

High yielding IMI tolerant lentil more reliable on lighter textured soils

KEY FEATURES

- ✓ **High yielding broadly adapted IMI tolerant red lentil**
- ✓ **Higher average grain yield than all XT varieties**, excluding GIA Thunder[Ⓛ], including an average increase of 9% above PBA Hurricane XT[Ⓛ] across SA & Vic NVT trials in 2021 and 2022
- ✓ **Highest yielding variety on lighter textured soils** in the Mallee region
- ✓ **Group B herbicide tolerance** (IMI and SU) equivalent to existing XT and GIA varieties
- ✓ **Upright bush type plant structure** aids in harvestability
- ✓ **Provisionally rated resistant** to the Nipper and moderately resistant/moderately susceptible to the Hurricane ascochyta blight pathotypes
- ✓ **Small, rounded red lentil seed** with a grey seed coat



LIGHTNING^ϕ

IMI Lentil



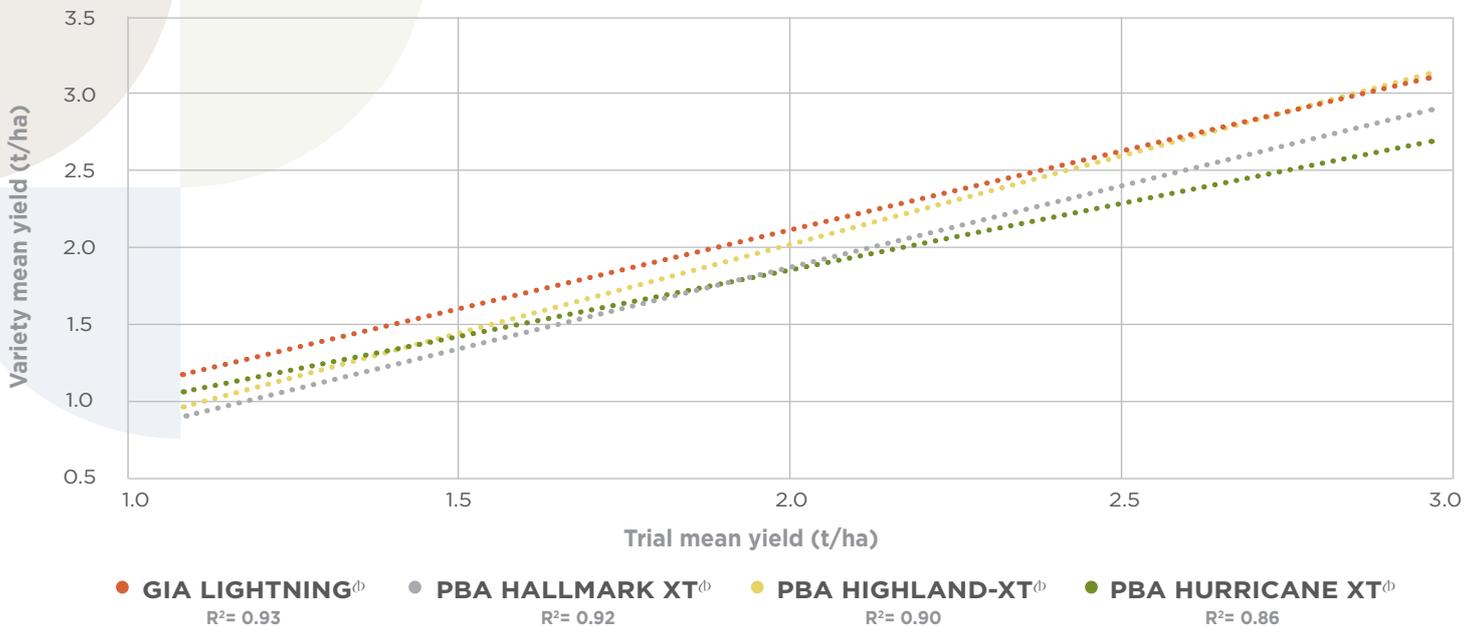
ADAPTATION & GRAIN YIELD

GIA Lightning^ϕ is a broadly adapted variety and has been high yielding across all lentil growing areas of southern Australia in breeding and evaluation trials from 2019-2021. In GRDC NVT trials (2020-21), it has averaged between 9 and 13% higher yield in South Australia and averaged between 6 and 11% higher yield in Victoria than all current IMI tolerant varieties (excluding GIA Thunder^ϕ).

GIA Lightning^ϕ and GIA Thunder^ϕ are the first IMI varieties to be similar or higher yielding than the conventional high yielding variety, PBA Jumbo2^ϕ.

GIA identified GIA Lightning^ϕ for the Mallee regions of SA and Victoria in a project funded by The South Australian Grain Industry Trust (SAGIT). GIA Lightning^ϕ was the most reliable lentil variety on lighter textured sandy soils due to its combination of high and stable yield, and good harvestability, yielding 10% higher than GIA Thunder^ϕ. GIA Lightning^ϕ was found to have a unique extended growth pattern during flowering and early podding that can capitalize on late season rainfall events.

