

# WHEAT

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## INTRODUCTION

The wheat section of this sowing guide provides information to support wheat growers with decisions on variety selection and management. It provides a summary of the yield performance of varieties in the National Variety Trials (NVT), disease resistance ratings and agronomic information. There is also a quick reference for 22 common and recently released varieties in snapshots at the end of the wheat section.

When deciding whether to implement a new variety into your farming system, it is important to determine whether the change will provide an advantage. A new variety should:

- have better or equal yield, grain quality and/or disease traits
- provide diversity or risk mitigation
- suit current market requirements.

Reviewing available trial information (such as NVT and DPIRD trials) is highly recommended.

## WHAT IS NEW?

**Catapult<sup>®</sup>** is an Australian Hard (AH) wheat variety with a mid-long maturity released by Australian Grains Technologies (AGT) (Table 17). Catapult<sup>®</sup> was included in the NVT for the first time in 2018, yielding higher than alternatives such as Cutlass<sup>®</sup>, LRPB Trojan<sup>®</sup> and Magenta<sup>®</sup>, but lower than Scepter<sup>®</sup> and RockStar<sup>®</sup> in the main season trials. Provisional disease ratings suggest that Catapult<sup>®</sup> is moderately resistant to moderately susceptible to yellow spot, moderately resistant to stem rust and resistant to moderately resistant to stripe rust, but susceptible to leaf rust and powdery mildew.

**RockStar<sup>®</sup>** is an Australian Hard (AH) wheat variety with a mid-long maturity released by InterGrain (Table 17). RockStar<sup>®</sup> was included in the NVT for the first time in 2018, yielding similar to Scepter<sup>®</sup> and higher than the existing mid-long maturity alternatives such as Catapult<sup>®</sup>, Cutlass<sup>®</sup>, LRPB Trojan<sup>®</sup> and Magenta<sup>®</sup>. Provisional disease ratings suggest that RockStar<sup>®</sup> is moderately resistant to moderately susceptible to yellow spot, moderately resistant to stem rust, resistant to moderately resistant to stripe rust, susceptible to leaf rust and moderately resistant to moderately susceptible to powdery mildew.

**Sheriff CL Plus<sup>®</sup>** is an imidazolinone herbicide tolerant Australian Premium White (APW) wheat released by InterGrain in 2018. Sheriff CL Plus<sup>®</sup> is a mid-season maturity wheat that can be sown slightly earlier than the other Clearfield<sup>®</sup> options (Table 17). NVT yield performance from 2016 and 2017 suggests Sheriff CL Plus<sup>®</sup> yields are similar to Mace<sup>®</sup> and other top-performing Clearfield<sup>®</sup> options, Chief CL Plus<sup>®</sup> and Razor CL Plus<sup>®</sup>. Sheriff CL Plus<sup>®</sup> was not sown in NVT in 2018. Sheriff CL Plus<sup>®</sup> is moderately resistant to moderately susceptible to yellow spot, moderately susceptible to stem rust, moderately susceptible to susceptible to stripe rust, susceptible to very susceptible to leaf rust and susceptible to powdery mildew.

**Vixen<sup>®</sup>** is an Australian Hard (AH) wheat variety with a short season maturity released by InterGrain in 2018 (Table 17). Vixen<sup>®</sup> has been tested in NVT since 2017, except for Agzones 3 and 6 (tested in 2018 only). NVT data suggests Vixen<sup>®</sup> is similar yielding to Scepter<sup>®</sup>, but as for all short maturing varieties its performance is more variable across sites. Vixen<sup>®</sup> is moderately resistant to moderately susceptible to yellow spot, moderately resistant to moderately susceptible to stem and stripe rust, susceptible to very susceptible to leaf rust and susceptible to powdery mildew.

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## VARIETY CLASSIFICATION

Source: Wheat Quality Australia (WQA).

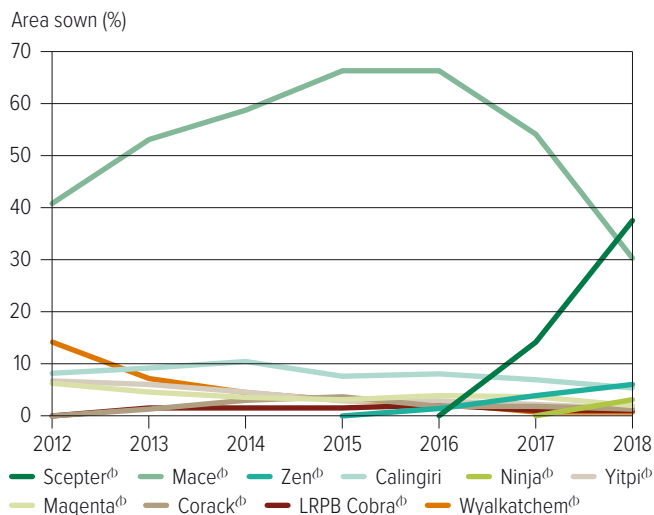
Wheat Quality Australia rationalises the Wheat Variety Master List through annual reviews of varieties that are more than 10 years old and are less than 0.1% of deliveries over the past four seasons. In 2021, the varieties Clearfield® JNZ, Clearfield® STL, Endure, Tammarin Rock<sup>®</sup> and Zippy<sup>®</sup> are to be removed from the Wheat Variety Master List. This means that they are no longer deliverable into their respective wheat classification segregations beyond 2021 and will only be deliverable as feed. These varieties have been surpassed in yield performance.

Australian Premium Noodle (APWN) is a quality class created to allow varietal control to optimise end-use quality in export blends with Australian Noodle (ANW), which primarily services the premium Japanese udon noodle market. APWN classification has been determined for the following AH and APW varieties: Chief CL Plus<sup>®</sup>, Cutlass<sup>®</sup>, Devil<sup>®</sup>, EGA Bonnie Rock<sup>®</sup>, LRPB Envoy<sup>®</sup>, King Rock<sup>®</sup>, LRPB Havoc<sup>®</sup>, LRPB Trojan<sup>®</sup>, LRPB Scout<sup>®</sup>, Mace<sup>®</sup>, Westonia and Wyalkatchem<sup>®</sup>. Cutlass<sup>®</sup>, Devil<sup>®</sup>, LRPB Havoc<sup>®</sup> and LRPB Trojan<sup>®</sup> were additions to this list in 2019.

## WHAT VARIETY SHOULD I GROW?

Variety choice is one of the easiest means to lift the profitability of wheat cropping. The opportunity to increase returns from the same input costs must surely motivate keen interest when new varieties can show consistent yield gains. As proof of this, Scepter<sup>®</sup> has now replaced Mace<sup>®</sup> as the most popular variety planted in Western Australia (Figure 1).

**FIGURE 1 Popularity (per cent of wheat area) of the top 10 wheat varieties grown in WA over the past seven seasons.**



There are now alternatives to Scepter<sup>®</sup> for yield coming onto the market, but also a range of varieties that would complement Scepter<sup>®</sup> very well. Many of these can provide a measurable change in risk or opportunity. It is important to consider several factors, including:

- its yield performance in your environment over multiple seasons;
- its maturity to ensure its life cycle is a fit for your targeted sowing time;
- its disease resistance ratings, particularly for prevalent diseases in your area and farming system. Due to the incursion of new strains or mutations of pathogens already present, it is essential to review existing varieties' disease ratings as these may have changed; and
- other quality requirements such as susceptibility to high grain screenings, low hectolitre weight, pre-harvest sprouting, black point and other quality defects.

Tables 1–4 compare notable varieties with Scepter<sup>®</sup> to assist in variety selection. Preferred agronomic characteristics and disease traits will vary in priority based on the pressure in the target environment.

## AH and APW short-mid season varieties

In 2018, two AH wheats were released by InterGrain. Devil<sup>®</sup> is a short-mid maturity wheat and Vixen<sup>®</sup> is a short maturity wheat (Table 1). While there is only two years of data available on these varieties, yield performances in the 2017 and 2018 NVT were similar to Scepter<sup>®</sup>, although Vixen<sup>®</sup> is more variable in yield than Scepter<sup>®</sup> and Devil<sup>®</sup>. As the table shows, all leading varieties competing in this maturity class are MRMS for yellow spot and most are susceptible for powdery mildew and the new strain of leaf rust. Neither Devil<sup>®</sup> nor Vixen<sup>®</sup> have improved powdery mildew resistance over Scepter<sup>®</sup>, and they are also more susceptible for leaf rust. LRPB Havoc<sup>®</sup> is slightly shorter in maturity than Mace<sup>®</sup> and is moderately resistant to moderately susceptible for powdery mildew (see comment in Disease Resistance section, page 19), but is averaging approximately five per cent lower yield than Scepter<sup>®</sup> and is susceptible for stem and leaf rust. Scepter<sup>®</sup> has a higher falling number rating (equal to Mace<sup>®</sup>) than Devil<sup>®</sup>, Vixen<sup>®</sup> (provisional ratings only) and LRPB Havoc<sup>®</sup>.

## CL Plus wheats

Wheat varieties denoted with 'CL Plus' identifies them as varieties with two resistance genes for imidazolinone herbicides and are registered for

**TABLE 1 Summary of wheat variety traits comparing Scepter<sup>Ⓛ</sup> with top yielding AH and APW short and short-mid maturity wheat varieties.**

	Scepter <sup>Ⓛ</sup>	Devil <sup>Ⓛ</sup>	Vixen <sup>Ⓛ</sup>	LRPB Havoc <sup>Ⓛ</sup>	Corack <sup>Ⓛ</sup>	Mace <sup>Ⓛ</sup>	Emu Rock <sup>Ⓛ</sup>
Yield (% site mean)	111%	111%	110%	106%	103%	103%	97%
Maturity	Short-mid	Short-mid	Short	Short-mid	Short-mid	Short-mid	Short
Classification	AH	AH(N)	AH	AH(N)	APW	AH(N)	AH
Falling no. index	5	3 <sub>p</sub>	3 <sub>p</sub>	3	4	5	2
Stem rust	MRMS	MS	MRMS	S	MR	MRMS	MS
Stripe rust	MR*	MR	MRMS	MR	MS	RMR*	MRMS
Leaf rust	MSS	SVS	SVS	S	SVS	MSS	SVS
Powdery mildew	S	S <sub>p</sub>	S	MRMS	SVS	MSS	S
Yellow spot	MRMS	MRMS	MRMS	MRMS	MRMS	MRMS	MRMS

(N) = Denotes supplementary classification of APWN. \* = Some races in eastern Australia can attack these varieties

**TABLE 2 Summary of wheat variety traits comparing Scepter<sup>Ⓛ</sup> with CL Plus wheat varieties.**

	Scepter <sup>Ⓛ</sup>	Chief CL Plus <sup>Ⓛ</sup>	Sheriff CL Plus <sup>Ⓛ</sup>	Razor CL Plus <sup>Ⓛ</sup>	Grenade CL Plus <sup>Ⓛ</sup>	Impress CL Plus <sup>Ⓛ</sup>
Yield (% site mean)	111%	102%	102%	102%	91%	88%
Maturity	Short-mid	Mid	Mid	Short-mid	Short-mid	Short-mid
Classification	AH	APW(N)	APW	ASW	APW	APW
Falling no. index	5	4	-	-	5	2
Stem rust	MRMS	MR	MS	MRMS	MR	MR
Stripe rust	MR*	S	MSS	RMR	RMR	MSS
Leaf rust	MSS	MR*	SVS	S	S	R*
Powdery mildew	S	S	S	S	MSS	SVS
Yellow spot	MRMS	MRMS	MRMS	MSS	S	MRMS

(N) = Denotes supplementary classification of APWN. \* = Some races in eastern Australia can attack these varieties

**TABLE 3 Summary of wheat variety traits comparing Scepter<sup>Ⓛ</sup> with mid-long maturity wheat varieties.**

	Scepter <sup>Ⓛ</sup>	RockStar <sup>Ⓛ^</sup>	Catapult <sup>Ⓛ^</sup>	Kinsei <sup>Ⓛ</sup>	Cutlass <sup>Ⓛ</sup>	Magenta <sup>Ⓛ</sup>	LRPB Trojan <sup>Ⓛ</sup>	Yitpi <sup>Ⓛ</sup>
Yield (% site mean)	111%	111%	104%	104%	101%	99%	99%	95%
Maturity	Short-mid	Mid-long	Mid-long	Mid-long	Mid-long	Mid-long	Mid-long	Mid-long
Classification	AH	AH	AH	ANW	APW(N)	APW	APW(N)	AH
Falling no. index	5	-	-	4	4	3	5	5
Stem rust	MRMS	MR <sub>p</sub>	MR <sub>p</sub>	MS	RMR	RMR	MRMS	S
Stripe rust	MR*	RMR <sub>p</sub>	RMR <sub>p</sub>	MRMS	RMR*	MSS	MR	MRMS
Leaf rust	MSS	S <sub>p</sub>	S <sub>p</sub>	S	R*	RMR*	MR	S
Powdery mildew	S	MRMS <sub>p</sub>	S <sub>p</sub>	MSS	S	MRMS	S	MRMS
Yellow spot	MRMS	MRMS <sub>p</sub>	MRMS <sub>p</sub>	MS	MSS	(MR)	MSS	SVS

<sup>^</sup> = Single year of NVT data. (N) = Denotes supplementary classification of APWN. \* = Some races in eastern Australia can attack these varieties p = provisional assessment**TABLE 4 Summary of wheat variety traits comparing Scepter<sup>Ⓛ</sup> with noodle wheat varieties.**

	Scepter <sup>Ⓛ</sup>	Ninja <sup>Ⓛ</sup>	Kinsei <sup>Ⓛ</sup>	Zen <sup>Ⓛ</sup>	Supreme <sup>Ⓛ</sup>	Calingiri <sup>Ⓛ</sup>
Yield (% site mean)	111%	107%	105%	102%	97%	95%
Maturity	Short-mid	Mid	Mid-long	Mid-long	Short-mid	Mid-long
Classification	AH	ANW	ANW	ANW	ANW	ANW
Falling no. index	5	4	4	3	4	4
Stem rust	MRMS	SVS	MS	S	MRMS	MSS
Stripe rust	MR*	MS	MRMS	MRMS	MR*	SVS
Leaf rust	MSS	SVS	S	S	RMR*	S
Powdery mildew	S	S	MSS	S	MSS	SVS
Yellow spot	MRMS	MRMS	MS	MRMS	MS	MSS

\* = Some strains in eastern Australia can attack these varieties

spraying with label rates of Intervix®. Chief CL Plus<sup>®</sup>, Sheriff CL Plus<sup>®</sup> and Razor CL Plus<sup>®</sup> are competitive with Mace<sup>®</sup> in the NVT and far out-yield previous CL Plus varieties; however, they are inferior in yield to some non-Imidazolinone resistant varieties such as Scepter<sup>®</sup>, Devil<sup>®</sup> and Vixen<sup>®</sup> (Table 2). Chief CL Plus<sup>®</sup> is classified as APWN, Sheriff CL Plus<sup>®</sup> was recently classified in WA as APW and Razor CL Plus<sup>®</sup> is classified as ASW. With a decent overall agronomic package and APWN classification, it will be hard to see Chief CL Plus<sup>®</sup> being displaced by Sheriff CL Plus<sup>®</sup> or Razor CL Plus<sup>®</sup>, which have not achieved higher yields.

