PBA Bendoc$^{\Phi}$
Faba Bean

The information in this document is current as at September 2018.
For updated information after this date, please refer to NVT results

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Herbicide Tolerant Faba Bean

KEY FEATURES

- **Tolerant to some imidazolinone (Group B) herbicides***
  *Only apply products with a registered label or current permit. All directions for use must be adhered to
- **Similar yields to current faba bean varieties grown in southern Australia**
- **Good adaptation throughout southern Australia**
- **Resistant to both pathotype 1 and pathotype 2 of Ascochyta blight**
- **Small to medium sized seed suited to the Middle East markets**

MAIN ADVANTAGES

PBA Bendoc$^{\Phi}$ is the first faba bean variety with a high level of tolerance to some imidazolinone (Group B) herbicides when applied post-emergent. This not only increases the in-crop options for broadleaf weed control but also enables the variety to be grown where some Group B (including the sulfonylureas) herbicide residues persist from applications to the previous crop.

PBA Bendoc$^{\Phi}$ has similar yield to the major faba bean varieties grown in Southern Australia and is resistant to Ascochyta blight. Seed is small/medium in size and suited to the Middle East markets.

SEED PROTECTION & ROYALTIES

PBA Bendoc$^{\Phi}$ is protected by Plant Breeder's Rights (PBR) legislation. Growers can only retain seed from production of PBA Bendoc for their own seed use.

An End Point Royalty (EPR) of $4.29 per tonne (GST inclusive), which includes breeder royalty, applies upon delivery of this variety.

Seed is available from the commercial partner Seednet.

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AREA OF ADAPTATION

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YIELD & ADAPTATION

PBA Bendoc$^{\phi}$ is a new faba bean variety that has been selected for tolerance to imidazolinone herbicides applied post-emergence when plants are at up to the 6 node growth stage. PBA Bendoc$^{\phi}$ has been evaluated in yield trials throughout southern Australia, and in limited trials in Western Australia in the medium rainfall area of Agzone 5, and has generally performed comparably to conventional varieties with no obvious yield penalty associated with herbicide tolerance.

PBA Bendoc$^{\phi}$ is similar in time of flowering and maturity to Nura$^{\phi}$ and PBA Samira$^{\phi}$, and also has similar resistance to both pathotypes of Ascochyta blight as these other two varieties. It is susceptible to chocolate spot and this will need to be managed in higher rainfall and high biomass situations.

PBA Bendoc$^{\phi}$ is not adapted to northern NSW or southern Qld as it is too late to flower and mature, and is susceptible to rust which is the major fungal disease in the region.

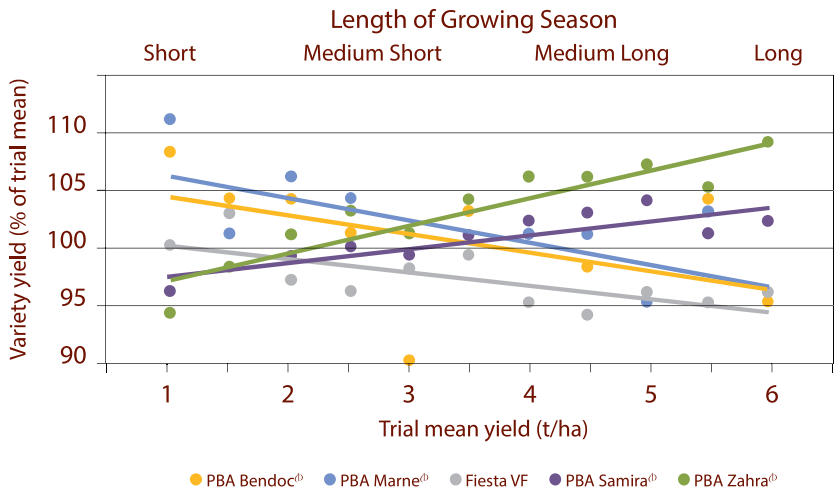

Figure 1: Average relative yield of PBA Bendoc$^{\phi}$ and other faba bean varieties, compared to the average trial yield, in breeding trials across a range of yield scenarios.
Source: Trial results from Pulse Breeding Australia (PBA) and National Variety Trials (NVT) programs. Data sourced from the ACAS Long Term Yield Reporter.

Agronomic and disease resistance ratings of faba bean varieties in southern Australia

Variety	Plant height	Flower time	Maturity	Lodging resistance	Ascochyta blight*		Chocolate spot	Cerco-spora	Rust	PSbMV seed staining
					Pathotype 1	Pathotype 2				
PBA Bendoc$^{\phi}$	**Medium**	**Mid**	**Early/ Mid**	**MS**	**MR/R**	**MR/R**	**S**	**S**	**S**	**S**
PBA Marne$^{\phi}$	Medium/ Short	Early	Early/ Mid	MR	MR/R	MS/MR	S	S	MR	MR
Fiesta VF	Medium	Early/ Mid	Early/ Mid	MS	MR	S	S	S	S	S
Farah$^{\phi}$	Medium	Early/ Mid	Early/ Mid	MS	MR/R	S	S	S	S	S
Nura$^{\phi}$	Short	Mid	Early/ Mid	MR	MR/R	MR/R	MS	S	MS	VS
PBA Rana$^{\phi}$	Med/Tall	Mid	Mid	MR	R	MS/MR	MS	S	MS	MR
PBA Samira$^{\phi}$	Medium	Mid	Early/ Mid	MR	R	R	MS	S	MS	S
PBA Zahra$^{\phi}$	Med/Tall	Mid	Mid	MR	R	MS/MR	MS	S	MS	S

* Ascochyta blight ratings are for pathotype 1 which is widely distributed throughout the Southern Region, and pathotype 2 which has been recently identified in the mid-north of South Australia.