Yield performance (t/ha) of GIA Lightning^ϕ from 27 GIA trials (SA and Vic 2019-2021).



2017-21 SA and Vic NVT predicted MET yield performance of lentil varieties.

Variety	2017		2018		2019		2020		2021	
	SA	Vic	SA	Vic	SA	Vic	SA	Vic	SA	Vic
IMI tolerant varieties										
GIA Lightning^ϕ							111	107	109	108
GIA Thunder ^ϕ							113	112	112	108
GIA Leader ^ϕ					97	101	104	103	99	101
PBA Hallmark XT ^ϕ	97	93	97	101	97	99	95	99	99	96
PBA Highland-XT ^ϕ	102	99	101	100	103	102	97	102	104	97
PBA Hurricane XT ^ϕ	98	96	99	100	97	99	99	100	101	100
PBA KelpieXT ^ϕ	105	102	100	95	110	101	92	98	102	95
Conventional variety										
PBA Jumbo2 ^ϕ	106	111	107	103	105	105	107	106	104	103
Mean yield (t/ha)*	2.5 (6)	1.64 (5)	2.14 (8)	1.09 (4)	1.67 (7)	2 (4)	2.49 (6)	1.94 (5)	3.53 (3)	2.77 (1)

(Data represented by year grouping as a % of site mean accessed from the GRDC NVT website on 11/04/2022) * Number of trials shown in brackets.

Yield of GIA Lightning^ϕ on different soil texture types (SA and Vic trials 2020-2021).

Variety	Trials located on sand textured soils		Trials located on all textured soils	
	Yield (% PBA Hallmark XT ^ϕ)	# trials	Yield (% PBA Hallmark XT ^ϕ)	# trials
GIA Lightning^ϕ	125	7	111	15
GIA Thunder ^ϕ	114	7	119	15
PBA Hallmark XT ^ϕ (t/ha)	1.3	7	1.85	15





LIGHTNING^ϕ IMI Lentil



AGRONOMY

General paddock selection and agronomic production requirements for growing GIA Lightning^ϕ are the same as for other IMI tolerant lentil varieties. Refer to GRDC Lentil Grownotes and Lentil Ute Guide (www.grdc.com.au). GIA Lightning^ϕ has the same level of tolerance to IMI and residual levels of sulfonylurea (SU) herbicides as current XT lentil varieties (e.g. PBA Hurricane XT^ϕ), GIA Leader^ϕ and GIA Thunder^ϕ. Thus, it is tolerant to applied imazamox and imazapyr according to the Intercept[®] herbicide label.

It is imperative growers adhere to product label rates, plant-back periods and all label directions for herbicide use.

GIA Lightning^ϕ has a similar flowering time to GIA Leader^ϕ and is generally 2 to 5 days later flowering than PBA Hurricane XT^ϕ and GIA Thunder^ϕ, although these relativities can vary with sowing date and climatic conditions across environments. The maturity of GIA

Lightning^ϕ is similar but generally slightly later than PBA Hurricane XT^ϕ and GIA Thunder^ϕ but earlier than GIA Leader^ϕ. GIA Lightning^ϕ matures more evenly than varieties such as PBA Hallmark XT^ϕ and PBA Highland-XT^ϕ in which, with late season rainfall events, stems can remain green when the pods are ripening.

The levels of pod drop and shattering in GIA Lightning^ϕ are similar to that observed in PBA Hurricane XT^ϕ. Derived from a PBA Ace^ϕ and PBA Hurricane XT^ϕ background, GIA Lightning^ϕ has an upright bush type plant structure at maturity that aids harvestability, particularly on uneven soil surfaces and/or where plant numbers are below optimal levels.

As with all lentil varieties the correct application, timing and product selection for effective desiccation is required in GIA Lightning^ϕ, refer to GRDC Lentil Grownotes and the Lentil Ute Guide (www.grdc.com.au).

Agronomic and disease characteristics of GIA Lightning^ϕ compared with other lentil varieties