Note: there are no grower-to-grower sales permitted for any CL Plus varieties.

## Mid-long maturity varieties

Mid-long maturity wheats, as their name suggests, show delayed phenological development compared with the widely grown short-mid types. They provide an option to maintain flowering at an optimum date when the sowing date is moved earlier (as with early sowing opportunities), or in delaying flowering from mainstream sowing dates to avoid periods of high frost prevalence.

The benefits of their delayed maturity is realised by growers and is evident in the stability of the area sown to longer season varieties over the past five years (Figure 1). Although most NVT are sown in the second half of May, which suits short-mid and mid maturing wheats, several mid-long maturities are still yield competitive, with Cutlass<sup>®</sup>, Magenta<sup>®</sup> LRPB Trojan<sup>®</sup> yielding similarly to Mace<sup>®</sup> in some environments.

The recently released AH varieties RockStar<sup>®</sup> and Catapult<sup>®</sup> have performed very well in the 2018 NVT, although more seasons are required to determine their yield stability. Kinsei<sup>®</sup>, an ANW released in 2018, showed superior yields to Cutlass<sup>®</sup>, Magenta<sup>®</sup> and LRPB Trojan<sup>®</sup> in 2017 and 2018.

Of the three newest mid-long varieties (Catapult<sup>®</sup>, RockStar<sup>®</sup> and Kinsei<sup>®</sup>), Kinsei<sup>®</sup> has inferior ratings to stem and stripe rust, with Catapult<sup>®</sup> and RockStar<sup>®</sup> both provisionally rated as moderately resistant to stem rust and resistant to moderately resistant to stripe rust. All three are susceptible to the new pathotype of leaf rust, which is inferior to Cutlass<sup>®</sup>, Magenta<sup>®</sup> and LRPB Trojan<sup>®</sup>.

RockStar<sup>®</sup> and Catapult<sup>®</sup> are rated as moderately resistant to moderately susceptible to yellow spot and Kinsei<sup>®</sup> is rated moderately susceptible. RockStar<sup>®</sup> is provisionally rated as moderately resistant to moderately susceptible to powdery

mildew while Catapult<sup>®</sup> is provisionally susceptible like Cutlass<sup>®</sup>, LRPB Trojan<sup>®</sup> and Scepter<sup>®</sup>. Yitpi<sup>®</sup> is now inferior in both yield and disease package.

## ANW

Ninja<sup>®</sup> is one of the top five highest yielding milling wheats, yielding just below Scepter<sup>®</sup> in the NVT over the past four years (Table 4). The longer maturing Kinsei<sup>®</sup> has also performed well in 2017 and 2018 with both varieties having improved yields over all other ANW varieties. Ninja<sup>®</sup> is marginally shorter in maturity than Zen<sup>®</sup> and Calingiri, while Kinsei<sup>®</sup> is slightly longer in maturity. Ninja<sup>®</sup> is highly susceptibility to powdery mildew, stem rust and leaf rust and should be actively monitored and managed. Kinsei<sup>®</sup>'s disease ratings are marginally better than Zen<sup>®</sup> and Ninja<sup>®</sup>, particularly for stem rust, stripe rust and powdery mildew.

## Suggested sowing times

Suggested planting times for varieties have been developed (Table 5) to support variety decisions in response to sowing time preferences or opportunities. The suggestions are based on knowledge of the varieties and their performance in NVT and agronomy trials. The output was developed in consultation with breeding companies and researchers. Refer to the maturity class of a variety to assess the suggested sowing time for varieties not listed in the table. Note: spring wheats have a higher risk of yield loss if sown before late April in Western Australia.

Research findings on the flowering time of varieties relative to Mace<sup>®</sup> can also assist with decisions on the planting order of wheat varieties. Number of days to flowering after/before Mace<sup>®</sup> are provided in Tables 17 and 18.

## GRAIN YIELD

National Variety Trials (NVT) provide an independent means of assessing varietal performance in WA. NVT results can be viewed as individual site reports or as multi-environment (MET) long-term summaries that can deliver an insight into a variety's yield performance across several environments and seasons. Tables 6–11 are outputs extracted from [www.nvtonline.com.au](http://www.nvtonline.com.au). They provide the MET data for the six Agzones in WA between 2014 and 2018.

Visit <https://app.nvtonline.com.au> to assess the performance of varieties relative to the site mean at locations relevant to your business.

**TABLE 5 Suggested sowing times of wheat varieties in WA.**

AGZONES 1–6	April				May				June			
	wk 1	wk 2	wk 3	wk 4	wk 1	wk 2	wk 3	wk 4	wk 1	wk 2	wk 3	wk 4
Mid-long: Calingiri, Catapult <sup>Ⓟ</sup> , Cutlass <sup>Ⓟ</sup> , Kinsei <sup>Ⓟ</sup> , LRPB Trojan <sup>Ⓟ</sup> , Magenta <sup>Ⓟ</sup> , RockStar <sup>Ⓟ</sup> , Yitpi <sup>Ⓟ</sup> , Zen <sup>Ⓟ</sup> , Ninja <sup>Ⓟ</sup>												
Short-mid: Chief CL Plus <sup>Ⓟ</sup> , Corack <sup>Ⓟ</sup> , Devil <sup>Ⓟ</sup> , LRPB Cobra <sup>Ⓟ</sup> , LRPB Havoc <sup>Ⓟ</sup> , Mace <sup>Ⓟ</sup> , Scepter <sup>Ⓟ</sup> , Supreme <sup>Ⓟ</sup>												
Short: Emu Rock <sup>Ⓟ</sup> , Vixen <sup>Ⓟ</sup>												

Yellow = earlier than ideal.

Green = optimum sowing time.

Red = later than ideal but acceptable.

**TABLE 6 Grain yield of wheat varieties in Agzone 1 expressed as a per cent of site mean yield for each trial year (2014–18).**

Year			2014	2015	2016	2017	2018
Site mean yield (t/ha)			1.92	2.37	4.12	2.59	3.63
	Maturity	No. trials	(5)	(6)	(5)	(5)	(6)
<b>AUSTRALIAN HARD</b>							
Bremer <sup>Ⓟ</sup>	mid	(27)	98	103	99	102	100
Catapult <sup>Ⓟ</sup>	mid-long	(6)	-	-	-	-	102
Devil <sup>Ⓟ</sup> #	short-mid	(11)	-	-	-	104	111
Emu Rock <sup>Ⓟ</sup>	short	(27)	101	84	96	88	102
LRPB Cobra <sup>Ⓟ</sup>	short-mid	(27)	100	101	101	98	100
LRPB Havoc <sup>Ⓟ</sup> #	short-mid	(16)	-	-	106	97	113
Mace <sup>Ⓟ</sup> #	short-mid	(27)	106	96	101	97	106
RockStar <sup>Ⓟ</sup>	mid-long	(6)	-	-	-	-	109
Scepter <sup>Ⓟ</sup>	short-mid	(22)	-	106	108	104	110
Tungsten <sup>Ⓟ</sup>	mid-long	(16)	-	98	96	98	-
Vixen <sup>Ⓟ</sup>	short	(11)	-	-	-	93	116
Yitpi <sup>Ⓟ</sup>	mid-long	(27)	91	96	95	102	90
<b>AUSTRALIAN PREMIUM WHITE</b>							
Chief CL Plus <sup>Ⓟ</sup> #	mid	(21)	105	-	101	103	104
Corack <sup>Ⓟ</sup>	short-mid	(27)	107	93	101	95	108
Cutlass <sup>Ⓟ</sup> #	mid-long	(22)	-	105	101	106	95
Grenade CL Plus <sup>Ⓟ</sup>	short-mid	(27)	92	85	90	93	92
Hydra <sup>Ⓟ</sup>	short-mid	(27)	102	104	103	102	103
Impress CL Plus <sup>Ⓟ</sup>	short-mid	(27)	101	88	89	89	99
LRPB Scout <sup>Ⓟ</sup> #	mid	(21)	98	97	100	98	-
LRPB Trojan <sup>Ⓟ</sup> #	mid-long	(27)	96	103	101	100	96
Magenta <sup>Ⓟ</sup>	mid-long	(27)	95	106	100	104	93
Sheriff CL Plus <sup>Ⓟ</sup>	mid	(10)	-	-	100	102	-
Wyalkatchem <sup>Ⓟ</sup> #	short-mid	(27)	102	98	98	100	101
<b>AUSTRALIAN NOODLE WHEAT</b>							
Calingiri	mid-long	(27)	91	100	95	104	92
Kinsei <sup>Ⓟ</sup>	mid-long	(11)	-	-	-	108	102
Ninja <sup>Ⓟ</sup>	mid	(22)	-	107	105	105	105
Supreme <sup>Ⓟ</sup>	short-mid	(27)	99	92	97	93	98
Zen <sup>Ⓟ</sup>	mid-long	(27)	101	104	102	104	103
<b>AUSTRALIAN STANDARD WHITE</b>							
Razor CL Plus <sup>Ⓟ</sup>	short-mid	(11)	-	-	-	90	107
<b>FEED</b>							
Cobalt <sup>Ⓟ</sup>		(16)	-	110	107	105	-
Tenfour <sup>Ⓟ</sup>		(21)	105	99	106	95	-

# = Denotes supplementary classification of APWN

SOURCE: NVT ONLINE, [NVTONLINE.COM.AU](http://NVTONLINE.COM.AU)

**TABLE 7 Grain yield of wheat varieties in Agzone 2 expressed as a per cent of site mean yield for each trial year (2014–18).**

Year			2014	2015	2016	2017	2018
Site mean yield (t/ha)			2.60	2.38	3.52	3.48	4.02
	Maturity	No. trials	(16)	(14)	(7)	(16)	(14)
<b>AUSTRALIAN HARD</b>							
Bremer <sup>Ⓛ</sup>	mid	(67)	95	100	92	99	101
Catapult <sup>Ⓛ</sup>	mid-long	(14)	-	-	-	-	104
Devil <sup>Ⓛ</sup> #	short-mid	(30)	-	-	-	111	111
Emu Rock <sup>Ⓛ</sup>	short	(67)	97	92	96	99	96
LRPB Cobra <sup>Ⓛ</sup>	short-mid	(67)	101	101	101	97	97
LRPB Havoc <sup>Ⓛ</sup> #	short-mid	(37)	-	-	100	108	106
Mace <sup>Ⓛ</sup> #	short-mid	(67)	103	101	100	106	104
RockStar <sup>Ⓛ</sup>	mid-long	(14)	-	-	-	-	113
Scepter <sup>Ⓛ</sup>	short-mid	(51)	-	110	111	111	111
Tungsten <sup>Ⓛ</sup>	mid-long	(37)	-	96	97	94	-
Vixen <sup>Ⓛ</sup>	short	(30)	-	-	-	111	109
Yitpi <sup>Ⓛ</sup>	mid-long	(67)	95	93	100	94	95
<b>AUSTRALIAN PREMIUM WHITE</b>							
Chief CL Plus <sup>Ⓛ</sup> #	mid	(53)	102	-	96	104	103
Corack <sup>Ⓛ</sup>	short-mid	(67)	102	100	99	108	105
Cutlass <sup>Ⓛ</sup> #	mid-long	(51)	-	101	107	98	100
Grenade CL Plus <sup>Ⓛ</sup>	short-mid	(67)	91	87	91	94	91
Harper <sup>Ⓛ</sup>	mid-long	(66)	97	92	99	95	94
Hydra <sup>Ⓛ</sup>	short-mid	(67)	103	104	105	102	103
Impress CL Plus <sup>Ⓛ</sup>	short-mid	(67)	89	89	70	96	87
LRPB Scout <sup>Ⓛ</sup> #	mid	(53)	101	98	105	97	-
LRPB Trojan <sup>Ⓛ</sup> #	mid-long	(67)	100	100	103	95	96
Magenta <sup>Ⓛ</sup>	mid-long	(67)	101	100	103	95	95
Sheriff CL Plus <sup>Ⓛ</sup>	mid	(23)	-	-	101	104	-
Wyalkatchem <sup>Ⓛ</sup> #	short-mid	(67)	100	98	95	103	100
<b>AUSTRALIAN NOODLE WHEAT</b>							
Calingiri	mid-long	(67)	94	95	95	95	97
Kinsei <sup>Ⓛ</sup>	mid-long	(30)	-	-	-	104	108
Ninja <sup>Ⓛ</sup>	mid	(51)	-	107	109	106	105
Supreme <sup>Ⓛ</sup>	short-mid	(67)	98	95	98	96	95
Zen <sup>Ⓛ</sup>	mid-long	(67)	99	103	98	104	106
<b>AUSTRALIAN STANDARD WHITE</b>							
Razor CL Plus <sup>Ⓛ</sup>	short-mid	(30)	-	-	-	105	102
<b>FEED</b>							
Cobalt <sup>Ⓛ</sup>		(38)	103	109	107	102	-

# = Denotes supplementary classification of APWN

SOURCE: NVT ONLINE, [NVTONLINE.COM.AU](http://NVTONLINE.COM.AU)

**TABLE 8 Grain yield of wheat varieties in Agzone 3 expressed as a per cent of site mean yield for each trial year (2014–18).**

Year			2014	2015	2016	2017	2018
Site mean yield (t/ha)			4.56	3.70	3.17	4.25	2.96
	Maturity	No. trials	(5)	(6)	(3)	(4)	(3)
<b>AUSTRALIAN HARD</b>							
Bremer <sup>Ⓛ</sup>	mid	(21)	98	99	94	97	104
Catapult <sup>Ⓛ</sup>	mid-long	(3)	-	-	-	-	101
Devil <sup>Ⓛ</sup> #	short-mid	(7)	-	-	-	114	111
Emu Rock <sup>Ⓛ</sup>	short	(21)	94	102	95	93	97
LRPB Cobra <sup>Ⓛ</sup>	short-mid	(21)	99	101	100	99	98
LRPB Havoc <sup>Ⓛ</sup> #	short-mid	(10)	-	-	97	104	112
Mace <sup>Ⓛ</sup> #	short-mid	(21)	102	106	99	102	104
RockStar <sup>Ⓛ</sup>	mid-long	(3)	-	-	-	-	111
Scepter <sup>Ⓛ</sup>	short-mid	(16)	-	109	109	113	109
Tungsten <sup>Ⓛ</sup>	mid-long	(16)	-	95	96	94	91
Vixen <sup>Ⓛ</sup>	short	(3)	-	-	-	-	110
Yitpi <sup>Ⓛ</sup>	mid-long	(21)	97	89	102	96	90
<b>AUSTRALIAN PREMIUM WHITE</b>							
Chief CL Plus <sup>Ⓛ</sup> #	mid	(15)	103	-	95	101	105
Corack <sup>Ⓛ</sup>	short-mid	(21)	101	107	98	101	106
Cutlass <sup>Ⓛ</sup> #	mid-long	(16)	-	94	108	104	96
DS Pascal <sup>Ⓛ</sup>	mid-long	(10)	-	-	92	86	84
Grenade CL Plus <sup>Ⓛ</sup>	short-mid	(21)	92	92	93	88	89
Harper <sup>Ⓛ</sup>	mid-long	(21)	97	92	100	95	90
Hydra <sup>Ⓛ</sup>	short-mid	(21)	103	102	105	105	103
Impress CL Plus <sup>Ⓛ</sup>	short-mid	(15)	90	-	68	78	96
LRPB Scout <sup>Ⓛ</sup> #	mid	(18)	99	97	105	100	-
LRPB Trojan <sup>Ⓛ</sup> #	mid-long	(21)	99	97	103	100	96
Magenta <sup>Ⓛ</sup>	mid-long	(21)	101	94	102	100	93
Sheriff CL Plus <sup>Ⓛ</sup>	mid	(7)	-	-	101	102	-
Wyalkatchem <sup>Ⓛ</sup> #	short-mid	(21)	101	102	94	98	101
<b>AUSTRALIAN NOODLE WHEAT</b>							
Calingiri <sup>Ⓛ</sup>	mid-long	(21)	97	91	99	96	95
Kinsei <sup>Ⓛ</sup>	mid-long	(7)	-	-	-	108	107
Ninja <sup>Ⓛ</sup>	mid	(16)	-	104	107	109	104
Supreme <sup>Ⓛ</sup>	short-mid	(21)	96	99	97	95	95
Zen <sup>Ⓛ</sup>	mid-long	(21)	102	102	100	103	107
<b>AUSTRALIAN STANDARD WHITE</b>							
Razor CL Plus <sup>Ⓛ</sup>	short-mid	(7)	-	-	-	100	101
<b>FEED</b>							
Cobalt <sup>Ⓛ</sup>		(18)	104	103	109	109	-
Tenfour <sup>Ⓛ</sup>		(18)	100	107	107	106	-

