

# Titan AX<sup>®</sup>



- The world's first CoAXium® barley variety
- Tolerant to Aggressor® (Group 1) herbicide
- Derived from popular variety Compass<sup>Ⓛ</sup>
- The highest yielding herbicide tolerant barley available
- Mid season maturity, slightly later than Compass<sup>Ⓛ</sup>, similar to RGT Planet<sup>Ⓛ</sup>
- Wide adaptation but particularly suited to low-medium rainfall or Mallee type environments
- Agronomically very similar to Compass<sup>Ⓛ</sup>

## Breeder's comments

Titan AX<sup>ϕ</sup> is the first barley variety in the world to carry tolerance to Aggressor<sup>®</sup> herbicide (Group 1, Quizalofop-P-Ethyl), which allows growers to control susceptible populations of barley grass, brome grass, annual ryegrass, wild oats and other grass weeds in the barley phase of the rotation; offering an alternative to Clearfield<sup>®</sup> technology which growers have relied on for some time now.

Opportunistically discovered by Eyre Peninsula farmer Shannan Larwood in 2010, and further developed by the University of Adelaide, this novel herbicide tolerance trait has been bred into a range of widely adapted, high yielding backgrounds by the University of Adelaide and AGT; with Titan AX<sup>ϕ</sup> being the first variety to be released.

Titan AX<sup>ϕ</sup> (tested as AGTB0325) is derived from widely adapted and popular variety Compass<sup>ϕ</sup>, a plant type that particularly lends itself to low-medium rainfall or Mallee style environments where early vigour and longer straw is preferred; and where lodging is less of an issue. However, AGT data suggests that Titan AX<sup>ϕ</sup> performs consistently well across a range of growing conditions and therefore should be a suitable option for all growers that see value in tolerance to Aggressor<sup>®</sup> herbicide.

Titan AX<sup>ϕ</sup> will be initially released as a Barley/Feed grade variety, however we expect to nominate Titan AX<sup>ϕ</sup> as a malt quality candidate with Barley Australia in 2023.

## Seed availability

Commercial quantities of Titan AX<sup>ϕ</sup> may be available through AGT Affiliates, or your local retailer. Please consult the AGT website for AGT Affiliate contact details. Titan AX<sup>ϕ</sup> can be traded between growers upon the completion of a License Agreement as part of AGT's Seed Sharing<sup>™</sup> initiative. All Titan AX<sup>ϕ</sup> growers will be required to complete an easy, online stewardship registration: [www.coaxium.com.au/stewardship](http://www.coaxium.com.au/stewardship)

## PBR and EPR

Titan AX<sup>ϕ</sup> is protected by Plant Breeders Rights (PBR) (denoted by the <sup>ϕ</sup> symbol) and all production (except seed saved for planting) is liable to an End Point Royalty (EPR), which funds future plant breeding. Titan AX<sup>ϕ</sup> growers will be subject to a Growers License Agreement that acknowledges that an EPR of \$4.55/tonne + GST must be paid on all production other than seed saved for planting.

## CoAXium® Barley Production System

Titan AX<sup>®</sup> has been specifically developed to carry tolerance to Aggressor<sup>®</sup> herbicide. Aggressor<sup>®</sup> is a Group 1 Quizalofop-P-Ethyl herbicide, offering post-emergent knockdown of major grass weeds including brome grass, barley grass, annual ryegrass, wild oats, and volunteer wheat and barley (non- Aggressor<sup>®</sup> tolerant only).

Aggressor<sup>®</sup> herbicide has a wide application window and flexibility to be mixed with herbicides to control broadleaf weeds, with no carryover on soil or grain residue issues. Distribution of Aggressor<sup>®</sup> herbicide and the CoAXium<sup>®</sup> stewardship program is administered by Sipcam.



Visit [www.coaxium.com.au](http://www.coaxium.com.au) for more information.