Variety	Vigour	Vegetative frost	Flower time	Maturity	Lodging resistance	Pod drop	Shattering	Ascochyta blight		BGM#
								Nipper virulent#	Hurricane virulent#	
GIA Lightning^ϕ	Mod	Mod-poor	Mid-late	Mid	MR	MR	MRR	R(p)	MRMS(p)	MS(p)
GIA Thunder ^ϕ	Mod	Mod-good	Mid	Mid	MRMS	MR	MRR	R(p)	MRMS(p)	MRMS(p)
GIA Leader ^ϕ	Mod	Mod-good	Mid-late	Mid-late	MR	MR	MRR	MR(p)	MR(p)	MR(p)
PBA Hallmark XT ^ϕ	Mod-good [^]	Mod-poor	Mid [^]	Mid [^]	MR [^]	MR [^]	R [^]	RMR	MRMS	MR(p)
PBA Hurricane XT ^ϕ	Mod	Poor	Mid [^]	Mid [^]	MR [^]	MR [^]	R [^]	RMR	MRMS	MS
PBA Highland-XT ^ϕ	Mod-good [^]	Mod-poor	Early [^]	Early-mid [^]	MR [^]	MR [^]	MR [^]	MR	MR	MS
PBA KelpieXT ^ϕ	Mod-good [^]	Mod-good	Early-mid [^]	Early-mid [^]	MRMS [^]	MR [^]	R [^]	MRMS	MRMS	MRMS

Legend: (p) = provisional, #Data source NVT National Pathology Ratings www.grdc-nvt.com.au, ^Data source GRDC Crop Sowing Guides www.grdc.com.au.

DISEASE AND ABIOTIC TOLERANCE

GIA Lightning^ϕ is provisionally rated as resistant (R) and moderately resistant/moderately susceptible (MRMS) for the Nipper and Hurricane virulence strains of ascochyta blight, respectively, by the GRDC NVT National Pathology Rating system. GIA Lightning^ϕ is provisionally rated as moderately susceptible (MS) to botrytis grey mould and is likely to require the same disease management strategy as used for PBA Highland XT^ϕ and PBA Hurricane XT^ϕ. **Disease management for GIA Lightning^ϕ should follow the GRDC Lentil Grownotes and the Lentil Ute Guide (www.grdc.com.au) recommendations for the relevant disease ratings.**

GIA Lightning^ϕ is rated similar to PBA Hallmark XT^ϕ and PBA Highland-XT^ϕ for vegetative frost tolerance but superior to PBA Hurricane XT^ϕ. It has not been assessed for virus resistance, or boron, salinity and heat tolerance and should be treated as susceptible, or intolerant, for these characteristics.



Absolutely Innovative Grains.



GRAIN QUALITY & MARKETING

GIA Lightning[®] produces a small, rounded red lentil grain with a grey seed coat. Grain size of GIA Lightning[®], as measured by average 100 grain weight has been very similar to PBA Hurricane XT[®] in GRDC NVT trials in 2020 and 2021.

Appropriate insect, pest and disease management practices in GIA Lightning[®] will assist growers in minimising poor colour and achieving market acceptable grain quality, refer to GRDC Lentil Grownotes and the Lentil Ute Guide (www.grdc.com.au).

Grain of GIA Lightning[®] should be segregated for marketing purposes unless otherwise stated, however, its small- sized grain, shape and grey seed coat colour are consistent with traditional small red marketed varieties such as PBA Hurricane XT[®] and Nipper[®] and very similar to that of the small red lentil GIA Thunder[®]. Occasionally, some environmental conditions can result in a trace of grain with seed coat speckling, as seen in previously marketed varieties like PBA Herald XT and Aldinga.

Grain characteristics of GIA Lightning[®] compared with other lentil varieties

Variety	Market category	Seed shape	Seed coat colour	Cotyledon colour	Seed size (g 100 seeds)#
GIA Lightning[®]	SRP	Round	Grey	Red	3.42
GIA Thunder [®]	SRP	Round	Grey	Red	3.65
PBA Hurricane XT [®]	SRP	Round	Grey	Red	3.44
PBA Highland-XT [®]	SRP	Round	Grey	Red	3.81
PBA Hallmark XT [®]	MRS	Lens	Grey	Red	4.05
GIA Leader [®]	MRS	Lens	Grey	Red	4.37
PBA KelpieXT [®]	LRS	Lens	Grey	Red	4.81

Legend: SRP=small red premium round, MRS=medium red split, LRS=large red split. #Data source NVT Trials 2020-21, 25 trial sites across western and southern Australia, www.grdc-nvt.com.au

SEED PROTECTION & ROYALTIES

GIA Lightning[®] is protected under Plant Breeders Rights (PBR) legislation. A PBR bag licence applies to the seed purchased and a seed technology fee applies to the seed price. Licensed growers can only retain seed for their own sowing or for sale as a commodity. GIA Lightning[®] is open marketed with an End Point Royalty (EPR) of \$5.40/t (excluding GST), applying upon delivery of all grain of this variety.

GIA receives no funding from the Grains Research and Development Corporation (GRDC) or state and federal governments for breeding and therefore EPR's are critical for GIA to continue delivering innovative varieties that increase on-farm profitability for growers.

BREEDING

GIA Lightning[®] was developed by Grains Innovation Australia (GIA) and derived from the IMI tolerant variety PBA Hurricane XT[®] and a PBA Ace[®] background using conventional breeding techniques. GIA Lightning[®] is commercialised by PB Seeds.

SEED ENQUIRIES

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