# = Denotes supplementary classification of APWN

SOURCE: NVT ONLINE, [NVTONLINE.COM.AU](http://NVTONLINE.COM.AU)



**TABLE 9 Grain yield of wheat varieties in Agzone 4 expressed as a per cent of site mean yield for each trial year (2014–18).**

Year			2014	2015	2016	2017	2018
Site mean yield (t/ha)			1.38	2.14	3.06	2.16	3.26
	Maturity	No. trials	(9)	(8)	(4)	(9)	(9)
<b>AUSTRALIAN HARD</b>							
Bremer <sup>Ⓛ</sup>	mid	(39)	86	98	96	97	101
Catapult <sup>Ⓛ</sup>	mid-long	(9)	-	-	-	-	102
Devil <sup>Ⓛ</sup> #	short-mid	(18)	-	-	-	110	111
Emu Rock <sup>Ⓛ</sup>	short	(39)	111	93	100	97	100
LRPB Cobra <sup>Ⓛ</sup>	short-mid	(39)	104	104	101	96	98
LRPB Havoc <sup>Ⓛ</sup> #	short-mid	(22)	-	-	109	102	108
Mace <sup>Ⓛ</sup> #	short-mid	(39)	107	98	104	105	105
RockStar <sup>Ⓛ</sup>	mid-long	(9)	-	-	-	-	111
Scepter <sup>Ⓛ</sup>	short-mid	(30)	-	107	112	112	110
Vixen <sup>Ⓛ</sup>	short	(18)	-	-	-	108	112
Yitpi <sup>Ⓛ</sup>	mid-long	(39)	94	94	93	98	94
<b>AUSTRALIAN PREMIUM WHITE</b>							
Chief CL Plus <sup>Ⓛ</sup> #	mid	(31)	98	-	100	104	102
Corack <sup>Ⓛ</sup>	short-mid	(39)	109	96	104	106	107
Cutlass <sup>Ⓛ</sup> #	mid-long	(30)	-	102	100	102	98
Grenade CL Plus <sup>Ⓛ</sup>	short-mid	(39)	98	87	90	96	92
Harper <sup>Ⓛ</sup>	mid-long	(30)	-	94	94	99	94
Hydra <sup>Ⓛ</sup>	short-mid	(38)	102	104	104	102	103
Impress CL Plus <sup>Ⓛ</sup>	short-mid	(39)	92	87	84	93	90
LRPB Scout <sup>Ⓛ</sup> #	mid	(30)	106	101	101	98	-
LRPB Trojan <sup>Ⓛ</sup> #	mid-long	(39)	100	104	100	95	96
Magenta <sup>Ⓛ</sup>	mid-long	(39)	99	104	97	98	93
Sheriff CL Plus <sup>Ⓛ</sup>	mid	(4)	-	-	100	-	-
Wyalkatchem <sup>Ⓛ</sup> #	short-mid	(39)	100	96	98	104	100
<b>AUSTRALIAN NOODLE WHEAT</b>							
Calingiri	mid-long	(39)	86	95	92	97	95
Kinsei <sup>Ⓛ</sup>	mid-long	(18)	-	-	-	104	105
Ninja <sup>Ⓛ</sup>	mid	(30)	-	106	107	108	104
Supreme <sup>Ⓛ</sup>	short-mid	(39)	106	97	99	96	97
Zen <sup>Ⓛ</sup>	mid-long	(39)	92	100	101	102	105
<b>AUSTRALIAN STANDARD WHITE</b>							
Razor CL Plus <sup>Ⓛ</sup>	short-mid	(18)	-	-	-	105	105
<b>FEED</b>							
Cobalt <sup>Ⓛ</sup>		(30)	95	108	107	99	-
Tenfour <sup>Ⓛ</sup>		(30)	101	104	110	97	-

# = Denotes supplementary classification of APWN

SOURCE: NVT ONLINE, [NVTONLINE.COM.AU](http://NVTONLINE.COM.AU)



**TABLE 10 Grain yield of wheat varieties in Agzone 5 expressed as a per cent of site mean yield for each trial year (2014–18).**

Year			2014	2015	2016	2017	2018
Site mean yield (t/ha)			2.61	3.09	2.97	3.20	2.44
	Maturity	No. trials	(6)	(6)	(3)	(5)	(4)
<b>AUSTRALIAN HARD</b>							
Bremer <sup>Ⓟ</sup>	mid	(24)	94	97	91	92	94
Catapult <sup>Ⓟ</sup>	mid-long	(4)	-	-	-	-	108
Devil <sup>Ⓟ</sup> #	short-mid	(9)	-	-	-	115	115
Emu Rock <sup>Ⓟ</sup>	short	(24)	98	102	96	97	99
LRPB Cobra <sup>Ⓟ</sup>	short-mid	(24)	100	101	101	101	99
LRPB Havoc <sup>Ⓟ</sup> #	short-mid	(12)	-	-	96	106	109
Mace <sup>Ⓟ</sup> #	short-mid	(24)	103	108	100	104	107
RockStar <sup>Ⓟ</sup>	mid-long	(4)	-	-	-	-	116
Scepter <sup>Ⓟ</sup>	short-mid	(18)	-	114	111	115	116
Tungsten <sup>Ⓟ</sup>	mid-long	(14)	-	94	98	97	-
Vixen <sup>Ⓟ</sup>	short	(9)	-	-	-	115	117
Yitpi <sup>Ⓟ</sup>	mid-long	(24)	98	88	103	95	93
<b>AUSTRALIAN PREMIUM WHITE</b>							
Chief CL Plus <sup>Ⓟ</sup> #	mid	(18)	102	-	95	102	105
Corack <sup>Ⓟ</sup>	short-mid	(24)	103	110	99	104	109
Cutlass <sup>Ⓟ</sup> #	mid-long	(18)	-	95	109	103	100
Grenade CL Plus <sup>Ⓟ</sup>	short-mid	(24)	95	89	93	90	92
Harper <sup>Ⓟ</sup>	mid-long	(24)	100	92	102	97	96
Hydra <sup>Ⓟ</sup>	short-mid	(24)	103	103	105	104	104
Impress CL Plus <sup>Ⓟ</sup>	short-mid	(18)	89	-	67	84	92
LRPB Scout <sup>Ⓟ</sup> #	mid	(20)	101	98	106	101	-
LRPB Trojan <sup>Ⓟ</sup> #	mid-long	(24)	99	96	103	99	95
Magenta <sup>Ⓟ</sup>	mid-long	(24)	101	94	104	101	97
Sheriff CL Plus <sup>Ⓟ</sup>	mid	(8)	-	-	101	103	-
Wyalkatchem <sup>Ⓟ</sup> #	short-mid	(24)	101	102	95	100	104
<b>AUSTRALIAN NOODLE WHEAT</b>							
Calingiri	mid-long	(24)	95	88	97	92	91
Kinsei <sup>Ⓟ</sup>	mid-long	(9)	-	-	-	103	102
Ninja <sup>Ⓟ</sup>	mid	(18)	-	108	109	111	110
Supreme <sup>Ⓟ</sup>	short-mid	(24)	98	99	98	97	97
Zen <sup>Ⓟ</sup>	mid-long	(24)	99	102	98	98	101
<b>AUSTRALIAN STANDARD WHITE</b>							
Razor CL Plus <sup>Ⓟ</sup>	short-mid	(9)	-	-	-	105	108
<b>FEED</b>							
Cobalt <sup>Ⓟ</sup>		(20)	100	104	106	102	-
Tenfour <sup>Ⓟ</sup>		(20)	97	108	103	99	-

# = Denotes supplementary classification of APWN

SOURCE: NVT ONLINE, [NVTONLINE.COM.AU](http://NVTONLINE.COM.AU)

**TABLE 11 Grain yield of wheat varieties in Agzone 6 expressed as a per cent of site mean yield for each trial year (2014–18).**

Year			2014	2015	2016	2017	2018
Site mean yield (t/ha)			2.75	4.20	4.01	4.16	3.75
	Maturity	No. trials	(3)	(3)	(2)	(1)	(2)
<b>AUSTRALIAN HARD</b>							
Bremer <sup>Ⓛ</sup>	mid	(11)	104	99	96	94	98
Catapult <sup>Ⓛ</sup>	mid-long	(2)	-	-	-	-	103
Devil <sup>Ⓛ</sup> #	short-mid	(3)	-	-	-	111	110
Emu Rock <sup>Ⓛ</sup>	short	(11)	90	93	95	95	93
LRPB Cobra <sup>Ⓛ</sup>	short-mid	(11)	96	101	99	100	102
LRPB Havoc <sup>Ⓛ</sup> #	short-mid	(5)	-	-	94	101	106
Mace <sup>Ⓛ</sup> #	short-mid	(11)	104	102	99	101	100
RockStar <sup>Ⓛ</sup>	mid-long	(2)	-	-	-	-	109
Scepter <sup>Ⓛ</sup>	short-mid	(8)	-	114	106	111	108
Tungsten <sup>Ⓛ</sup>	mid-long	(8)	-	93	96	97	97
Vixen <sup>Ⓛ</sup>	short	(2)	-	-	-	-	106
Yitpi <sup>Ⓛ</sup>	mid-long	(11)	92	90	105	99	95
<b>AUSTRALIAN PREMIUM WHITE</b>							
Chief CL Plus <sup>Ⓛ</sup> #	mid	(8)	109	-	95	100	101
Corack <sup>Ⓛ</sup>	short-mid	(11)	104	102	98	101	98
Cutlass <sup>Ⓛ</sup> #	mid-long	(8)	-	100	108	105	102
DS Pascal <sup>Ⓛ</sup>	mid-long	(5)	-	-	95	91	92
Grenade CL Plus <sup>Ⓛ</sup>	short-mid	(11)	87	83	96	92	88
Harper <sup>Ⓛ</sup>	mid-long	(11)	91	90	102	99	94
Hydra <sup>Ⓛ</sup>	short-mid	(11)	103	106	104	104	104
Impress CL Plus <sup>Ⓛ</sup>	short-mid	(8)	98	-	70	81	86
LRPB Scout <sup>Ⓛ</sup> #	mid	(9)	93	98	104	102	-
LRPB Trojan <sup>Ⓛ</sup> #	mid-long	(11)	94	100	102	100	102
Magenta <sup>Ⓛ</sup>	mid-long	(11)	97	98	102	102	102
Sheriff CL Plus <sup>Ⓛ</sup>	mid	(3)	-	-	101	102	-
Wyalkatchem <sup>Ⓛ</sup> #	short-mid	(11)	104	97	95	98	97
<b>AUSTRALIAN NOODLE WHEAT</b>							
Calingiri	mid-long	(11)	97	92	101	96	96
Kinsei <sup>Ⓛ</sup>	mid-long	(3)	-	-	-	105	105
Ninja <sup>Ⓛ</sup>	mid	(5)	-	-	105	108	107
Supreme <sup>Ⓛ</sup>	short-mid	(5)	-	-	97	97	96
Zen <sup>Ⓛ</sup>	mid-long	(8)	-	104	101	100	101
<b>AUSTRALIAN STANDARD WHITE</b>							
Razor CL Plus <sup>Ⓛ</sup>	short-mid	(3)	-	-	-	101	97
<b>FEED</b>							
Cobalt <sup>Ⓛ</sup>		(9)	106	112	108	104	-
Tenfour <sup>Ⓛ</sup>		(9)	100	112	106	101	-

# = Denotes supplementary classification of APWN

SOURCE: NVT ONLINE, [NVTONLINE.COM.AU](http://NVTONLINE.COM.AU)

## Variety performance in early sown trials

Since 2017, NVT has conducted an ‘early season’ wheat series in WA. This series, along with the DPIRD trial series ‘Capturing the best sowing opportunities for wheat in WA’, aims to evaluate the performance of longer-maturing varieties in WA when sown early.

### Early season NVT

In 2017 and 2018 the early season series was generally sown in late April. At these sowing dates the newly released Catapult<sup>®</sup> performed well in 2018, closely followed by other mid-long maturing varieties Cutlass<sup>®</sup>, Kinsei<sup>®</sup> and LRPB Trojan<sup>®</sup> (Table 12). Scepter<sup>®</sup> was also included in 2018 and performed similarly to the mid-long maturing varieties. They were all higher yielding than the recently released winter wheats such as Illabo<sup>®</sup> and Longsword<sup>®</sup>. These releases are generally higher yielding than EGA Wedgetail<sup>®</sup>, LRPB Kittyhawk<sup>®</sup> and Forrest<sup>®</sup>. RockStar<sup>®</sup> was not included in early sown NVT in 2017 or 2018.

### DPIRD tactical wheat agronomy trials

DPIRD has conducted trials from 2015 to 2018 to determine optimum variety choice across sowing dates at multiple locations. In 2018, varieties were assessed across a broad range of sowing dates at four DPIRD sites, where irrigation was used when

required to ensure timely germination. Catapult<sup>®</sup>, Illabo<sup>®</sup> and RockStar<sup>®</sup> were not included in the DPIRD experiments.

At the early April sowing time in 2018, the top two yielding varieties were Ninja and Kinsei at Mullewa, LRPB Trojan<sup>®</sup> and Yitpi<sup>®</sup> at Merredin, Longsword and Kinsei<sup>®</sup> at Gibson, and LRPB Kittyhawk<sup>®</sup> and EGA Wedgetail<sup>®</sup> at the frosted Katanning site. For Anzac Day sowing, the top two yielding varieties were Kinsei<sup>®</sup> and LRPB Trojan<sup>®</sup> at Mullewa, Devil<sup>®</sup> and LRPB Havoc<sup>®</sup> at Merredin, Kinsei<sup>®</sup> and Cutlass<sup>®</sup> at Gibson, and EGA Wedgetail<sup>®</sup> and LRPB Kittyhawk<sup>®</sup> at Katanning (frosted).

