

## Durum Variety Update - 2015

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### Acknowledgements

The Growers, GRDC, SAGIT, San Remo, SADGA, SARDI, Mellco and other industry stakeholders and supporters of the durum industry both locally and interstate.

### DBA-Aurora Facts

- DBA-Aurora is named after the Roman goddess of the dawn (or sunrise) ‘Aurora’.
- DBA-Aurora is a step-change variety for the southern region of Australia, heralding a new beginning for the Australian durum industry.
- With over five years of advanced trial fieldwork, DBA-Aurora has consistently shown yield potential that is comparable or superior to the current highest yielding commercially available durum varieties across Australia.
- When compared to other current commercial grown varieties including Hyperno, Saintly, Tjilkuri, Yawa and WID802 in the southern region, DBA-Aurora stacks up by:
  - Maintaining a **high relative yield** (Table 1)
  - Having a **superior disease resistance** package (Table 2)
  - Delivering **improved grain size** (Table 3)
  - Has an **acceptable protein average** (Table 4)
  - Importantly, having **reduced screenings** compared to some varieties (Table 5)
  - Showing **early vigour** and **weed competitiveness**
- DBA-Aurora may result in lower levels of protein as a consequence of its high yielding performance, so it is important to ensure that growers have suitable strategies in place for nitrogen management.
- DBA-Aurora will help alleviate some of the risk associated with growing durum and improve durum's fit in the farming system rotation.
- DBA-Aurora has been granted the Wheat Quality Australia classification ADR for the southern, south-eastern and northern zones of Australia.
- DBA-Aurora is protected by Plant Breeder’s Rights.

**Table 1. DBA-Aurora yield performance in southern national variety trials (NVT) averaged across five years (including 2014).** Data calculated using Best Linear Unbiased Predictions (BLUPs) analysis and is expressed as a % above or below the area mean. Abbreviations: MN – Mid-North; YP – Yorke Peninsula; VIC – Victoria. Excluding Yawa, DBA-Aurora out-yields every current commercially grown durum by as much as 19% (region and variety dependent). Data kindly analysed by Dr Alison Kelly and team at Statistics for the Australian Grains Industry (SAGI).

		DBA-Aurora	WID802	Yawa	Tjilkuri	Hyperno	Saintly	Caparoi	Jandaroi
	MN	107	105	109	102	105	104	100	95
Southern	YP	109	106	109	104	103	108	104	95
	VIC	118	112	120	109	109	103	105	89

**Table 2. DBA-Aurora disease resistance ratings compared to the currently grown dominant varieties in the southern region.** DBA-Aurora has equivalent or superior ratings for all of the diseases listed. SVS(p) is provisional and is based on three years data. All data has been sourced courtesy of the NVT disease ratings (2014 consensus).

Disease	DBA-Aurora	WID802	Yawa	Tjilkuri	Hyperno	Saintly
Leaf Rust	RMR	RMR	MR	RMR	RMR	MRMS
Stem Rust	RMR	RMR	RMR	MR	R	MR
Stripe Rust	RMR	MR	MR	MR	MR	MR
Yellow Leaf Spot	MRMS	MRMS	MRMS	MRMS	MRMS	MRMS
Powdery Mildew	RMR	MRMS	MS	S	MR	S
Bunt	MR	MS	MSS	MS	MSS	S
<i>P. neglectus</i>	MRMS	MS	MS	MSS	MS	S
<i>P. thornei</i>	RMR	MS	RMR	MR	MR	MR
Blackpoint	MS	MSS	MRMS	S	MS	MS
Crown Rot	SVS(p)	SVS	VS	VS	SVS	VS

**Table 3. Varieties differ in their thousand grain weight (TG) and test weight (TW) with DBA-Aurora showing consistently higher thousand grain weight and high hectolitre weight.** The data is from the durum NVT conducted in the southern region of Australia, with those varieties commonly grown in the region shown. Thousand grain weight (TG – g/1000 seeds) and hectolitre weight (TW – kg/hectolitre) is presented from two years (2011 and 2012), except Saintly at Kaniva where only one year's data for TW is available (2011). Abbreviations: MN – Mid-North (MIN – Mintaro, SPA – Spalding, TUR – Turretfield); YP – Yorke Peninsula (PAS – Paskeville, WOK – Wokurna, URA – Urania); VIC – Victoria (KAN – Kaniva). Numbers have been rounded up or down appropriately to whole figures.

	MN MIN		MN SPA		MN TUR		YP PAS		YP WOK		YP URA		VIC KAN	
	TG	TW												
<b>DBA-Aurora</b>	<b>46</b>	<b>81</b>	<b>43</b>	<b>80</b>	<b>38</b>	<b>80</b>	<b>39</b>	<b>82</b>	<b>44</b>	<b>79</b>	<b>45</b>	<b>80</b>	<b>43</b>	<b>79</b>
WID802	38	79	38	79	33	77	34	80	40	78	39	78	40	78
Yawa	35	80	36	80	30	79	36	82	34	79	37	82	38	79
Tjilkuri	41	79	42	80	36	77	37	82	42	79	43	80	36	78
Hyperno	43	81	43	81	34	79	36	82	40	80	43	81	44	79
Saintly	42	80	40	80	37	80	41	83	43	82	42	83	40	79

**Table 4. DBA-Aurora protein achievement in southern national variety trials (NVT) averaged across regional areas and for three years (2011-2013) when compared to those varieties commonly grown in the regions shown.** Abbreviations: MN – Mid-North (which includes the trial sites of Mintaro, Spalding and Turretfield); YP – Yorke Peninsula (which includes the trial sites of Paskeville, Wokurna and Urania); VIC – Victoria (where the trial site is represented from Kaniva alone).

