



## Highest yielding broadly adapted IMI tolerant lentil



### KEY FEATURES

- ✓ **Highest yielding broadly adapted IMI tolerant red lentil**
- ✓ **Higher average grain yield than all XT varieties**, including an average increase of 11% above PBA Hurricane XT<sup>®</sup> across SA & Vic NVT trials in 2021 and 2022
- ✓ **Moderate to good vegetative frost tolerance**, superior to PBA Highland XT<sup>®</sup>, PBA Hallmark XT<sup>®</sup>, PBA Hurricane XT<sup>®</sup> and GIA Lightning<sup>®</sup>
- ✓ **Group B herbicide tolerance (IMI and SU)** equivalent to existing XT and GIA varieties
- ✓ **Mid flowering and maturity timings**, similar to PBA Hurricane XT<sup>®</sup>
- ✓ **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



# THUNDER<sup>ϕ</sup>

## IMI Lentil



### ADAPTATION & GRAIN YIELD

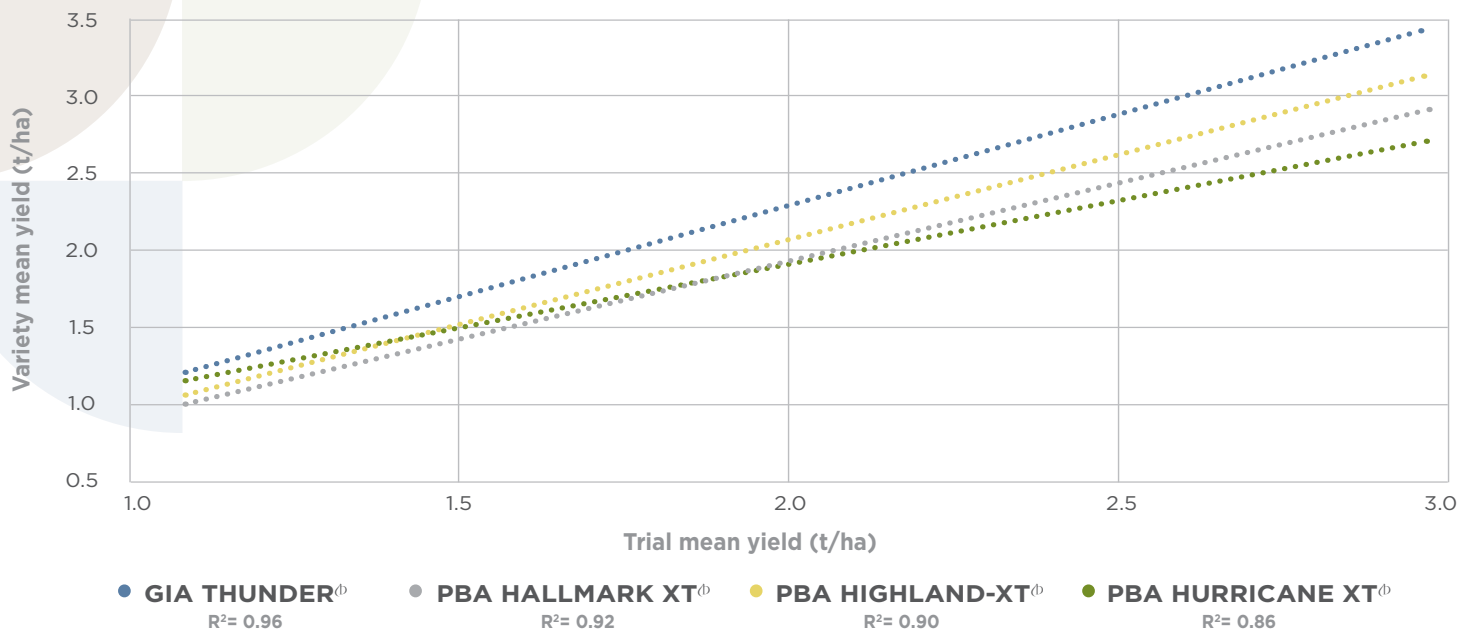
GIA Thunder<sup>ϕ</sup> is the highest yielding imidazolinone (IMI) tolerant lentil across all growing areas of southern Australia in breeding and evaluation trials from 2019-2021. In GRDC NVT trials (2020-21), it averaged between 11 and 16% higher yields in South Australia and between 8 and 14% higher yields in Victoria, than all current IMI tolerant varieties (excluding GIA Lightning<sup>ϕ</sup>).

GIA Thunder<sup>ϕ</sup> has shown slightly higher grain yields than GIA Lightning<sup>ϕ</sup> across all NVT trials in 2020 and 2021, averaging 2% higher in Victoria and 3% higher in

South Australia. However, GIA Lightning<sup>ϕ</sup> was the most reliable lentil variety on lighter textured sandy soils, with an average yield increase of 10% over GIA Thunder<sup>ϕ</sup> on these soils (7 trials) in 2020 and 2021. Conversely, GIA Thunder<sup>ϕ</sup> averaged 8% higher than GIA Lightning<sup>ϕ</sup> on all other soil types in this set of 22 breeding trials.