Where frost was an issue, the winter wheats were the highest yielding varieties when sown in April. But overall the highest yield at the site was obtained by Cutlass<sup>®</sup>, Kinsei<sup>®</sup> and Yitpi<sup>®</sup> when sown in early May. This indicates it is a better proposition to delay sowing wheat or use another crop species in frost-prone areas. Higher-yielding mid and short-mid season varieties are competitive with the mid-long varieties when sown late April to early May; however, there is more risk with frost and reduced growth and yield if earlier conditions are stressful.

Despite the early sowing dates tested, winter wheats were generally uncompetitive with spring wheats except for Longsword<sup>®</sup> at Gibson or the longer maturing types at the frosted Katanning sites. For more information on these results, as well as long term results (2015–2018) at these sites, contact Brenda Shackley at:

[brenda.shackley@dpiird.wa.gov.au](mailto:brenda.shackley@dpiird.wa.gov.au).

TABLE 12 Early season NVT in 2017 and 2018, expressed as per cent of site mean yield.

Site	York	Eneabba	Ogilvie	Ogilvie	Gibson	Bencubbin		
Year	2017	2017	2017	2018	2018	2018		
Sowing date	24 April	20 April	23 April	20 April	2 May	30 April		
Trial mean (t/ha)	4.07	2.84	3.47	4.02	3.11	2.93		
Variety (order of maturity)	Classification	Maturity						
Scepter <sup>®</sup>	AH	Short-mid	-	-	100	108	115	
LRPB Trojan <sup>®</sup>	APWN	Mid-long	121	122	110	103	110	117
Magenta <sup>®</sup>	APW	Mid-long	114	114	103	101	104	111
Kinsei <sup>®</sup>	ANW	Mid-long	118	125	111	107	119	117
DS Pascal <sup>®</sup>	APW	Mid-long	98	110	103	109	114	108
Catapult <sup>®</sup>	AH	Mid-long	-	-	-	111	122	126
Yitpi <sup>®</sup>	AH	Mid-long	111	109	98	100	98	109
Cutlass <sup>®</sup>	APWN	Mid-long	112	117	109	106	110	114
Longsword <sup>®</sup>	Feed	Fast winter	99	103	113	98	122	88
Forrest <sup>®</sup>	ASW	Long spring	-	-	-	105	93	97
LRPB Kittyhawk <sup>®</sup>	Feed	Mid winter	79	84	97	100	104	83
EGA Wedgetail <sup>®</sup>	APW	Mid winter	78	82	97	101	100	85
Illabo <sup>®</sup>	AH	Mid winter	91	102	114	104	128	88

**TABLE 13 Performance of varieties expressed as a percentage of sowing time mean yield, sown early April to early May at four DPIRD sites in 2018.**

Variety (order of maturity)	Mullewa <sup>1</sup>			Merredin <sup>2</sup>			Gibson			Katanning <sup>3</sup> (frosted)		
	10 April	24 April	8 May	12 April	26 April	15 May	10 April	24 April	8 May	10 April	24 April	8 May
Emu Rock <sup>db</sup>	79	91	97	85	105	111	81	94	87	34	18	30
Vixen <sup>db</sup>	91	111	129	92	116	116	75	91	96	23	53	41
Devil <sup>db</sup>	107	113	128	93	126	127	88	107	111	10	73	104
LRPB Havoc <sup>db</sup>	99	107	117	91	124	124	76	91	102	13	7	32
Mace <sup>db</sup>	96	98	108	100	113	110	86	94	96	16	44	78
Scepter <sup>db</sup>	106	107	111	114	121	128	99	109	100	10	34	108
Chief CL Plus <sup>db</sup>	113	104	109	101	102	108	73	76	92	28	46	83
Ninja <sup>db</sup>	129	115	111	95	118	107	106	105	115	23	50	101
Zen <sup>db</sup>	105	104	111	111	122	121	85	93	97	16	53	92
LRPB Trojan <sup>db</sup>	116	116	121	129	109	99	99	102	104	23	80	104
Magenta <sup>db</sup>	104	111	108	101	98	103	108	107	102	45	79	107
Kinsei <sup>db</sup>	125	121	109	115	111	123	117	115	115	38	81	135
DS Pascal <sup>db</sup>	115	110	104	95	83	92	110	100	106	95	120	107
Yitpi <sup>db</sup>	95	98	96	117	111	118	104	93	100	79	160	133
Cutlass <sup>db</sup>	104	110	110	114	110	117	115	115	115	69	118	130
Longsword <sup>db</sup>	85	87	71	106	80	77	125	108	108	48	78	92
Forrest <sup>db</sup>	88	93	94	92	60	73	110	95	81	263	125	91
LRPB Kittyhawk <sup>db</sup>	94	81	67	90	92	79	93	95	83	303	164	120
EGA Wedgetail <sup>db</sup>	70	63	53	79	66	51	99	96	82	299	174	104
Mean yield (t/ha)	2.78	2.76	2.79	2.78	3.03	2.90	3.94	4.69	4.79	0.80	1.55	2.32
Isd (%) within TOS	10			20			11			29		

1. To ensure germination 21mm of irrigation was applied prior to each seeding.

2. A total of 50mm was applied to the trial in 10mm allotments across the sowing period, some establishment issues with April sowings.

3. A total of 10mm was applied before and after seeding.

## DISEASE RESISTANCE

Plan ahead:

- Be aware of your variety's disease package so you can plan any in-season disease management that may be needed.
- Choose your variety wisely. Do not plant a susceptible variety into a high disease risk paddock.
- Diversify your wheat varieties as well as your crop types.

When selecting a wheat variety, it is important to consider not only the yield or potential quality grade but the disease resistance of each variety (Table 16). Higher resistance ratings reduce disease severity and subsequent yield losses. Avoiding susceptible or very susceptible varieties, where possible, significantly reduces chances of disease outbreaks and the need for in-season management.

For a disease to become damaging in-season, there needs to be: the presence of inoculum that is usually carried over from last season; favourable weather conditions; and a susceptible host crop to become infected. **Depending on the disease in question, inoculum can be carried on infested stubble or trash, on a green bridge, in seed or soil borne** (Table 14).

**TABLE 14** Examples of wheat diseases carried over from different inoculum sources.

Inoculum carryover source	Disease
Infested stubble or trash	Yellow spot, nodorum blotch (syn. Septoria nodorum blotch) and crown rot
Green bridge	Rusts, powdery mildew and viruses
Seed	Loose smut
Soil borne	Root lesion nematode, Rhizoctonia root rot, flag smut and common bunt

**TABLE 15** Suggested minimum resistance for wheat varieties in different disease risk areas to common diseases.

Disease risk*	Stem rust	Stripe rust	Leaf rust	Yellow spot	Nodorum blotch
Low risk	MSS	MS	MS	MSS	MSS
Medium risk	MS	MRMS	MRMS	MS	MS
High risk	MR	MR	MR	MRMS	MRMS

\*Determined by taking into account factors such as disease history in previous years, presence and amount of primary inoculum and prevailing weather conditions (temperature, rainfall and relative humidity).

Choose your variety for each paddock based on its disease strengths and weaknesses and the disease risk of that paddock. Disease risk of a paddock is related to the potential presence of disease inoculum and to the favourability of the environment for the disease. For example, it is not advisable to sow Yitpi<sup>®</sup>, which is rated susceptible to very susceptible to yellow spot, onto wheat stubble.

Planning ahead and understanding the disease strengths and weaknesses of your variety will allow for more effective disease management during the season. For example, Scepter<sup>®</sup> is susceptible to powdery mildew. In a season or environment conducive to powdery mildew it may be prudent to use a seed dressing or in-furrow fungicide and to proactively monitor for the presence of disease to ensure a rapid and appropriate response if disease is detected.

Diversification of varieties reduces the risk of whole farm infection requiring management at the same time in the case of disease outbreaks. Diversification also reduces the risk associated with the emergence of a new pathotype that could render a significant proportion of a farm or region susceptible, requiring region-wide management responses.

Disease ratings provided in this guide reflect the expected response to the most common or dominant pathotype or strain of a disease in Western Australia. For the majority of diseases, very little variability in response is evident between seasons or regions, but occasionally mutations or incursions of rusts can significantly change variety ratings. For example, leaf rust ratings in the disease table (Table 16) are for the pathotype that was an incursion in WA in 2015 (104-1,3,4,6,7,8,10,12 +Lr37). These are based on 2017 eastern states' consensus ratings and on testing done on inoculated nurseries at Carnarvon in 2018.

For powdery mildew, the ratings reflect expected resistance to the general mildew population, but a variety's response (such as LRPB Havoc) may differ on rare occasions where a more virulent isolate occurs.

For more information

- Crop diseases – forecasts and management at [www.agric.wa.gov.au/n/2319](http://www.agric.wa.gov.au/n/2319)
- Wheat disease ratings at [www.agric.wa.gov.au](http://www.agric.wa.gov.au)
- Download the Australian Field Crop Disease Guide app

**TABLE 16 Disease resistance ratings for wheat varieties grown in Western Australia.**

Variety	Grade	Nodorum blotch	Septoria tritici blotch	Yellow spot	Rust			Powdery mildew	Flag smut	Common bunt	Root lesion nematodes		CCN	Crown rot
					Stem	Stripe	Leaf				<i>P. quasitereoides</i>	<i>P. neglectus</i>		
Arrino	ANW	MS	MSS	MS	VS	MSS	VS	MRMS	MSS	MS	S	S	-	-
Bremer <sup>db</sup>	AH	MS	S	MSS	MR	MR*	MR*	S	MSS	RMR	-	SVS	MRMS	S
Calingiri	ANW	MSS	MSS	MSS	MSS	SVS	S	SVS	RMR	MRMS	S	SVS	-	S
Carnamah	APW	MSS	SVS	MSS	MRMS	SVS	MSS	S	MSS	MS	SVS	VS	S	-
Catapult <sup>db</sup>	tbd	-	-	MRMS <sub>p</sub>	MR <sub>p</sub>	RMR <sub>p</sub>	S <sub>p</sub>	S <sub>p</sub>	-	-	-	-	-	-
Chief CL Plus <sup>db</sup>	APW	MS	S	MRMS	MR	S	MR*	S	SVS	MR <sub>p</sub>	-	MRMS	-	MSS
Clearfield WHT STL <sup>db</sup>	APW	MRMS	MSS	S	MR	MSS	VS	S	MS	MS	-	S	-	-
Corack <sup>db</sup>	APW	MSS	S	MRMS	MR	MS	SVS	SVS	MRMS	MSS	MSS	MSS	RMR	S
Cutlass <sup>db</sup>	APW	MRMS	MSS	MSS	RMR	RMR*	R*	S	MS	S	-	MSS	MSS	S
Devil <sup>db</sup>	AH	MS <sub>p</sub>	S <sub>p</sub>	MRMS	MS	MR	SVS	S <sub>p</sub>	SVS	R <sub>p</sub>	-	S	-	MSS <sub>p</sub>
DS Pascal <sup>db</sup>	APW	MRMS	MS	MS	MSS	RMR	MS	RMR	S	SVS	-	S	MS	S
EGA Bonnie Rock <sup>db</sup>	AH	MSS	S	MRMS	MSS	VS	SVS	S	S	MS	S	SVS	S	-
EGA Eagle Rock <sup>db</sup>	AH	MRMS	MSS	MSS	MRMS	MS	MR	MSS	S	MRMS	S	S	S	-
EGA Wedgetail <sup>db</sup>	APW	MRMS	MSS	MSS	MRMS	MS	S	-	-	-	-	-	-	-
Emu Rock <sup>db</sup>	AH	SVS	S	MRMS	MS	MRMS	SVS	S	R	S	MS	MSS	S	MSS
Fortune <sup>db</sup>	ANW	MS	MS	MRMS	MS	MRMS	MRMS	MS	R	MR	S <sub>p</sub>	S	-	S
Grenade CL Plus <sup>db</sup>	APW	MSS	S	S	MR	RMR	S	MSS	MR	SVS	-	MSS	R	S
Harper <sup>db</sup>	APW	MS	MSS	MSS	MS	RMR	S	MSS	RMR	MSS	-	S	MRMS	S
Hydra <sup>db</sup>	APW	MSS	MS	MRMS	MS	MS	SVS	S	VS	VS	-	S	S	S
Illabo <sup>db</sup>	AH	MR	MR	MS	MS	RMR	S	RMR	R	MS	-	S	MS	S <sub>p</sub>
Impress CL Plus <sup>db</sup>	APW	MSS	MSS	MRMS	MR	MSS	R*	SVS	MSS	RMR	-	MRMS	MS	S
Justica CL Plus <sup>db</sup>	APW	MRMS	S	SVS	MR	RMR*	SVS	MSS	RMR	VS	S <sub>p</sub>	S	MS	S
King Rock <sup>db</sup>	AH	MSS	S	MRMS	MSS	RMR*	S	S	SVS	MSS	-	MSS	MS	S
Kinsei <sup>db</sup>	ANW	MRMS <sub>p</sub>	SVS <sub>p</sub>	MS	MS	MRMS	S	MSS	RMR	RMR <sub>p</sub>	-	S	-	MSS <sub>p</sub>
Longsword <sup>db</sup>	Feed	MR	MRMS	MRMS	MR	RMR	MSS	MRMS	R	RMR	-	MRMS	-	S
LRPB Cobra <sup>db</sup>	AH	MRMS	MSS	MRMS	MR	MSS	MR	MSS	MS	SVS	MS	MSS	MS	S
LRPB Havoc <sup>db</sup>	AH	MS	MRMS	MRMS	S	MR	S	MRMS	MS	R	-	S	-	S
LRPB Trojan <sup>db</sup>	APW	MS	MSS	MSS	MRMS	MR	MR	S	SVS	SVS	MRMS <sub>p</sub>	MSS	MS	MS
Mace <sup>db</sup>	AH	MS	S	MRMS	MRMS	RMR*	MSS	MSS	S	MR	MRMS	MS	MRMS	S
Magenta <sup>db</sup>	APW	MRMS	MRMS	MR	RMR	MSS	RMR*	MRMS	MSS	S	MSS	MSS	S	MSS
Ninja <sup>db</sup>	ANW	MRMS	MSS	MRMS	SVS	MS	SVS	S	MR	RMR	-	S	MS	S
Razor CL Plus <sup>db</sup>	ASW	MS	SVS	MSS	MRMS	RMR	S	S	R	RMR	-	S	-	S
RockStar <sup>db</sup>	tbd	-	-	MRMS <sub>p</sub>	MR <sub>p</sub>	RMR <sub>p</sub>	S <sub>p</sub>	MRMS <sub>p</sub>	-	-	-	-	-	-
Scepter <sup>db</sup>	AH	MRMS	S	MRMS	MRMS	MR*	MSS	S	MSS	MSS	MS <sub>p</sub>	S	MRMS	S
Sheriff CL Plus <sup>db</sup>	APW	MSS	S	MRMS	MS	MSS	SVS	S	S	RMR	-	MRMS	-	S <sub>p</sub>
Stiletto	APW	MS	MSS	S	RMR	MSS	VS	MSS	MS	MS	MRMS	MS	S	-
Supreme <sup>db</sup>	ANW	S	MSS	MS	MRMS	MR*	RMR*	MSS	MSS	SVS	-	MSS	S	MSS
Tungsten <sup>db</sup>	AH	MS	MSS	MSS	MSS	RMR	MS	MSS	MR	S	-	MSS	-	S
Vixen <sup>db</sup>	AH	S	MSS	MRMS	MRMS	MRMS	SVS	S	SVS	RMR	-	MRMS	-	S
Westonia	APW	MS	SVS	MS	VS	VS	MS	SVS	SVS	S	S	SVS	S	S <sub>p</sub>
Wyalkatchem <sup>db</sup>	APW	MSS	S	MR	MSS	S	S	SVS	SVS	RMR	MSS	MRMS	S	S
Yitpi <sup>db</sup>	AH	MS	MRMS	SVS	S	MRMS	S	MRMS	MR	S	MS	MSS	MR	S
Zen <sup>db</sup>	ANW	MRMS	S	MRMS	S	MRMS	S	S	MS	MR	-	MRMS	S	S

VS = Very susceptible, SVS = Susceptible to very susceptible, S = Susceptible, MSS = Moderately susceptible to susceptible, MS = Moderately susceptible, MRMS = Moderately resistant to moderately susceptible, MR = Moderately resistant, RMR = Resistant to moderately resistant, R = Resistant. No score '-' = no rating is currently available. *p* = Provisional assessment. \* = Some races in eastern Australia can attack these varieties. These include races with Yr17 virulence for stripe rust and races with Lr24 virulence for leaf rust. R=resistant – nematode numbers will decrease when this variety is grown. MR = Moderately resistant – nematode numbers will slightly decrease when this variety is grown. MS = Moderately susceptible – nematode numbers will slightly increase when this variety is grown. S = Susceptible – nematode numbers will increase greatly when this variety is grown. Crown rot ratings from SARDI, USQ and DPI NSW data.

