah[®] when sown early.

However, relative yields are reduced by a greater extent than that of Fiesta VF and Farah[®] when sown late.

PBA Rana[®] yields more than broad bean varieties in most districts, the main exception being the Millicent/Conmurra district where broad beans produce higher yields.

2004 - 2010 Long term yield of faba bean varieties (yields expressed as % Fiesta VF)

Variety	South Australia							Victoria		Sth NSW
	Lower South East	Mid South East	Upper South East	Central Hills Fleurieu P	Lower Mid North (High rainfall)	Lower Mid North (med/low rainfall)	Yorke P	Wimmera	North East	
Site mean yield (t/ha)	2.61	3.25	2.22	2.57	2.69	1.83	2.33	2.35	2.77	2.68
Faba bean										
PBA Rana [®]	117	108	93	102	101	95	96	94	94	95
Farah [®]	97	100	101	100	100	100	102	101	102	101
Fiesta VF	100	100	100	100	100	100	100	100	100	100
Fiord	-	98	92	100	96	95	98	96	99	96
Manafest	107	107	88	90	82	86	87	86	88	88
Nura [®]	104	95	98	103	98	96	100	95	99	96
Broad bean										
Aquadulce	128	89								
PBA Kareema [®]	142	70								

Source: Trial results from Pulse Breeding Australia (PBA)

Disease resistance rating of faba and broad bean varieties in southern Australia

Variety	Plant height	Flower time	Maturity	Lodging resistance	Ascochyta blight		Chocolate spot	Cercospora	Rust	PSbMV Seed staining
					Foliage	Seed				
Faba bean										
PBA Rana [®]	Medium	Mid	Mid	MR	R	R	MS	S	MS	MR
Farah [®]	Medium	Early/Mid	Early/Mid	MS	MR/R	MR/R	S	S	S	S
Fiesta VF	Medium	Early/Mid	Early/Mid	MS	MR	MS	S	S	S	S
Fiord	Short	Early	Early	MR	MS	MS	VS	S	S	S
Manafest	Medium	Mid	Mid	MR	VS	VS	MS	S	MS	VS
Nura [®]	Short	Mid	Early/Mid	MR	MR/R	MR/R	MS	S	MR	VS
Broad bean										
Aquadulce	Tall	Mid	Late	MS	MS	MS	MS	S	MS	
PBA Kareema [®]	Tall	Mid	Late	MS	MR/R	MR/R	MS	S	MR	

Source: Pulse Breeding Australia trials program 2004-2010

R = Resistant, MR = Moderately Resistant, MS = Moderately Susceptible, S = Susceptible, VS = Very Susceptible

DISEASE MANAGEMENT

Ascochyta blight

- PBA Rana[®] is Resistant (R) to Ascochyta blight with a greater level of resistance than Farah[®] and Nura[®].
- Foliar fungicides that target Ascochyta blight control applied at 6-8 weeks post-sowing should not be required for PBA Rana[®]. However, crops should be monitored and managed if significant disease occurs.
- This improved resistance should reduce the risk of seed staining due to this disease. Ascochyta blight protection during podding should only be required if significant disease occurs on foliage earlier in the season.

Chocolate spot

- PBA Rana[®] is rated as Moderately Susceptible (MS) to Chocolate spot. It is more resistant than Fiesta VF and Farah[®] and comparable to the broad bean varieties PBA Kareema[®] and Aquadulce.
- The risk of Chocolate spot is high in the target region. Crops should be monitored regularly and managed accordingly with strategic fungicide applications.
- Foliar fungicides that target Chocolate spot may need to be applied before flowering in very early sown crops.
- In high risk situations applications of fungicides that target Chocolate spot are recommended prior to canopy closure and during late flowering and pod fill.

Cercospora leaf spot

- PBA Rana[®] is Susceptible (S) to Cercospora leaf spot, similar to all other Australian faba bean varieties.
- The risk of Cercospora leaf spot is greatest in paddocks with a long history of faba/broad bean production and when bean crops are grown in tight rotations.
- A foliar fungicide that targets Cercospora leaf spot is recommended to be applied at 5-8 weeks post-sowing.

Rust

- PBA Rana[®] is rated as Moderately Susceptible (MS) to rust.
- Foliar fungicides that target rust may need to be applied before flowering in very early sown crops.
- Otherwise; a foliar fungicide that targets rust is only required in high risk situations, and management should be similar to that used for Fiesta VF and Farah[®].