GIA Thunder<sup>ϕ</sup> and GIA Lightning<sup>ϕ</sup> are the first IMI tolerant varieties to be consistently similar or higher yielding than the conventional high yielding variety, PBA Jumbo2<sup>ϕ</sup> in NVT trials.

Yield performance (t/ha) of GIA Thunder<sup>ϕ</sup> from 27 GIA trials (SA and Vic 2019-2021).



2017-21 SA and Vic NVT predicted MET yield performance of lentil varieties (as % Site Mean).

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

(Data accessed from the GRDC NVT website on 11/04/2022). \*Number of trials shown in brackets.

Vegetative frost tolerance of GIA Thunder (right) compared to a poor variety  
 PHOTO: J Brand, AgVic.



# THUNDER<sup>Ⓢ</sup>

## IMI Lentil



### AGRONOMY

General paddock selection and agronomic production requirements for growing GIA Thunder<sup>Ⓢ</sup> are the same as for other IMI tolerant lentil varieties. Refer to GRDC Lentil Grownotes and Lentil Ute Guide ([www.grdc.com.au](http://www.grdc.com.au)).

GIA Thunder<sup>Ⓢ</sup> 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<sup>Ⓢ</sup>), GIA Leader<sup>Ⓢ</sup> and GIA Lightning<sup>Ⓢ</sup>. Thus, it is tolerant to applied imazamox and imazapyr according to the Intercept<sup>®</sup> herbicide label.

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

GIA Thunder<sup>Ⓢ</sup> has a similar flowering time to PBA Hurricane XT<sup>Ⓢ</sup>, generally later than PBA Hallmark XT<sup>Ⓢ</sup> but earlier than GIA Lightning<sup>Ⓢ</sup> and GIA Leader<sup>Ⓢ</sup>, although relativities can vary with sowing date and climatic conditions across environments.

The maturity timing of GIA Thunder<sup>Ⓢ</sup> is also similar to PBA Hurricane XT<sup>Ⓢ</sup> and earlier than GIA Lightning<sup>Ⓢ</sup> and GIA Leader<sup>Ⓢ</sup>. Like GIA Lightning<sup>Ⓢ</sup>, GIA Thunder<sup>Ⓢ</sup> matures more evenly than varieties such as PBA Hallmark XT<sup>Ⓢ</sup> and PBA Highland-XT<sup>Ⓢ</sup> in which, with late season rainfall events, stems can remain green when pods are ripening.

The lodging resistance of GIA Thunder<sup>Ⓢ</sup> plants at maturity is less than in more erect varieties, such as GIA Lightning<sup>Ⓢ</sup>, PBA Hallmark XT<sup>Ⓢ</sup> and PBA Highland-XT<sup>Ⓢ</sup>, but generally similar to that observed in the highly harvestable variety PBA Jumbo 2<sup>Ⓢ</sup>.

The levels of pod drop and shattering in GIA Thunder<sup>Ⓢ</sup> have generally been found to be similar to or lower than those observed in PBA Hurricane XT<sup>Ⓢ</sup>.

**As with all lentil varieties the correct application, timing and product selection for effective desiccation is required in GIA Thunder<sup>Ⓢ</sup>, refer to GRDC Lentil Grownotes and the Lentil Ute Guide ([www.grdc.com.au](http://www.grdc.com.au)).**