**TABLE 17** Number of days to flowering compared with Mace<sup>(b)</sup> on selected NVT trials in 2016, 2017 and 2018.

Variety	Maturity	2016	2017	2018	Average
Emu Rock <sup>(b)</sup>	Short	-7	-7	-9	<b>-8</b>
Vixen <sup>(b)</sup>	Short	-	-	-7	<b>-7</b>
Supreme <sup>(b)</sup>	Short-mid	-1	0	-3	<b>-1</b>
Razor CL Plus <sup>(b)</sup>	Short-mid	-	-	-1	<b>-1</b>
Grenade CL Plus <sup>(b)</sup>	Short-mid	1	2	-1	<b>0</b>
Hydra <sup>(b)</sup>	Short-mid	0	-1	-1	<b>-1</b>
Corack <sup>(b)</sup>	Short-mid	-3	-2	-1	<b>-2</b>
Impress CL Plus <sup>(b)</sup>	Short-mid	-1	1	-1	<b>0</b>
Devil <sup>(b)</sup>	Short-mid	-	-	-1	<b>-1</b>
LRPB Havoc <sup>(b)</sup>	Short-mid	-1	1	0	<b>0</b>
LRPB Cobra <sup>(b)</sup>	Short-mid	-1	0	0	<b>0</b>
Mace <sup>(b)</sup>	Short-mid	0	0	0	<b>0</b>
Wyalkatchem <sup>(b)</sup>	Short-mid	2	2	0	<b>1</b>
Scepter <sup>(b)</sup>	Short-mid	3	2	1	<b>2</b>
Chief CL Plus <sup>(b)</sup>	Mid	0	4	3	<b>2</b>
Sheriff CL Plus <sup>(b)</sup>	Mid	5	3	-	<b>4</b>
Ninja <sup>(b)</sup>	Mid	6	1	4	<b>4</b>
Bremer <sup>(b)</sup>	Mid	4	6	5	<b>5</b>
RockStar <sup>(b)</sup>	Mid-long	-	-	5	<b>5</b>
Calingiri	Mid-long	7	6	5	<b>6</b>
LRPB Trojan <sup>(b)</sup>	Mid-long	7	5	5	<b>6</b>
Zen <sup>(b)</sup>	Mid-long	7	5	5	<b>6</b>
Kinsei <sup>(b)</sup>	Mid-long	-	5	7	<b>6</b>
Harper <sup>(b)</sup>	Mid-long	9	6	5	<b>6</b>
Magenta <sup>(b)</sup>	Mid-long	9	5	7	<b>7</b>
Tungsten <sup>(b)</sup>	Mid-long	9	7	8	<b>8</b>
DS Pascal <sup>(b)</sup>	Mid-long	12	8	7	<b>9</b>
Catapult <sup>(b)</sup>	Mid-long	-	-	8	<b>8</b>
Yitpi <sup>(b)</sup>	Mid-long	11	7	9	<b>9</b>
Cutlass <sup>(b)</sup>	Mid-long	14	9	10	<b>11</b>

**TABLE 18** Number of days to flowering compared with Mace<sup>(b)</sup> for selected varieties over five sowing dates, averaged from four DPIRD sites in 2018.

Variety	Maturity	Sowing time				
		10 Apr	24 Apr	8 May	22 May	20 June
Emu Rock <sup>(b)</sup>	Short	-12	-13	-12	-7	-3
Vixen <sup>(b)</sup>	Short	-15	-11	-10	-6	-2
Devil <sup>(b)</sup>	Short-mid	-8	-5	-3	-1	-1
LRPB Havoc <sup>(b)</sup>	Short-mid	-4	-7	-3	-1	-2
Mace <sup>(b)</sup>	Short-mid	0	0	0	0	0
Scepter <sup>(b)</sup>	Short-mid	3	1	3	2	1
Chief CL Plus <sup>(b)</sup>	Mid	7	3	4	4	3
Ninja <sup>(b)</sup>	Mid	11	6	6	4	3
Zen <sup>(b)</sup>	Mid-long	10	7	7	4	4
Magenta <sup>(b)</sup>	Mid-long	10	6	7	6	7
LRPB Trojan <sup>(b)</sup>	Mid-long	15	10	5	4	3
Kinsei <sup>(b)</sup>	Mid-long	16	11	10	6	5
DS Pascal <sup>(b)</sup>	Mid-long	21	17	11	8	7
Yitpi <sup>(b)</sup>	Mid-long	21	17	11	7	6
Cutlass <sup>(b)</sup>	Mid-long	26	20	13	10	6
Longsword <sup>(b)</sup>	Fast winter	57	36	21	15	8
Forrest <sup>(b)</sup>	Long	59	37	26	19	10
LRPB Kittyhawk <sup>(b)</sup>	Mid winter	65	39	28	20	13
EGA Wedgetail <sup>(b)</sup>	Mid winter	65	43	28	21	15

## VARIETY TRAITS

### Maturity

The majority of wheat varieties grown in WA have a very low response to vernalisation (an accumulation of cold temperatures) and photoperiod (a response to daylength), making them suitable for mid-May sowings. Varieties with a higher response to vernalisation (such as Magenta<sup>(b)</sup>) or photoperiod (such as Yitpi<sup>(b)</sup>) can be sown from late April as their maturity is delayed. Varieties are broadly classified into maturity categories of short, short-mid, mid and mid-long in WA based on their duration to flowering. There are longer-maturing spring wheats and winter wheats, but these are not commonly grown in WA.

Mace<sup>(b)</sup> is classified as short-mid maturity and Table 17 shows how other varieties compare over selected NVT locations between 2016 and 2018 sown mid to

late May. In many cases, sowing spring wheats into April results in an advanced rate of development (due to warmer temperatures and longer daylengths) and a reduced duration to flowering. For this reason, winter wheats are seen as having more appropriate development times for April sowing in WA, primarily due to their vernalisation requirement. Table 18 is a summary of DPIRD's experiments in 2018 with sowing times ranging from early April to mid June, showing the large spread in the number of days to flowering after Mace<sup>(b)</sup> that mid-long to mid-winter wheats can provide, particularly when sown in April and early May.

Flowering dates change with sowing date, location and from season to season due to differences in temperatures experienced. It is important to consider data from various experiments over several seasons as the genetic control of flowering is complex.



## Coleoptile length and seeding depth

The longer the coleoptile, the better the chance of establishment if seeding depth increases. The ability to establish wheat crops from seed placed deeper in the soil could be useful in situations where the soil surface is dry but the subsoil is moist. Varieties will have inherently different coleoptile lengths and this is also affected by seed size with larger seeds increasing the coleoptile length. An index value for coleoptile length (Table 19) replaces reporting of a variety's coleoptile length as short, medium or long.

- The majority of current wheat varieties have a coleoptile index of 6–7cm. Sowing the seed into moist soil at 2–4cm is preferred.
- Varieties with longer coleoptile indexes include Cutlass<sup>db</sup> (7.3), Harper<sup>db</sup> (8.1), Magenta<sup>db</sup> (7.5), Scout<sup>db</sup> (7.3) and Yitpi<sup>db</sup> (7.8).
- If dry seeding, increase the seed rate as there is the risk of staggered emergence with a false break.
- The impact of deep sowing on grain yield depends on growing season conditions and whether low crop density can be compensated through increases in other yield components such as tiller number, grains per ear and grain weight.
- Not all seeding systems are equal for deep-sowing; ensure depth is monitored as conditions change.
- Sowing deeper than 5cm where the advantage of earlier emergence is not possible will generally reduce yield.

## GRAIN QUALITY

While hectolitre weights and small grain screenings for individual varieties can vary from site to site and year to year, they are generally well below industry limits in WA and are therefore not presented in the guide. Details can be found at [www.nvtonline.com.au](http://www.nvtonline.com.au).

## Falling number index

The falling number index (FNI) is a system of ratings that reflects the risk of a wheat variety exhibiting a low falling number at harvest (Table 19). The risk of a variety exhibiting a low falling number is associated with complex variety and environment interactions. Pre-harvest sprouting, a common cause of low falling number whereby mature grain begins to germinate in the paddock in response to rainfall, is an example of this. A wheat crop's risk of sprouting is affected by the

**TABLE 19** Black point ratings, falling number index and coleoptile index for wheat in 2020.

Variety	Black point	Falling number index	Coleoptile index (cm)
Arrino	MS	2	6.8
Bremer <sup>db</sup>	MRMS	5	6.8
Calingiri	MS	4	6.4
Carnamah	MS	2	7.4
Chief CL Plus <sup>db</sup>	MS	4	-
Clearfield WHT STL <sup>db</sup>	MRMS	6	6.8
Corack <sup>db</sup>	S	4	6.8
Cutlass <sup>db</sup>	MS	4	7.3
Devil <sup>db</sup>	MSS	3p	-
DS Pascal <sup>db</sup>	MS	7	6
EGA Bonnie Rock <sup>db</sup>	MR	4	6.6
EGA Eagle Rock <sup>db</sup>	MS	6	-
Emu Rock <sup>db</sup>	MSS	2	6.5
Fortune <sup>db</sup>	MS	2	6.4
Grenade CL Plus <sup>db</sup>	MSS	5	6.6
Harper <sup>db</sup>	MRMS	5	8.1
Hydra <sup>db</sup>	MS	3	6.9
Illabo <sup>db</sup>	MRMS	-	-
Impress CL Plus <sup>db</sup>	S	2	6.8
Justica CL Plus <sup>db</sup>	MSS	5	6.7
King Rock <sup>db</sup>	MRMS	4	6.3
Kinsei <sup>db</sup>	MSS	4	-
LRPB Cobra <sup>db</sup>	MSS	2	6.6
LRPB Havoc <sup>db</sup>	MS	3	-
LRPB Trojan <sup>db</sup>	MS	5	-
Mace <sup>db</sup>	MRMS	5	6.9
Magenta <sup>db</sup>	MSS	3	7.5
Ninja <sup>db</sup>	MRMS	4	-
Razor CL Plus <sup>db</sup>	MS	5	-
Scepter <sup>db</sup>	MS	5	6.6
Sheriff CL Plus <sup>db</sup>	MRMS	-	-
Supreme <sup>db</sup>	MSS	4	5.7
Tungsten <sup>db</sup>	MRMS	2	6.3
Vixen <sup>db</sup>	MS	3p	-
Westonia	MS	2	7
Wyalkatchem <sup>db</sup>	MS	3	6.4
Yitpi <sup>db</sup>	MS	5	7.8
Zen <sup>db</sup>	MRMS	3	6.6

Note: Coleoptile lengths (cm) are based on predicted mean length of main season sown wheats at 55 NVT during 2007–2015. Screening of varieties was undertaken as part of the NVT project. Black point ratings are provided through the NVT project and based on the research of Dr Hugh Wallwork at the Field Crop Pathology Unit (SARDI).

variety's resistance to sprouting (including grain dormancy), the grains' maturity, and environmental conditions during growth and grain-filling stages, which all influence the overall impact of any rainfall that does occur.

Since 2013, DPIRD has conducted experiments\* to understand the susceptibility of wheat varieties to low falling number, both in response to growing conditions and rainfall in the pre and post-maturation period.

The falling number index\* is designed to inform growers of the relative differences between wheat varieties in their risk of exhibiting a low falling number at harvest. A higher FNI reflects a lower risk of downgrading.

The pre-harvest sprouting (PHS) tolerance of Mace<sup>Ⓛ</sup> has enabled its widespread adoption across WA, even into areas of high PHS risk; this is reflected in its FNI of 5. A variety with a FNI of less than 4 is not recommended for sowing into high-risk areas (such as the south coast), while the recently released DS Pascal<sup>Ⓛ</sup> has leading pre-harvest sprouting tolerance as reflected in its FNI of 7.

\* Outcome of the co-investment by DPIRD and GRDC in the Tactical Wheat Agronomy Project (DAW00249)

## VARIETY SNAPSHOTS

Variety snapshots are presented for 22 varieties. Varieties are presented in order of classification.

Each snapshot includes a general comment describing essential characteristics of the variety and highlighting key strengths and weaknesses. Grain yields relative to Mace<sup>Ⓛ</sup> for each year between 2014 and 2018 for each Agzone are presented. The data was extracted from [www.nvtonline.com.au](http://www.nvtonline.com.au) and disease ratings are sourced from Table 16.

Flowering information is sourced from DPIRD experiments in 2018 and NVT trials where data was not available from the DPIRD experiments and presented relative to Mace<sup>Ⓛ</sup>.

Crown rot yield loss information was provided by Daniel Huberli, Miriam Connor and Kris Gajda from DPIRD with GRDC investment. Ratings were collected and provided as weighted yield loss to Fusarium crown rot in inoculated trials at Merredin and Wongan Hills between 2014–2016.

Variety information including pedigree, seed licensee, seed trading restrictions and end point royalty (EPR) payable are sourced from breeding companies and Variety Central ([www.varietycentral.com.au](http://www.varietycentral.com.au)).

If you are seeking information for any varieties not included in the snapshots please consult [www.varietycentral.com.au](http://www.varietycentral.com.au), [www.nvtonline.com.au](http://www.nvtonline.com.au) and breeding companies for the information.

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**CHIEF CL PLUS<sup>(1)</sup>**

APW(N)

**Comments**

Chief CL Plus<sup>(1)</sup> is an APW imidazolinone tolerant variety that was released in 2016. This variety was the highest-yielding APW imidazolinone tolerant variety in its four years of NVT data with yields that were competitive with Mace<sup>(1)</sup>. Chief CL Plus<sup>(1)</sup> is resistant to both pathotypes of leaf rust, but susceptible to the Lr24 virulent pathotype that is not present in WA (\*). Registered for label rate applications of Intervix<sup>®</sup> herbicide. Note: There are no grower-to-grower sales permitted for any CL Plus varieties.