		<b>DBA-Aurora</b>	<b>WID802</b>	<b>Yawa</b>	<b>Tjilkuri</b>	<b>Hyperno</b>	<b>Saintly</b>
	<b>MN</b>	<b>12.8</b>	12.6	12.5	12.9	13	12.7
<b>Southern</b>	<b>YP</b>	<b>12</b>	12.5	12.2	12.4	12.8	12
	<b>VIC</b>	<b>11.5</b>	11	11	11.6	11.3	11.3

**Table 5. DBA-Aurora screenings levels in southern national variety trials (NVT) averaged across three years (2011-2013).** DBA-Aurora has reduced screenings in the majority of trials when compared to the varieties WID802, Yawa and Hyperno. An overall average screenings level from all trials (19) across the three years is shown in the last row. Kaniva (2011, 2013) and Mintaro (2011, 2012) are represented by only two years data.

		<b>DBA-Aurora</b>	<b>WID802</b>	<b>Yawa</b>	<b>Tjilkuri</b>	<b>Hyperno</b>	<b>Saintly</b>
	<b>Mintaro</b>	<b>1.5</b>	2.3	3.4	1.6	1.5	1.5
	<b>Spalding</b>	<b>2.3</b>	4	4.3	1.7	3.2	2
	<b>Turretfield</b>	<b>8.1</b>	7.5	9.5	8	10.6	3.6
	<b>Paskeville</b>	<b>1.2</b>	2.1	3.9	1.5	2.9	1.2
	<b>Wokurna</b>	<b>3.1</b>	3.9	5.9	2.4	6	1.3
	<b>Urania</b>	<b>2.4</b>	2.7	4.7	1.7	3.8	1.7
	<b>Kaniva</b>	<b>4.8</b>	5.6	7.2	5.9	4.7	3.9
	<b>Overall Average</b>	<b>3.3</b>	4	5.6	3.3	4.7	2.2

#### **Additional Take Home Durum Messages**

- DBA-Aurora offers existing growers and newcomers to durum a more robust variety that is better suited to an integrated weed management system, and which is less likely to be downgraded for small grain when we have a tight spring finish with minimal rainfall.
- Durum prices rallied well in 2014 and many growers locked in to good prices for the 2015 season with area-based San Remo contracts. Significant premiums over bread wheat continue year-on-year, resulting in a much larger gross margin.
- An increased area sown to durum will assist the University's industry partner San Remo Macaroni Pty Ltd through improved domestic opportunities and will assist the development of a stable export market longer term.

- Current pre-breeding research linked with the University's breeding program will continue to underpin further improvements in crown rot tolerance (SARDI-led through Dr Hugh Wallwork), and grass weed control (SARDI-led through Rob Wheeler and the SADGA).
- Importantly, the University's breeding program has also received recent SAGIT funding (2 grants) in conjunction with SADGA to investigate gross margin trials against bread wheat and to examine the heat tolerance of many advanced breeding lines (S3 and S4 selected entries) coming through the program (stacked up against varieties and bread wheat tolerant and sensitive controls).
- The University's breeding program continues to broaden the genetic base of our germplasm by introducing diverse overseas material as parents in our crossing blocks (countries such as Italy, USA and Canada have all been sourced and used in the past 3 years). This enables the program to screen many more potential new combinations of traits that perform well in our environments. Much of this material is now in our S1 and S2 trials at Roseworthy and three other locations in 2015.

### **Other Varieties since 2010**

*Tjilkuri* was released in 2010 and is a slightly later maturing variety. It is a substantially better replacement for those farmers still growing Tamaroi – of which there should be very few if any now. It has consistently higher yield and better quality characteristics (e.g. semolina colour) when compared to Tamaroi; as well as other agronomic features that make it an attractive option for sowing (e.g. less likely to lodge compared to Hyperno).

*Yawa* is a very high yielding variety that was released in September 2012. Yawa has consistently out-yielded Hyperno in trial sites across SA. It is a well-adapted variety suitable for the majority of current durum growing areas in SA. Yawa has superior semolina and pasta attributes when compared to currently grown varieties such as Hyperno. Yawa has a higher than normal level of screenings (which is season dependent). ***Growers need to be aware of this risk when sowing Yawa.***

*WID802* is a high yielding variety that was released in October 2012 at Kaniva. WID802 has yield potential comparable to Hyperno. As with Yawa, WID802 is a well-adapted variety suitable for the majority of durum growing areas of SA. As with the majority of durum varieties, it shows good levels of rust resistance.

### **Beyond DBA-Aurora**

There are several other lines, including *UAD1152020* which may be progressed forward. It is currently being evaluated against DBA-Aurora and Yawa at Virginia and will possibly be allocated to seed growers in 2016 to multiply further, subject to yield performance and approval from within DBA. This line performed particularly well during the 2012 and 2013 seasons, and has also passed the initial quality tests that Dr Mike Sissons conducted. Other lines include *UAD1151056* and *UAD1151096*, the latter of which has shown improved crown rot tolerance in Hugh Wallwork's trials over a number of years. At least one of these entries will appear in the NVT from 2016.

## Durum variety trial - Hart 2015

Location: 2015 trial site (Q1)

Trial contact: Hart

	Buffer	Buffer	Buffer
1	Caparoi	Tamaroi	Saintly
2	Hyperno	DBA-Aurora	Caparoi
3	Saintly	Yawa	Tjilkuri
4	Tamaroi	Hyperno	DBA-Aurora
5	Tjilkuri	Saintly	Yawa
6	Yawa	Caparoi	Tamaroi
7	DBA-Aurora	Tjilkuri	Hyperno
	Buffer	Buffer	Buffer

*speaking side at field day*



Seeding date: 6/5/2015

Fertiliser: DAP + 2% Zn + Impact

Fertiliser rate: 100 kg/ha