Pea seed borne mosaic virus

- Preliminary results indicate that PBA Rana[®] develops a lower level of seed staining caused by Pea Seed borne Mosaic Virus (PSbMV) than other faba bean varieties.
- Seed staining of susceptible varieties can have an impact on grain quality.
- PSbMV does not cause significant yield loss in faba beans, and no management practices are available to control the disease.

AGRONOMY

Plant characteristics

Paddock selection and basic requirements for production are similar to other faba bean varieties.

PBA Rana[®] has the following characteristics;

- Mid to late flowering, similar to Nura[®] and 5-10 days later than Fiesta VF and Farah[®].
- Mid maturity, later than Fiesta VF, Farah[®] and Nura[®].
- Medium plant height, similar to Fiesta VF and Farah[®], and can form bulky canopies under very high rainfall conditions.
- Lodging resistance better than Fiesta VF and Farah[®] and similar to Nura[®], but can lodge in very high biomass situations.
- Has performed well in situations where iron chlorosis can occur on sensitive varieties.

Sowing

- PBA Rana[®] benefits from early sowing and delaying sowing until late May or early June can result in significant reduction in yield.
- PBA Rana[®] is responsive to sowing rate and a seeding rate similar to other faba bean varieties should be maintained to achieve maximum yields. The larger size of PBA Rana[®] seed might restrict the seeding rate that can be achieved.
- Seeding equipment must be able to handle the larger seed of PBA Rana[®] without blockages.
- Trials investigating the effect of row spacing on yield of PBA Rana[®] indicate a reduction in yield at wider than conventional row spacing.

Herbicide tolerance

- In specific herbicide tolerance trials there has been no adverse effect measured at the recommended rate for registered herbicides commonly applied to faba beans. Application of higher than recommended rates indicate a narrow margin of safety for Imazamox (e.g. Raptor[®]) and Imazethapyr (e.g. Spinnaker[®]).
- PBA Rana[®] has been extensively tested in breeding yield trials in which a range of herbicides registered for use in faba beans has been applied at recommended rates. No specific adverse reactions have been observed in these trials.

PBA Rana[Ⓛ]

Faba bean

SEED QUALITY

PBA Rana[Ⓛ] produces large, light brown seeds with a seed size of 65 - 90 g/100 seeds, and 15-20% larger than Fiesta VF and Farah[Ⓛ]. Seed size varies between locations and seasons and larger seed is produced under more favourable ripening conditions.

The overall colour of seed samples is uniform and bright. There is a generally low rate of darkening during storage.

PBA Rana[Ⓛ] has a high hydration capacity and a low proportion of seeds that do not hydrate which indicates a high suitability for cooking as a whole bean.

Seed weight (g/100 seeds) of faba / broad bean varieties

Variety	Location	
	Bool Lagoon	Turretfield
Faba bean		
PBA Rana [Ⓛ]	75 - 90	65 - 85
Farah [Ⓛ]	55 - 75	55 - 75
Fiesta VF	60 - 80	55 - 75
Fiord	40 - 55	40 - 50
Nura [Ⓛ]	55 - 65	50 - 70
Manafest	75 - 95	65 - 85
Broad bean		
Aquadulce	110 - 115	
PBA Kareema [Ⓛ]	130 - 145	

Source: Pulse Breeding Australia



PBA Rana[Ⓛ]



Nura[Ⓛ]



Farah[Ⓛ]

MARKETING

- PBA Rana[Ⓛ] is highly suitable for the human food market for medium to large faba beans, and under favourable growing conditions could fit the small broad bean category.
- It represents a different quality category for Australian faba beans. There has been very positive feedback from the market in Egypt for this larger type of faba bean. This category is not produced by other major faba bean exporters and variety segregation will be necessary.



Better pulse varieties faster

PBA is an unincorporated joint venture between the GRDC, University of Adelaide, SARDI, DPI Victoria, NSW-DPI, DEEDI, DAFWA and Pulse Australia. It aims to deliver better pulse varieties faster.

FOR MORE INFORMATION

PBA

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PBA Faba bean

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Viterra has formed a commercial partnership with Pulse Breeding Australia (PBA) to multiply, manage and release PBA faba bean varieties. Viterra and PBA are delivering faba bean varieties to growers earlier by fast tracking the identification, multiplication, generation of information and release of new varieties.

AGRONOMIC ENQUIRIES

South Australia

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Victoria

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BREEDING

PBA Rana[Ⓛ] (evaluated as 974*(611*974)/15-1) was developed by the PBA faba bean breeding program, lead by the University of Adelaide. It was produced as a backcross to Manafest (Accession 974) as the recurrent parent and Accession 611 as the donor for the high level of Ascochyta blight resistance.

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