Yield (% of Mace <sup>(1)</sup> )	2014	2015	2016	2017	2018
Agzone 1	99	-	100	106	98
Agzone 2	99	-	96	98	99
Agzone 3	101	-	96	99	101
Agzone 4	92	-	96	99	97
Agzone 5	99	-	95	98	98
Agzone 6	105	-	96	99	101
Disease resistance	Adult rating				
Nodorum blotch	MS				
S. tritici blotch	S				
Yellow spot	MRMS				
Stem rust	MR				
Stripe rust	S				
Leaf rust	MR*				
Powdery mildew	S				
Flag smut	SVS				
Common bunt	MR <sub>p</sub>				
RLN ( <i>P. quasitereoides</i> )	-				
RLN ( <i>P. neglectus</i> )	MRMS				
CCN	-				
Crown rot	MSS				
Flowering 2017 & 2018 DPIRD trials	Days after/before Mace <sup>(1)</sup>				
	11 Apr	25 Apr	8 May	24 May	20 Jun
Mullewa	+15	+7	+8	+7	+5
Merredin	+8	+0	+0	+1	+2
Katanning	+4	+2	+2	+2	+3
Gibson	+3	+7	+8	+4	+5
Agronomic traits					
Coleoptile length (cm)	-				
Crown rot yield loss	-				
Black point	MS				
Falling number index	4				
Maturity	Mid				
Variety information					
Pedigree	Wyalkatchem derivative				
Breeder/seed licensee	InterGrain				
Access to seed	InterGrain Seed Club members or seed retailers				
EPR (\$/t, exc. GST)	\$4.25				

p = provisional assessment. (N) denotes the supplementary classification of APWN

\* = Some races in eastern Australia can attack these varieties.

**CORACK<sup>(1)</sup>**

APW

**Comments**

Corack<sup>(1)</sup> is an APW variety with a Wyalkatchem<sup>(1)</sup> background that is suitable for sowings from mid-May. Corack<sup>(1)</sup> is useful for planting where resistance to CCN, stem rust and yellow spot is required. Corack<sup>(1)</sup> is less suitable to higher rainfall zones because of its susceptibility to black point and powdery mildew. This variety is susceptible to very susceptible to the latest pathotype of leaf rust. Similar yields to Mace<sup>(1)</sup>, but has been surpassed for yield by other varieties such as Scepter<sup>(1)</sup>.

Yield (% of Mace <sup>(1)</sup> )	2014	2015	2016	2017	2018
Agzone 1	101	97	100	98	102
Agzone 2	99	99	99	102	101
Agzone 3	99	101	99	99	102
Agzone 4	102	98	100	101	102
Agzone 5	100	102	99	100	102
Agzone 6	100	100	99	100	98
Disease resistance	Adult rating				
Nodorum blotch	MSS				
S. tritici blotch	S				
Yellow spot	MRMS				
Stem rust	MR				
Stripe rust	MS				
Leaf rust	SVS				
Powdery mildew	SVS				
Flag smut	MRMS				
Common bunt	MSS				
RLN ( <i>P. quasitereoides</i> )	MSS				
RLN ( <i>P. neglectus</i> )	MSS				
CCN	RMR				
Crown rot	S				
Flowering selected NVT trials	Days after/before Mace				
2016 (av sowing date 8 May)	-3				
2017 (av sowing date 24 May)	-2				
2018 (av sowing date 28 May)	-1				
Average	-2				
Agronomic traits					
Coleoptile length (cm)	6.8				
Crown rot yield loss	Moderate (10-20%)				
Black point	S				
Falling number index	4				
Maturity	Short-mid				
Variety information					
Pedigree	Wyalkatchem/Silverstar/Wyalkatchem				
Breeder/Seed licensee	AGT				
Access to seed	AGT affiliates, retailers, or seed s haring				
EPR (\$/t, excl GST)	\$3.00				

**CUTLASS<sup>Ⓓ</sup>**

APW(N)

**Comments**

Cutlass<sup>Ⓓ</sup> is a variety that provides growers with a longer-season APW option. Over the last three years, Cutlass<sup>Ⓓ</sup> has outyielded Yitpi<sup>Ⓓ</sup>, another longer-maturing variety commonly grown in WA, and has yielded similar to Mace<sup>Ⓓ</sup> in the NVT. Cutlass<sup>Ⓓ</sup> has a very useful triple rust resistance rating, MSS to yellow spot and a poor powdery mildew rating (compared with Yitpi<sup>Ⓓ</sup>'s SVS). DPIRD lead research has found that Cutlass<sup>Ⓓ</sup> has less tolerance to sprouting than Yitpi<sup>Ⓓ</sup>.

Yield (% of Mace <sup>Ⓓ</sup> )	2014	2015	2016	2017	2018
Agzone 1	-	109	100	109	90
Agzone 2	-	100	107	92	96
Agzone 3	-	89	109	102	92
Agzone 4	-	104	96	97	93
Agzone 5	-	88	109	99	93
Agzone 6	-	98	109	104	102

Disease resistance	Adult rating
S. nodorum blotch	MRMS
S. tritici blotch	MSS
Yellow spot	MSS
Stem rust	RMR*
Stripe rust	RMR*
Leaf rust	R*
Powdery mildew	S
Flag smut	MS
Common bunt	S
RLN ( <i>P. quasitereoides</i> )	-
RLN ( <i>P. neglectus</i> )	MSS
CCN	MSS
Crown rot	S

Flowering 2017 & 2018 DPIRD trials	Days after/before Mace <sup>Ⓓ</sup>				
	11 Apr	25 Apr	8 May	24 May	20 Jun
Mullewa	+22	+16	+15	+11	+8
Merredin	+19	+12	+5	+8	+6
Katanning	+20	+14	+6	+7	+8
Gibson	+29	+22	+18	+13	+10

Agronomic traits	
Coleoptile length (cm)	7.3
Crown rot yield loss	-
Black point	MS
Falling number index	4
Maturity	Mid-long

Variety information	
Pedigree	RAC1316/2*Fang
Breeder/seed licensee	AGT
Access to seed	AGT affiliates, retailers, or seed sharing
EPR (\$/t, exc. GST)	\$3.00

(N) denotes the supplementary classification of APWN

\* = Some races in eastern Australia can attack these varieties.

**DS PASCAL<sup>Ⓓ</sup>**

APW

**Comments**

DS Pascal<sup>Ⓓ</sup> is a mid-long maturing APW wheat variety. The outstanding characteristic of DS Pascal<sup>Ⓓ</sup> is its ability to maintain falling numbers after pre-harvest rain. It was the best performing variety in DPIRD's falling number index testing from 2014 to 2018. DS Pascal<sup>Ⓓ</sup> is resistant to powdery mildew, moderately susceptible to leaf rust and resistant to moderately resistant to stripe rust. It was included in the 2016, 2017 and 2018 NVT in Agzone 3 and 6, but it generally yielded lower than Mace<sup>Ⓓ</sup> and is susceptible to crown rot. Despite DS Pascal<sup>Ⓓ</sup>'s generally lower yields, it may have a fit where sprouting and powdery mildew are an issue.

Yield (% of Mace <sup>Ⓓ</sup> )	2014	2015	2016	2017	2018
Agzone 1	-	-	-	-	-
Agzone 2	-	-	-	-	-
Agzone 3	-	-	93	84	81
Agzone 4	-	-	-	-	-
Agzone 5	-	-	-	-	-
Agzone 6	-	-	96	90	92

Disease resistance	Adult rating
Nodorum blotch	MRMS
S. tritici blotch	MS
Yellow spot	MS
Stem rust	MSS
Stripe rust	RMR
Leaf rust	MS
Powdery mildew	RMR
Flag smut	S
Common bunt	SVS
RLN ( <i>P. quasitereoides</i> )	-
RLN ( <i>P. neglectus</i> )	S
CCN	MS
Crown rot	S

Flowering 2017 & 2018 DPIRD trials	Days after/before Mace <sup>Ⓓ</sup>				
	11 Apr	25 Apr	8 May	24 May	20 Jun
Mullewa	+21	+13	+15	+11	+5
Merredin	+19	+9	+3	+6	+7
Katanning	+17	+12	+7	+9	+10
Gibson	+20	+18	+15	+11	+10

Agronomic traits	
Coleoptile length (cm)	6.0
Crown rot yield loss	-
Black point	MS
Falling number index	7
Maturity	Mid-long

Variety information	
Pedigree	FAWON105/CFR00-687-55
Breeder/seed licensee	Seednet/DOW Seeds
Access to seed	Seed retailers
EPR (\$/t, exc. GST)	\$4.25

**LRPB TROJAN<sup>(p)</sup>**

APW(N)

**Comments**

Trojan<sup>(p)</sup> is an APW variety with a mid-long maturity. Trojan<sup>(p)</sup> has a falling number rating with pre-harvest rain of 5, which is similar to Mace<sup>(p)</sup>. Trojan has a useful black point rating and is moderately resistant to both leaf rust strains and to stripe rust, but is susceptible to powdery mildew and moderately susceptible to susceptible to yellow spot.

Yield (% of Mace <sup>(p)</sup> )	2014	2015	2016	2017	2018
Agzone 1	91	107	100	103	91
Agzone 2	97	99	103	90	92
Agzone 3	97	92	104	98	92
Agzone 4	93	106	96	90	91
Agzone 5	96	89	103	95	89
Agzone 6	90	98	103	99	102
Disease resistance		Adult rating			
Nodorum blotch	MS				
S. tritici blotch	MSS				
Yellow spot	MSS				
Stem rust	MRMS				
Stripe rust	MR				
Leaf rust	MR				
Powdery mildew	S				
Flag smut	SVS				
Common bunt	S				
RLN ( <i>P. quasitereoides</i> )	MRMS <sup>p</sup>				
RLN ( <i>P. neglectus</i> )	MSS				
CCN	MS				
Crown rot	MS				
Flowering 2017 & 2018 DPIRD trials	Days after/before Mace <sup>(p)</sup>				
	11 Apr	25 Apr	8 May	24 May	20 Jun
Mullewa	+14	+11	+12	+6	+2
Merredin	+9	+4	+1	+3	+3
Katanning	+17	+9	+5	+6	+8
Gibson	+14	+12	+11	+6	+7
Agronomic traits					
Coleoptile length (cm)	-				
Crown rot yield loss	Moderate (10-20%)				
Black point	MS				
Falling number index	5				
Maturity	Mid-long				
Variety information					
Pedigree	LPB 00LR000041/Sentinel3R				
Breeder/seed licensee	LongReach Plant Breeders				
Access to seed	Free to trade grower to grower				
EPR (\$/t, exc. GST)	\$4.00				

<sup>p</sup> = provisional assessment.

**MAGENTA<sup>(p)</sup>**

APW

**Comments**

Magenta<sup>(p)</sup> is an APW variety suitable for early to mid sowing opportunities. This variety has a good disease package so it is suitable for wheat-on-wheat situations and has a longer coleoptile. Magenta<sup>(p)</sup> has a low falling number index and is susceptible to black point, so is not suited to the south coast or areas that experience pre-harvest rainfall.

Yield (% of Mace <sup>(p)</sup> )	2014	2015	2016	2017	2018
Agzone 1	90	110	99	107	88
Agzone 2	98	99	103	90	91
Agzone 3	99	89	103	98	89
Agzone 4	93	106	93	93	89
Agzone 5	98	87	104	97	91
Agzone 6	93	96	103	101	102
Disease resistance		Adult rating			
Nodorum blotch	MRMS				
S. tritici blotch	MRMS				
Yellow spot	MR				
Stem rust	RMR				
Stripe rust	MS				
Leaf rust	RMR*				
Powdery mildew	MRMS				
Flag smut	MSS				
Common bunt	S				
RLN ( <i>P. quasitereoides</i> )	MSS				
RLN ( <i>P. neglectus</i> )	MSS				
CCN	S				
Crown rot	MSS				
Flowering 2017 & 2018 DPIRD trials	Days after/before Mace <sup>(p)</sup>				
	11 Apr	25 Apr	8 May	24 May	20 Jun
Mullewa	+14	+11	+10	+8	+6
Merredin	+16	+7	+2	+9	+7
Katanning	+10	+10	+5	+8	+10
Gibson	na	na	na	na	na
Agronomic traits					
Coleoptile length (cm)	7.5				
Crown rot yield loss	High (>20%)				
Black point	MSS				
Falling number index	3				
Maturity	Mid-long				
Variety information					
Pedigree	Carnamah/Tammin-18				
Breeder/seed licensee	InterGrain				
Access to seed	Free to trade				
EPR (\$/t, excl GST)	\$3.00				

\* = Some races in eastern Australia can attack these varieties.

WYALKATCHEM<sup>(b)</sup>

APW(N)

## Comments

Wyalkatchem<sup>(b)</sup> is an APW variety with a Machete background. This variety has good resistance to yellow spot. Wyalkatchem<sup>(b)</sup> has tolerance to acidic soils and low screenings. It is susceptible to very susceptible to powdery mildew, susceptible to stripe and leaf rust and has a low falling number index rating. Now superseded by Scepter<sup>(b)</sup>.

Yield (% of Mace <sup>(b)</sup> )	2014	2015	2016	2017	2018
Agzone 1	96	102	97	103	95
Agzone 2	97	97	95	97	96
Agzone 3	99	96	95	96	97
Agzone 4	93	98	94	99	95
Agzone 5	98	94	95	96	97
Agzone 6	100	95	96	97	97
Disease resistance	Adult rating				
Nodorum blotch	MSS				
S. tritici blotch	S				
Yellow spot	MR				
Stem rust	MS				
Stripe rust	S				
Leaf rust	S				
Powdery mildew	SVS				
Flag smut	SVS				
Common bunt	RMR				
RLN ( <i>P. quasitereoides</i> )	MSS				
RLN ( <i>P. neglectus</i> )	MRMS				
CCN	S				
Crown rot	S				
Flowering selected NVT trials	Days after/before Mace <sup>(b)</sup>				
2016 (av sowing date 8 May)	+2				
2017 (av sowing date 24 May)	+2				
2018 (av sowing date 28 May)	+0				
Average	+1				
Agronomic traits					
Coleoptile length (cm)	6.4				
Crown rot yield loss	High (>20%)				
Black point	MS				
Falling number index	3				
Maturity	Short-mid				
Variety information					
Pedigree	Machete/W84-129*504				
Breeder/seed licensee	InterGrain				
Access to seed	Free to trade				
EPR (\$/t, exc. GST)	\$1.92				

<sup>p</sup> = provisional assessment.

CATAPULT<sup>(b)</sup>

AH

## Comments

Catapult<sup>(b)</sup> is a mid-long maturing AH variety released by AGT in 2019. Catapult<sup>(b)</sup> was included in the NVT for the first time in 2018, yielding higher than alternatives such as Cutlass<sup>(b)</sup>, LRPB Trojan<sup>(b)</sup> and Magenta<sup>(b)</sup>, but lower than Scepter<sup>(b)</sup> in the main season trials. In the 2018 early season NVT trials Catapult<sup>(b)</sup> was the highest yielding variety, highlighting its suitability for plantings towards the end of April. Catapult<sup>(b)</sup> is susceptible to leaf rust and powdery mildew.