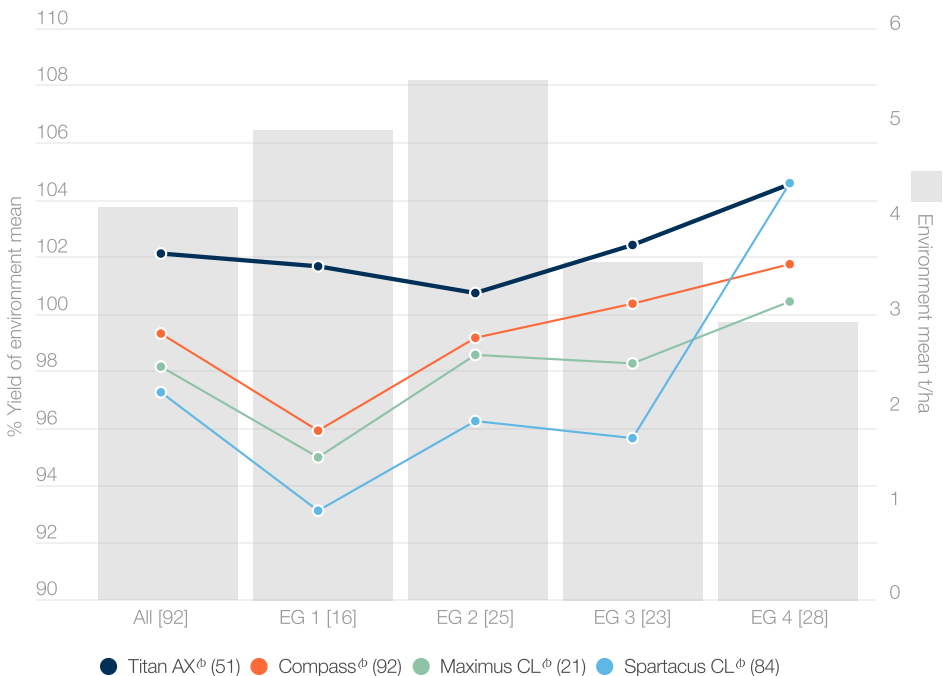
## Grain yield

Titan AX<sup>ϕ</sup> has demonstrated high and stable yields across a range of environment types, offering a consistent yield improvement over Compass<sup>ϕ</sup> and Clearfield<sup>®</sup> tolerant varieties Spartacus CL<sup>ϕ</sup> and Maximus CL<sup>ϕ</sup> in AGT long term testing (Figure 1).

Due to limited seed, Titan AX<sup>ϕ</sup> was only tested in upper Eyre Peninsula and Murray Mallee NVT's in 2021 (low-medium rainfall environments where Compass<sup>ϕ</sup> plant types are favoured). Across these eight sites, Titan AX<sup>ϕ</sup> performed exceptionally well, out-yielding Compass<sup>ϕ</sup> by 7% and beating all other herbicide tolerant barley varieties including Commodus CL<sup>ϕ</sup>, Spartacus CL<sup>ϕ</sup> and Maximus CL<sup>ϕ</sup> (Figure 2).

Titan AX<sup>ϕ</sup> is included in all NVT barley trials in 2022.

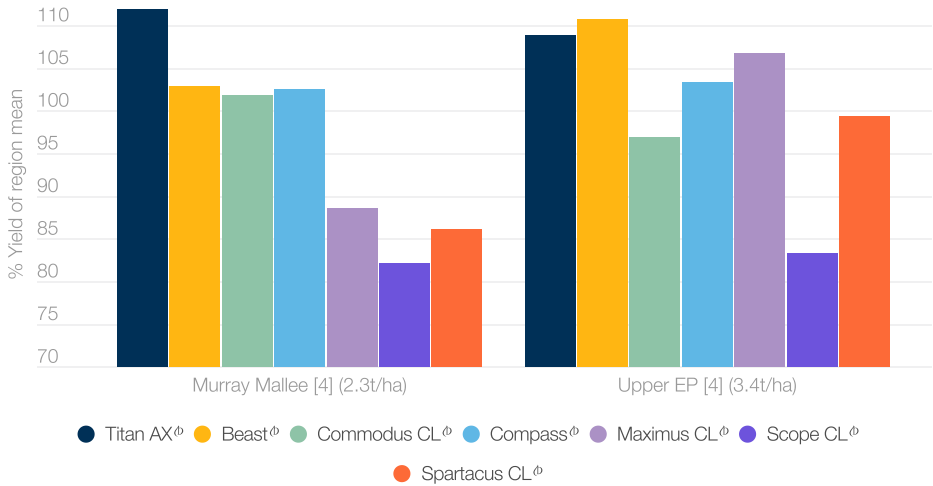
**Figure 1.** Grain yield of Titan AX<sup>ϕ</sup> versus comparators across a range of growing conditions - AGT long term data



Source: AGT long term MET analysis, all Australian trial sites 2017-2021

- [ ] Total number of trials per environmental grouping
- () Number of trials that each variety was present in across the dataset [92]
- EG Environmental Group, a statistical correlation of performance across 92 trial sites and seasons (2017-2021) where single experiments are grouped based on relative performance of varieties within those trials
- EG 1 High yielding sites with minimal stress throughout growing season
- EG 2 High yielding sites with a slow, soft finish to the season
- EG 3 Moderate yielding sites, experiencing moderate stress
- EG 4 Drought stressed, low/moderate yielding environments