R = resistant, MR = moderately resistant, MS = moderately susceptible, S = susceptible, VS = very susceptible

Source: Pulse Breeding Australia trials program 2012–2017

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DISEASE MANAGEMENT

Ascochyta blight

- PBA Bendoc$^{\Phi}$ is Resistant (MR/R) to both the original pathotype 1 and new pathotype 2 of Ascochyta blight that occur throughout southern Australia.
- Foliar fungicides that target Ascochyta blight control applied at 6–8 weeks post-sowing might not be required for PBA Bendoc$^{\Phi}$. Monitor crops and manage accordingly if significant disease occurs.
- The level of resistance should reduce the risk of seed staining from this disease. Ascochyta blight protection during podding should only be required if significant disease occurs earlier in the season.

Chocolate spot

- PBA Bendoc$^{\Phi}$ is rated as Susceptible (S) to chocolate spot, similar to Fiesta VF and Farah$^{\Phi}$.
- Monitor crops regularly and manage accordingly with strategic fungicide applications, particularly in higher rainfall districts or seasons with above average rainfall.
- Foliar fungicides that target chocolate spot should 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 Bendoc$^{\Phi}$ 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 Bendoc$^{\Phi}$ is rated as Susceptible (S) to rust.
- A foliar fungicide that targets rust is required in high risk situations, and management should be similar to that used for Fiesta VF and Farah$^{\Phi}$.

AGRONOMY

Plant characteristics

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

PBA Bendoc$^{\Phi}$ has the following characteristics:

- Mid flowering, similar to Nura$^{\Phi}$ and PBA Samira$^{\Phi}$ and 5–10 days later than Fiesta VF and Farah$^{\Phi}$.
- Early/Mid maturity, similar to most varieties.
- Medium height plant, similar to Fiesta VF and Farah$^{\Phi}$.
- Lodging resistance similar to Fiesta VF and Farah$^{\Phi}$.
- More susceptible to necking than some other varieties.

Sowing

- PBA Bendoc$^{\Phi}$ is similar to other faba bean varieties and benefits from early sowing. Delaying sowing until late May or early June can result in significant reduction in yield.
- Very early sowing can increase the risk of foliar fungal disease and excessive canopy growth for all faba bean varieties.
- Inoculation with the commercial faba bean Group F rhizobium is essential for proper nodulation.
- Seed crops of PBA Bendoc$^{\Phi}$should be isolated from other faba bean varieties by at least 200 m to prevent cross-pollination.

Herbicide tolerance

PBA Bendoc$^{\Phi}$ is tolerant to some imidazolinime herbicides when applied post crop emergence up to the 6 node growth stage.

- Growers must adhere to all product label and current permit directions for use including: rates, timing of application and plant back periods.
- Minor Use Permit PER14726 is available for post-emergence application of imazamox to faba bean crops.
- PBA Bendoc$^{\Phi}$ shows reduced sensitivity to some sulfonylurea herbicide residues from previous crop applications.
- PBA Bendoc$^{\Phi}$ has been 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.

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SEED QUALITY

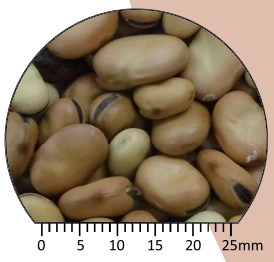
PBA Bendoc$^{\phi}$ produces small/medium sized, light brown, seeds that are comparable in size to Nura$^{\phi}$, with seed weight of 50–72 g/100 seeds. The seed size varies between locations and seasons and larger seed is produced under more favourable conditions.

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

Variety	Average	Range
PBA Bendoc$^{\phi}$	**64**	**50–72**
PBA Marne$^{\phi}$	74	61–87
Fiesta VF	69	57–78
Farah$^{\phi}$	69	59–76
Nura$^{\phi}$	68	55–79
PBA Samira$^{\phi}$	74	58–87

Source: NVT. Data derived from 18 rainfed trials in SA, Vic and sth NSW in 2016–2017

PBA Bendoc$^{\phi}$



Farah$^{\phi}$

Nura$^{\phi}$

MARKETING

The seed of PBA Bendoc$^{\phi}$ should be suitable to co-mingle with other varieties with small/medium and medium sized seed for export to the major food markets in the Middle East.

BREEDING

PBA Bendoc$^{\phi}$, evaluated as AF15369, was developed by the PBA Faba bean breeding program led by University of Adelaide in collaboration with SARDI. Tolerance to imidazolinone herbicides was developed by conventional mutation breeding techniques in Nura$^{\phi}$. A herbicide tolerant selection was crossed with PBA Samira$^{\phi}$ and PBA Bendoc$^{\phi}$ was derived from the progeny of this cross.

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PBA is an unincorporated joint venture between the GRDC, University of Adelaide, University of Sydney, SARDI, DEDJTR Victoria, NSW DPI, DAF (QLD), DPIRD WA and Pulse Australia.

PULSE AGRONOMY

Agronomy and disease management information has been developed with the assistance of the 'Southern region pulse agronomy project' co-funded by GRDC, SARDI, DEDJTR Victoria and NSW DPI.

FOR MORE INFORMATION

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Seednet's mission is:

"To deliver high performance seed based genetics to Australian grain growers and end user customers via superior product and service delivery channels".

Seednet is proud to partner with Pulse Breeding Australia and invest in the improvement of Australian lupin varieties.

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