Yield (% of Mace <sup>(b)</sup> )	2014	2015	2016	2017	2018
Agzone 1	-	-	-	-	96
Agzone 2	-	-	-	-	100
Agzone 3	-	-	-	-	97
Agzone 4	-	-	-	-	97
Agzone 5	-	-	-	-	101
Agzone 6	-	-	-	-	103
Disease resistance	Adult rating				
Nodorum blotch	-				
S. tritici blotch	-				
Yellow spot	MRMS <sup>p</sup>				
Stem rust	MR <sup>p</sup>				
Stripe rust	RMR <sup>p</sup>				
Leaf rust	Sp				
Powdery mildew	Sp				
Flag smut	-				
Common bunt	-				
RLN ( <i>P. quasitereoides</i> )	-				
RLN ( <i>P. neglectus</i> )	-				
CCN	-				
Crown rot	-				
Flowering selected NVT trials	Days after/before Mace <sup>(b)</sup>				
2016 (av sowing date 8 May)	-				
2017 (av sowing date 24 May)	-				
2018 (av sowing date 28 May)	+8				
Agronomic traits					
Coleoptile length (cm)	-				
Crown rot yield loss	-				
Black point	-				
Falling number index	-				
Maturity	Mid-long				
Variety information					
Pedigree	Mace/Corack				
Breeder/seed licensee	AGT				
Access to seed	AGT affiliates, retailers, or seed sharing				
EPR (\$/t, exc. GST)	\$3.25				

<sup>p</sup> = provisional assessment.

WHEAT

DEVIL <sup>(b)</sup>					
AH(N)					
Comments					
Devil <sup>(b)</sup> is a short-mid maturity AH (N) that was released in 2018. Devil <sup>(b)</sup> was first included in the 2017 NVT and with two years of data its yields are very similar to Scepter <sup>(b)</sup> . Devil <sup>(b)</sup> is susceptible to very susceptible to the latest leaf rust pathotype compared with Scepter <sup>(b)</sup> as moderately susceptible to susceptible. For mid May sowings, Devil <sup>(b)</sup> is similar to Mace <sup>(b)</sup> ; however, has been observed to be faster when sown much earlier, especially in warmer conditions. It has a provisional falling number rating of 3 so is not recommended for areas prone to pre-harvest sprouting.					
Yield (% of Mace <sup>(b)</sup> )	2014	2015	2016	2017	2018
Agzone 1	-	-	-	107	105
Agzone 2	-	-	-	105	107
Agzone 3	-	-	-	112	107
Agzone 4	-	-	-	105	106
Agzone 5	-	-	-	111	107
Agzone 6	-	-	-	110	110
Disease resistance	Adult rating				
Nodorum blotch	M <sup>Sp</sup>				
S. tritici blotch	Sp				
Yellow spot	MRMS				
Stem rust	MS				
Stripe rust	MR				
Leaf rust	SVS				
Powdery mildew	Sp				
Flag smut	SVS				
Common bunt	Rp				
RLN ( <i>P. quasitereoides</i> )	-				
RLN ( <i>P. neglectus</i> )	S				
CCN	-				
Crown rot	MSSp				
Flowering	Days after/before Mace <sup>(b)</sup>				
2018 DPIRD trials	10 Apr	24 Apr	08 May	22 May	21 Jun
Mullewa	-16	-3	-6	-1	-2
Merredin	-8	-9	-3	+0	-1
Katanning	-2	-6	-1	-1	+1
Gibson	-6	-4	-1	-1	+0
Agronomic traits					
Coleoptile length (cm)	-				
Crown rot yield loss	-				
Black point	MSS				
Falling number index	3p				
Maturity	Short-mid				
Variety information					
Pedigree	IGW3110/Mace				
Breeder/seed licensee	InterGrain				
Access to seed	Free to trade				
EPR (\$/t, exc. GST)	\$3.50				

p = provisional assessment. (N) denotes the supplementary classification of APWN

EMU ROCK <sup>(b)</sup>					
AH					
Comments					
Short maturity AH wheat best suited mid to late sowings in low rainfall environments. Useful tolerance to crown rot. Large grain size. Among most susceptible varieties to nodorum blotch. Susceptible to low falling numbers after pre-harvest rain, hence not suited to areas that experience pre-harvest rainfall. Consistently lower yielding than Mace <sup>(b)</sup> and many other varieties with similar characteristics. Now likely to be superseded by the recently released short maturing AH(N) Vixen <sup>(b)</sup> .					
Yield (% of Mace <sup>(b)</sup> )	2014	2015	2016	2017	2018
Agzone 1	95	88	95	91	96
Agzone 2	94	91	96	93	92
Agzone 3	92	96	96	91	93
Agzone 4	104	95	96	92	95
Agzone 5	95	94	96	93	93
Agzone 6	87	91	96	94	93
Disease resistance	Adult rating				
Nodorum blotch	SVS				
S. tritici blotch	S				
Yellow spot	MRMS				
Stem rust	MS				
Stripe rust	MRMS				
Leaf rust	SVS				
Powdery mildew	S				
Flag smut	R				
Common bunt	S				
RLN ( <i>P. quasitereoides</i> )	MS				
RLN ( <i>P. neglectus</i> )	MSS				
CCN	S				
Crown rot	MSS				
Flowering	Days after/before Mace <sup>(b)</sup>				
2017 & 2018 DPIRD trials	11 Apr	25 Apr	8 May	24 May	20 Jun
Mullewa	-23	-17	-11	-11	-7
Merredin	-19	-17	-10	-3	-2
Katanning	na	-13	-8	-3	-1
Gibson	na	-16	-9	-8	-3
Agronomic traits					
Coleoptile length (cm)	6.5				
Crown rot yield loss	Low (<10%)				
Black point	MSS				
Falling number index	2				
Maturity	Short				
Variety information					
Pedigree	96W657-37/Kukri				
Breeder/seed licensee	InterGrain				
Access to seed	Free to trade				
EPR (\$/t, exc. GST)	\$3.50				



LRPB COBRA<sup>(b)</sup>

AH

## Comments

LRPB Cobra<sup>(b)</sup> is an AH variety with a Westonia background that has yielded well in most NVT grown on acid soils. It has performed well in high yielding environments. Cobra<sup>(b)</sup> is susceptible to low falling number after pre-harvest rain. Cobra<sup>(b)</sup> is now below the yield benchmark set by Scepter<sup>(b)</sup>, but this variety is moderately resistant to both strains of leaf rust and stem rust.

Yield (% of Mace <sup>(b)</sup> )	2014	2015	2016	2017	2018
Agzone 1	94	105	100	101	94
Agzone 2	98	100	101	92	93
Agzone 3	97	95	101	97	94
Agzone 4	97	106	97	91	93
Agzone 5	97	94	101	97	93
Agzone 6	92	99	100	99	102
Disease resistance	Adult rating				
Nodorum blotch	MRMS				
S. tritici blotch	MSS				
Yellow spot	MRMS				
Stem rust	MR				
Stripe rust	MSS				
Leaf rust	MR				
Powdery mildew	MSS				
Flag smut	MS				
Common bunt	SVS				
RLN ( <i>P. quasitereoides</i> )	MS				
RLN ( <i>P. neglectus</i> )	MSS				
CCN	MS				
Crown rot	S				
Flowering selected NVT trials	Days after/before Mace <sup>(b)</sup>				
2016 (av sowing date 8 May)	-1				
2017 (av sowing date 24 May)	+0				
2018 (av sowing date 28 May)	+0				
Average	+0				
Agronomic traits					
Coleoptile length (cm)	6.6				
Crown rot yield loss	Moderate (10-20%)				
Black point	MSS				
Falling number index	2				
Maturity	Short-mid				
Variety information					
Pedigree	Westonia/W29				
Breeder/seed licensee	LongReach Plant Breeders				
Access to seed	Free to trade				
EPR (\$/t, exc. GST)	\$3.50				

LRPB HAVOC<sup>(b)</sup>

AH(N)

## Comments

LRPB Havoc<sup>(b)</sup> is the latest Australian Hard variety to be released by LongReach. Over the past three years the variety has yielded well in comparison to Mace<sup>(b)</sup>. Havoc is slightly shorter in maturity than Mace<sup>(b)</sup>. Havoc<sup>(b)</sup> has a low falling number index rating. It is important for growers of Havoc<sup>(b)</sup> to take note of this variety's stem and leaf rust ratings. It is susceptible to both rust types but moderately resistant to stripe rust. Havoc<sup>(b)</sup> is moderately resistant to moderately susceptible to powdery mildew; however, its response may differ on rare occasions where a more virulent isolate occurs.

Yield (% of Mace <sup>(b)</sup> )	2014	2015	2016	2017	2018
Agzone 1	-	-	105	100	107
Agzone 2	-	-	100	102	102
Agzone 3	-	-	98	102	108
Agzone 4	-	-	105	97	103
Agzone 5	-	-	96	102	102
Agzone 6	-	-	95	100	106
Disease resistance	Adult rating				
Nodorum blotch	MS				
S. tritici blotch	MRMS				
Yellow spot	MRMS				
Stem rust	S				
Stripe rust	MR				
Leaf rust	S				
Powdery mildew	MRMS				
Flag smut	MS				
Common bunt	R				
RLN ( <i>P. quasitereoides</i> )	-				
RLN ( <i>P. neglectus</i> )	S				
CCN	-				
Crown rot	S				
Flowering 2017 & 2018 DPIRD trials	Days after/before Mace <sup>(b)</sup>				
	11 Apr	25 Apr	8 May	24 May	20 Jun
Mullewa	+0	-3	-2	+1	-2
Merredin	-1	-5	-4	-0	-0
Katanning	-2	-1	-2	-1	-1
Gibson	+0	-3	-0	-3	-3
Agronomic traits					
Coleoptile length (cm)	-				
Crown rot yield loss	-				
Black point	MS				
Falling number index	3				
Maturity	Short-mid				
Variety information					
Pedigree	Mace/LPB07-0980				
Breeder/Seed licensee	LongReach Plant Breeders				
Access to seed	Seed associate and grower to grower (WA)				
EPR (\$/t, exc. GST)	\$4.00				

(N) denotes the supplementary classification of APWN

WHEAT

MACE <sup>(d)</sup>					
AH(N)					
Comments					
Mace <sup>(d)</sup> is a short-mid maturity AH(N) variety with a Wyalkatchem <sup>(d)</sup> background. Previously the benchmark variety for yield in WA, it has been very popular and was widely planted. Scepter <sup>(d)</sup> has now superceded Mace <sup>(d)</sup> as the dominant variety sown in WA. Mace <sup>(d)</sup> has performed well in pre-harvest rainfall conditions due to its falling number index of 5.					
Yield (% of Scepter <sup>(d)</sup> )	2014	2015	2016	2017	2018
Agzone 1	-	90	93	93	96
Agzone 2	-	92	90	95	94
Agzone 3	-	97	91	90	95
Agzone 4	-	92	93	94	95
Agzone 5	-	95	90	90	92
Agzone 6	-	89	93	91	93
Disease resistance	Adult rating				
Nodorum blotch	MS				
S. tritici blotch	S				
Yellow spot	MRMS				
Stem rust	MRMS				
Stripe rust	RMR*				
Leaf rust	MSS				
Powdery mildew	MSS				
Flag smut	S				
Common bunt	MR				
RLN ( <i>P. quasitereoides</i> )	MRMS				
RLN ( <i>P. neglectus</i> )	MS				
CCN	MRMS				
Crown rot	S				
Flowering 2017 & 2018 DPIRD trials	Days after/before Scepter <sup>(d)</sup>				
	11 Apr	25 Apr	8 May	24 May	20 Jun
Mullewa	-3	-4	-4	-2	-1
Merredin	-5	+2	+1	-1	-1
Katanning	-2	+0	-2	-1	-3
Gibson	-1	-4	-4	-4	-2
Agronomic traits					
Coleoptile length (cm)	6.9				
Crown rot yield loss	High (>20%)				
Black point	MRMS				
Falling number index	5				
Maturity	Short-mid				
Variety information					
Pedigree	Wyalkatchem/Stylet/Wyalkatchem				
Breeder/Seed licensee	AGT				
Access to seed	AGT affiliates, retailers, or seed sharing				
EPR (\$/t, exc. GST)	\$3.00				

(N) denotes the supplementary classification of APWN

\* = Some races in eastern Australia can attack these varieties.

ROCKSTAR <sup>(d)</sup>					
AH					
Comments					
RockStar <sup>(d)</sup> is a mid-long new AH release from InterGrain. It was included in the NVT for the first time in 2018, yielding similar to Scepter <sup>(d)</sup> and higher than the mid-long alternatives such as Catapult <sup>(d)</sup> , Cutlass <sup>(d)</sup> , LRPB Trojan <sup>(d)</sup> and Magenta <sup>(d)</sup> . RockStar <sup>(d)</sup> is moderately resistant to moderately susceptible to yellow spot and powdery mildew, and susceptible to leaf rust. No early sown trial data available.					
Yield (% of Mace <sup>(d)</sup> )	2014	2015	2016	2017	2018
Agzone 1	-	-	-	-	103
Agzone 2	-	-	-	-	109
Agzone 3	-	-	-	-	107
Agzone 4	-	-	-	-	106
Agzone 5	-	-	-	-	108
Agzone 6	-	-	-	-	109
Disease resistance	Adult rating				
Nodorum blotch	-				
S. tritici blotch	-				
Yellow spot	MRMS <sub>p</sub>				
Stem rust	MR <sub>p</sub>				
Stripe rust	RMR <sub>p</sub>				
Leaf rust	S <sub>p</sub>				
Powdery mildew	MRMS <sub>p</sub>				
Flag smut	-				
Common bunt	-				
RLN ( <i>P. quasitereoides</i> )	-				
RLN ( <i>P. neglectus</i> )	-				
CCN	-				
Crown rot	-				
Flowering selected NVT trials	Days after/before Mace <sup>(d)</sup>				
2016 (av sowing date 8 May)	-				
2017 (av sowing date 24 May)	-				
2018 (av sowing date 28 May)	+5				
Agronomic traits					
Coleoptile length (cm)	-				
Crown rot yield loss	-				
Black point	-				
Falling number index	-				
Maturity	Mid-long				
Variety information					
Pedigree	IGW3119/Mace/IGW3176				
Breeder/seed licensee	Intergrain				
Access to seed	Intergrain Seed Club members or seed retailers				
EPR (\$/t, exc. GST)	\$3.50				

p = provisional assessment.

SCEPTER<sup>(D)</sup>

AH

## Comments

Scepter<sup>(D)</sup>, released in 2015, is still one of the highest yielding AH varieties (and any other classification) in the NVT over the past four years. This variety is moderately susceptible to susceptible to the latest strain of leaf rust, which is an advantage over Devil<sup>(D)</sup>, Vixen<sup>(D)</sup>, LRPB Havoc<sup>(D)</sup> and Corack<sup>(D)</sup> as they are more susceptible to the new leaf rust strain. Scepter<sup>(D)</sup> appears to have a similar pre-harvest sprouting tolerance to Mace<sup>(D)</sup>, but its powdery mildew and black point ratings are poorer than Mace<sup>(D)</sup> (which is one of its parents). Due to a consistent increase in yield, grain protein is on average lower for this variety. Additional nitrogen will benefit the yield and protein performance of this variety.