Figure 2. Grain yield of Titan AX<sup>ϕ</sup> versus comparators - NVT



Source: NVT 2021

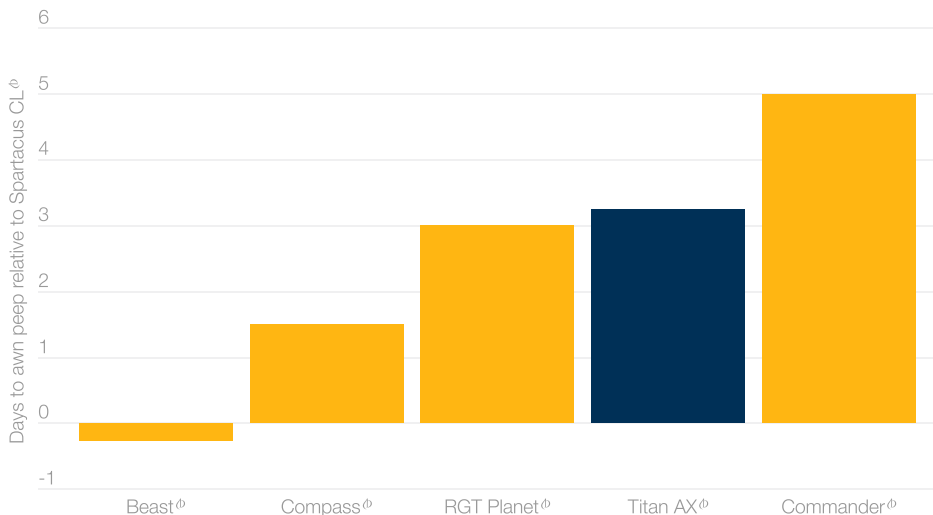
[ ] Total number of trials per region

( ) Region average yield

## Maturity

Titan AX<sup>ϕ</sup> is a mid season maturing variety, reaching awn peep slightly later than its main parent Compass<sup>ϕ</sup>, and at a similar time to RGT Planet<sup>ϕ</sup> (Figure 3).

Figure 3. Awn peep of Titan AX<sup>ϕ</sup> and comparator varieties relative to Spartacus CL<sup>ϕ</sup>



Source: AGT main season barley trials (average of Roseworthy SA and Lockhart NSW 2020-2021)

## Agronomics & grain quality

Titan AX<sup>ϕ</sup> boasts very similar plant type and grain quality characteristics as its parent Compass<sup>ϕ</sup>.

Sprouting Tolerance	Good, similar to Compass <sup>ϕ</sup>
Coleoptile Length	Medium, similar to Compass <sup>ϕ</sup> , longer than Spartacus CL <sup>ϕ</sup>
Height	Moderately tall, similar to Compass <sup>ϕ</sup>
Lodging	MSS, similar to Compass <sup>ϕ</sup>
Rachilla Hair	Long
Head Loss	MRMS, similar to Compass <sup>ϕ</sup>
Screenings	Low, similar or slightly better than Compass <sup>ϕ</sup>
Retention	High, similar to Compass <sup>ϕ</sup>
Test Weight	Moderate, similar to Compass <sup>ϕ</sup>

## Disease resistance

Titan AX<sup>ϕ</sup> offers a similar disease resistance package to its main parent Compass<sup>ϕ</sup>, with slightly better powdery mildew resistance. Compared with the most widely grown variety Spartacus CL<sup>ϕ</sup>, Titan AX<sup>ϕ</sup> offers improvements in SFNB, NFNB and powdery mildew resistance (Table 1).

Table 1. Variety comparisons

	Variety	Scald	Leaf Rust	Spot Form Net Blotch	Net Form Net Blotch	CCN	Powdery Mildew
South Australia	Titan AX <sup>ϕ</sup>	S	SVS-VS	MS	MRMS	R*	MRMS
	Compass <sup>ϕ</sup>	MSS-SVS	SVS	MS	MRMS-S	R	MS
	Spartacus CL <sup>ϕ</sup>	R-SVS	MR-S	S	S-VS	R	MSS
Victoria	Titan AX <sup>ϕ</sup>	SVS	S	MS	MRMS*	R*	MRMS
	Compass <sup>ϕ</sup>	SVS	SVS	MS	MRMS#	R	MS
	Spartacus CL <sup>ϕ</sup>	SVS	S	SVS	S	R	MSS
New South Wales	Titan AX <sup>ϕ</sup>	SVS*	SVS *	MSS*	MRMS*	R*	MRMS
	Compass <sup>ϕ</sup>	SVS	S	MS	MRMS-S	R	MS
	Spartacus CL <sup>ϕ</sup>	SVS	MRMS	SVS	MR-S	R	MSS

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

\* Provisional rating  
 # Varieties marked may be more susceptible if alternative strains are present

A range of reactions is provided (separated with -) where different strains of the pathogen exist and where the variety may respond differently to them

Source: NVT consensus ratings 2021, SARDI & AGT



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