### Agronomic and disease characteristics of GIA Thunder<sup>Ⓢ</sup> compared with other lentil varieties

Variety	Vigour	Vegetative frost	Flower time	Maturity	Lodging resistance	Pod drop	Shattering	Ascochyta blight		BGM#
								Nipper virulent#	Hurricane virulent#	
<b>IMI tolerant varieties</b>										
GIA Thunder <sup>Ⓢ</sup>	Mod	Mod-good	Mid	Mid	MRMS	MR	MRR	R(p)	MRMS(p)	MRMS(p)
GIA Lightning <sup>Ⓢ</sup>	Mod	Mod-poor	Mid-late	Mid	MR	MR	MRR	R(p)	MRMS(p)	MS(p)
GIA Leader <sup>Ⓢ</sup>	Mod	Mod-good	Mid-late	Mid-late	MR	MR	MRR	MR(p)	MR(p)	MR(p)
PBA Hallmark XT <sup>Ⓢ</sup>	Mod-good <sup>^</sup>	Mod-poor	Mid <sup>^</sup>	Mid <sup>^</sup>	MR <sup>^</sup>	MR <sup>^</sup>	R <sup>^</sup>	RMR	MRMS	MR(p)
PBA Hurricane XT <sup>Ⓢ</sup>	Mod	Poor	Mid <sup>^</sup>	Mid <sup>^</sup>	MR <sup>^</sup>	MR <sup>^</sup>	R <sup>^</sup>	RMR	MRMS	MS
PBA Highland- XT <sup>Ⓢ</sup>	Mod-good <sup>^</sup>	Mod-poor	Early <sup>^</sup>	Early-mid <sup>^</sup>	MR <sup>^</sup>	MR <sup>^</sup>	MR <sup>^</sup>	MR	MR	MS
PBA KelpieXT <sup>Ⓢ</sup>	Mod-good <sup>^</sup>	Mod-good	Early-mid <sup>^</sup>	Early-mid <sup>^</sup>	MRMS <sup>^</sup>	MR <sup>^</sup>	R <sup>^</sup>	MRMS	MRMS	MRMS
<b>Conventional variety</b>										
PBA Jumbo2 <sup>Ⓢ</sup>	Mod-good <sup>^</sup>	Mod-good	Mid <sup>^</sup>	Mid <sup>^</sup>	MRMS <sup>^</sup>	MR <sup>^</sup>	R <sup>^</sup>	R	RMR(p)	RMR(p)

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

### DISEASE AND ABIOTIC TOLERANCE

GIA Thunder<sup>Ⓢ</sup> 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 Thunder<sup>Ⓢ</sup> is provisionally rated as moderately resistance/susceptible (MRMS) to botrytis grey mould (BGM) compared with moderately susceptible (MS) for PBA Highland-XT<sup>Ⓢ</sup>, PBA Hurricane XT<sup>Ⓢ</sup> and GIA Lightning<sup>Ⓢ</sup>. **Disease management for GIA Thunder<sup>Ⓢ</sup> should follow the GRDC Lentil Grownotes and the Lentil Ute Guide ([www.grdc.com.au](http://www.grdc.com.au)) recommendations for the relevant disease ratings.**

GIA Thunder<sup>Ⓢ</sup> has improved levels of tolerance to vegetative frost tolerance over all IMI varieties except for PBA KelpieXT<sup>Ⓢ</sup>, where the response is similar. 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 Thunder<sup>®</sup> produces a small, rounded red lentil grain with a grey seed coat. Grain size, as measured by average 100 grain weight, is slightly heavier than PBA Hurrincance XT<sup>®</sup> but less than PBA Highland-XT<sup>®</sup>.

Appropriate insect, pest and disease management practices in GIA Thunder<sup>®</sup> 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](http://www.grdc.com.au)).

Grain of GIA Thunder<sup>®</sup> 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<sup>®</sup> and Nipper<sup>®</sup> and very similar to that of the small red lentil GIA Lightning<sup>®</sup>.

## Grain characteristics of GIA Thunder<sup>®</sup> compared with other lentil varieties

Variety	Market category	Seed shape	Seed coat colour	Cotyledon colour	Seed size (g 100 seeds)#
<b>IMI tolerant varieties</b>					
GIA Thunder <sup>®</sup>	SRP	Round	Grey	Red	3.65
GIA Lightning <sup>®</sup>	SRP	Round	Grey	Red	3.42
PBA Hurricane XT <sup>®</sup>	SRP	Round	Grey	Red	3.44
PBA Highland-XT <sup>®</sup>	SRP	Round	Grey	Red	3.81
PBA Hallmark XT <sup>®</sup>	MRS	Lens	Grey	Red	4.05
GIA Leader <sup>®</sup>	MRS	Lens	Grey	Red	4.37
PBA KelpieXT <sup>®</sup>	LRS	Lens	Grey	Red	4.81
<b>Conventional variety</b>					
PBA Jumbo2 <sup>®</sup>	LRS	Lens	Grey	Red	4.91

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](http://www.grdc-nvt.com.au)

## SEED PROTECTION & ROYALTIES

GIA Thunder<sup>®</sup> 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 Thunder<sup>®</sup> 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 Thunder<sup>®</sup> was developed by Grains Innovation Australia (GIA) and derived from the IMI tolerant variety PBA Hurricane XT<sup>®</sup> and popular conventional variety PBA Bolt<sup>®</sup> using conventional breeding techniques. GIA Thunder<sup>®</sup> is commercialised by PB Seeds.

## SEED ENQUIRIES

PB Seeds-Head Office  
1324 Blue Ribbon Road Kalkee VIC 3401  
Ph 03 5383 2213 Email [admin@pbseeds.com.au](mailto:admin@pbseeds.com.au)  
[www.pbseeds.com.au](http://www.pbseeds.com.au)

## VARIETY AND AGRONOMIC INFORMATION

**PB Seeds** Rob Launder Mob. 0467 844 231  
Janine Sounness Mob. 0407 827 292  
**GIA** Dr Larn McMurray Mob. 0466 113 848

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