Yield (% of Mace <sup>(D)</sup> )	2014	2015	2016	2017	2018
Agzone 1	-	110	107	107	104
Agzone 2	-	109	111	105	107
Agzone 3	-	103	110	111	105
Agzone 4	-	109	108	107	105
Agzone 5	-	106	111	111	108
Agzone 6	-	112	107	110	108

Disease resistance	Adult rating
Nodorum blotch	MRMS
S. tritici blotch	S
Yellow spot	MRMS
Stem rust	MRMS
Stripe rust	MR*
Leaf rust	MSS
Powdery mildew	S
Flag smut	MSS
Common bunt	MSS
RLN ( <i>P. quasitereoides</i> )	MSp
RLN ( <i>P. neglectus</i> )	S
CCN	MRMS
Crown rot	S

Flowering 2017 & 2018 DPIRD trials	Days after/before Mace <sup>(D)</sup>				
	11 Apr	25 Apr	8 May	24 May	20 Jun
Mullewa	+3	+4	+4	+2	+1
Merredin	+5	-2	-1	+1	+1
Katanning	+2	+0	+2	+1	+3
Gibson	+1	+4	+4	+4	+2

Agronomic traits	
Coleoptile length (cm)	6.6
Crown rot yield loss	Moderate (10-20%)
Black point	MS
Falling number index	5
Maturity	Short-mid

Variety information	
Pedigree	RAC1480/2*Mace
Breeder/seed licensee	AGT
Access to seed	AGT Affiliates, retailers, or seed sharing
EPR (\$/t, exc. GST)	\$3.25

p = provisional assessment.

\* = Some races in eastern Australia can attack these varieties.

VIXEN<sup>(D)</sup>

AH

## Comments

Vixen<sup>(D)</sup> is a short maturity, AH released in 2018 by InterGrain. It has only been in the NVT for two years where the data suggests Vixen<sup>(D)</sup> is similar to Scepter<sup>(D)</sup>. However, its yields have been more variable. It is moderately resistant to moderately susceptible to stem and stripe rust but susceptible to very susceptible to the latest strain of leaf rust. A provisional falling number rating of 3 means it is not recommended for areas prone to pre-harvest sprouting.

Yield (% of Mace <sup>(D)</sup> )	2014	2015	2016	2017	2018
Agzone 1	-	-	-	96	109
Agzone 2	-	-	-	105	105
Agzone 3	-	-	-	-	106
Agzone 4	-	-	-	103	107
Agzone 5	-	-	-	111	109
Agzone 6	-	-	-	-	106

Disease resistance	Adult rating
Nodorum blotch	S
S. tritici blotch	MSS
Yellow spot	MRMS
Stem rust	MRMS
Stripe rust	MRMS
Leaf rust	SVS
Powdery mildew	S
Flag smut	SVS
Common bunt	RMR
RLN ( <i>P. quasitereoides</i> )	-
RLN ( <i>P. neglectus</i> )	MRMS
CCN	-
Crown rot	S

Flowering 2018 DPIRD trials	Days after/before Mace <sup>(D)</sup>				
	10 Apr	24 Apr	8 May	22 May	21 Jun
Mullewa	-26	-12	-9	-8	+0
Merredin	-26	-16	-13	-5	-1
Katanning	na	-7	-10	-3	-3
Gibson	na	-11	-7	-7	-4

Agronomic traits	
Coleoptile length (cm)	-
Crown rot yield loss	-
Black point	MS
Falling number index	3p
Maturity	Short

Variety information	
Pedigree	Mace/IGW3119
Breeder/seed licensee	InterGrain
Access to seed	InterGrain Seed Club members or seed retailers
EPR (\$/t, exc. GST)	\$3.50

p = Provisional assessment.

YITPI<sup>(d)</sup>

AH

## Comments

Yitpi<sup>(d)</sup> has been the Western Australian industry standard for early sowing because of its longer maturity and maintenance of falling number after pre-harvest rain. Yitpi<sup>(d)</sup> has a long coleoptile but is very susceptible to yellow spot and susceptible to stem and leaf rust. This variety has been lower yielding than several new releases in NVT in recent years.

Yield (% of Mace <sup>(b)</sup> )	2014	2015	2016	2017	2018
Agzone 1	86	100	94	105	85
Agzone 2	92	92	100	89	91
Agzone 3	95	84	103	94	87
Agzone 4	88	96	89	93	90
Agzone 5	95	81	103	91	87
Agzone 6	88	88	106	98	95
Disease resistance		Adult rating			
Nodorum blotch	MS				
S. tritici blotch	MRMS				
Yellow spot	SVS				
Stem rust	S				
Stripe rust	MRMS				
Leaf rust	S				
Powdery mildew	MRMS				
Flag smut	MR				
Common bunt	S				
RLN ( <i>P. quasitereoides</i> )	MS				
RLN ( <i>P. neglectus</i> )	MSS				
CCN	MR				
Crown rot	S				
Flowering 2017 & 2018 DPIRD trials	Days after/before Mace				
	11 Apr	25 Apr	8 May	24 May	20 Jun
Mullewa	+15	+15	+13	+11	+5
Merredin	+17	+10	+5	+5	+5
Katanning	+18	+11	+6	+6	+8
Gibson	+24	+20	+18	+9	+9
Agronomic traits					
Coleoptile length (cm)	7.8				
Crown rot yield loss	Moderate (10-20%)				
Black point	MS				
Falling number index	5				
Maturity	Mid-long				
Variety information					
Pedigree	C8MMC8HMM/Frame				
Breeder/seed licensee	Seednet				
Access to seed	Seednet				
EPR (\$/t, exc. GST)	\$1.00				

## CALINGIRI

ANW

## Comments

Calingiri has remained a popular mid-long maturing ANW. Its yields are superseded by the more recently released ANW varieties, Zen<sup>(d)</sup>, Ninja<sup>(d)</sup> and Kinsei<sup>(d)</sup>. Calingiri is susceptible to very susceptible to stripe rust and powdery mildew and susceptible to leaf rust.

Yield (% of Mace <sup>(b)</sup> )	2014	2015	2016	2017	2018
Agzone 1	86	104	94	107	87
Agzone 2	91	94	95	90	93
Agzone 3	95	86	100	94	91
Agzone 4	80	97	88	92	90
Agzone 5	92	81	97	88	85
Agzone 6	93	90	102	95	96
Disease resistance		Adult rating			
Nodorum blotch	MSS				
S. tritici blotch	MSS				
Yellow spot	MSS				
Stem rust	MSS				
Stripe rust	SVS				
Leaf rust	S				
Powdery mildew	SVS				
Flag smut	RMR				
Common bunt	MRMS				
RLN ( <i>P. quasitereoides</i> )	S				
RLN ( <i>P. neglectus</i> )	SVS				
CCN	-				
Crown rot	S				
Flowering selected NVT trials	Days after/before Mace				
2016 (av sowing date 8 May)	+7				
2017 (av sowing date 24 May)	+6				
2018 (av sowing date 28 May)	+5				
Average	+6				
Agronomic traits					
Coleoptile length (cm)	6.4				
Crown rot yield loss	Moderate (10-20%)				
Black point	MS				
Falling number index	4				
Maturity	Mid-long				
Variety information					
Pedigree	Chino/Kulin//Reeves				
Breeder/seed licensee	InterGrain				
Access to seed	Free to trade				
EPR (\$/t, exc. GST)	nil				

**KINSEI<sup>Ⓟ</sup>**

ANW

**Comments**

Kinsei<sup>Ⓟ</sup> is a mid-long noodle wheat released by InterGrain in 2018. It is well suited to early sowing opportunities and has also performed well in the NVT main season plantings. It is a notable improvement over Calingiri and Zen for early sowing. Kinsei<sup>Ⓟ</sup> has been in the NVTs for two years where it yields slightly less than Ninja<sup>Ⓟ</sup>, but out yields both Zen<sup>Ⓟ</sup> and Calingiri. Kinsei<sup>Ⓟ</sup>'s disease ratings are marginally better than Ninja<sup>Ⓟ</sup> and Zen<sup>Ⓟ</sup>.

Yield (% of Mace <sup>Ⓟ</sup> )	2014	2015	2016	2017	2018
Agzone 1	-	-	-	111	96
Agzone 2	-	-	-	98	104
Agzone 3	-	-	-	106	103
Agzone 4	-	-	-	99	100
Agzone 5	-	-	-	99	95
Agzone 6	-	-	-	104	105
Disease resistance		Adult rating			
Nodorum blotch	MRMS <sub>p</sub>				
S. tritici blotch	SVSp				
Yellow spot	MS				
Stem rust	MS				
Stripe rust	MRMS				
Leaf rust	S				
Powdery mildew	MSS				
Flag smut	RMR				
Common bunt	RMR <sub>p</sub>				
RLN ( <i>P. quasitereoides</i> )	-				
RLN ( <i>P. neglectus</i> )	S				
CCN	-				
Crown rot	MSS <sub>p</sub>				
Flowering 2017 & 2018 DPIRD trials	Days after/before Mace <sup>Ⓟ</sup>				
	11 Apr	25 Apr	8 May	24 May	20 Jun
Mullewa	+17	+12	+13	+8	+5
Merredin	+16	+12	+5	+3	+5
Katanning	+12	+6	+5	+7	+7
Gibson	+11	+13	+13	+8	+7
Agronomic traits					
Coleoptile length (cm)	-				
Crown rot yield loss	-				
Black point	MSS				
Falling number index	4				
Maturity	Mid-long				
Variety information					
Pedigree	Complex cross				
Breeder/seed licensee	InterGrain				
Access to seed	Free to trade				
EPR (\$/t, exc. GST)	\$4.00				

p = provisional assessment.

**NINJA<sup>Ⓟ</sup>**

ANW

**Comments**

Ninja<sup>Ⓟ</sup> a noodle wheat variety released by InterGrain in 2016 with a Calingiri and Wyalkatchem<sup>Ⓟ</sup> background. Ninja<sup>Ⓟ</sup> is the highest yielding ANW variety and out yielded Mace<sup>Ⓟ</sup> in the past four years, just slightly behind Scepter<sup>Ⓟ</sup>. This variety is susceptible to very susceptible to stem rust, powdery mildew and the new incursion of leaf rust. However, it has a very useful black point rating.

Yield (% of Mace <sup>Ⓟ</sup> )	2014	2015	2016	2017	2018
Agzone 1	-	111	104	108	99
Agzone 2	-	106	109	100	101
Agzone 3	-	98	108	107	100
Agzone 4	-	108	103	103	99
Agzone 5	-	100	109	107	103
Agzone 6	-	-	106	107	107
Disease resistance		Adult rating			
Nodorum blotch	MRMS				
S. tritici blotch	MSS				
Yellow spot	MRMS				
Stem rust	SVS				
Stripe rust	MS				
Leaf rust	SVS				
Powdery mildew	S				
Flag smut	MR				
Common bunt	RMR				
RLN ( <i>P. quasitereoides</i> )	-				
RLN ( <i>P. neglectus</i> )	S				
CCN	MS				
Crown rot	S				
Flowering 2017 & 2018 DPIRD trials	Days after/before Mace <sup>Ⓟ</sup>				
	11 Apr	25 Apr	8 May	24 May	20 Jun
Mullewa	+14	+8	+9	+6	+3
Merredin	+12	+4	+1	+1	+3
Katanning	+4	+1	+2	+3	+2
Gibson	na	na	na	na	na
Agronomic traits					
Coleoptile length (cm)	-				
Crown rot yield loss	-				
Black point	MRMS				
Falling number index	4				
Maturity	Mid				
Variety information					
Pedigree	Calingiri/Wyalkatchem				
Breeder/seed licensee	InterGrain				
Access to seed	Free to trade				
EPR (\$/t, exc. GST)	\$4.00				

INTRO

WHEAT

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LUPIN

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LENTIL

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**SUPREME<sup>®</sup>**

ANW

**Comments**

Supreme<sup>®</sup> is an Arrino derivative with improved yield and disease resistance. Supreme is premium quality wheat noodle and is well regarded by international customers because of this. Supreme<sup>®</sup> is a lower yielding noodle variety compared with Zen<sup>®</sup>, Ninja<sup>®</sup> and Kinsei<sup>®</sup>. A strength of this variety is its triple rust resistance package, the best rating of the noodle wheats. It has a very short plant height.

Yield (% of Mace <sup>®</sup> )	2014	2015	2016	2017	2018
Agzone 1	93	96	96	96	92
Agzone 2	95	94	98	91	91
Agzone 3	94	93	98	93	91
Agzone 4	99	99	95	91	92
Agzone 5	95	92	98	93	91
Agzone 6	-	-	98	96	96
Disease resistance	Adult rating				
Nodorum blotch	S				
S. tritici blotch	MSS				
Yellow spot	MS				
Stem rust	MRMS				
Stripe rust	MR*				
Leaf rust	RMR*				
Powdery mildew	MSS				
Flag smut	MSS				
Common bunt	SVS				
RLN ( <i>P. quasitereoides</i> )	-				
RLN ( <i>P. neglectus</i> )	MSS				
CCN	S				
Crown rot	MSS				
Flowering selected NVT trials	Days after/before Mace <sup>®</sup>				
2016 (av sowing date 8 May)	-1				
2017 (av sowing date 24 May)	+0				
2018 (av sowing date 28 May)	-3				
Average	-1				
Agronomic traits					
Coleoptile length (cm)	5.7				
Crown rot yield loss	-				
Black point	MSS				
Falling number index	4				
Maturity	Short-mid				
Variety information					
Pedigree	LoPh-Nyabing.3*Calingiri/4*VPM Arrino				
Breeder/seed licensee	InterGrain				
Access to seed	Free to trade				
EPR (\$/t, exc. GST)	\$3.85				

\* = Some races in eastern Australia can attack these varieties.

**ZEN<sup>®</sup>**

ANW

**Comments**

Zen<sup>®</sup> is a noodle variety with a Calingiri and Wyalkatchem<sup>®</sup> background. Although Zen<sup>®</sup>'s yields are generally lower than Kinsei<sup>®</sup>, they are not significantly different. Zen<sup>®</sup> is susceptible to powdery mildew, stem and leaf rust. It has a useful black point and RLN (*P. neglectus*) rating but has a poor falling number rating.

Yield (% of Mace <sup>®</sup> )	2014	2015	2016	2017	2018
Agzone 1	95	108	101	107	97
Agzone 2	96	102	98	98	102
Agzone 3	100	96	101	101	103
Agzone 4	86	102	97	97	100
Agzone 5	96	94	98	94	94
Agzone 6	-	102	102	99	101
Disease resistance	Adult rating				
Nodorum blotch	MRMS				
S. tritici blotch	S				
Yellow spot	MRMS				
Stem rust	S				
Stripe rust	MRMS				
Leaf rust	S				
Powdery mildew	S				
Flag smut	MS				
Common bunt	MR				
RLN ( <i>P. quasitereoides</i> )	-				
RLN ( <i>P. neglectus</i> )	MRMS				
CCN	S				
Crown rot	S				
Flowering 2017 & 2018 DPIRD trials	Days after/before Mace <sup>®</sup>				
	11 Apr	25 Apr	8 May	24 May	20 Jun
Mullewa	+14	+7	+10	+7	+5
Merredin	+9	+4	+2	+2	+3
Katanning	+5	+3	+2	+2	+3
Gibson	na	na	na	na	na
Agronomic traits					
Coleoptile length (cm)	6.6				
Crown rot yield loss	-				
Black point	MRMS				
Falling number index	3				
Maturity	Mid-long				
Variety information					
Pedigree	Calingiri/Wyalkatchem				
Breeder/seed licensee	InterGrain				
Access to seed	Free to trade				
EPR (\$/t, exc. GST)	\$3.85				