MALLEE, WIMMERA AND NORTH CENTRAL CEREAL NVT SUMMARY

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TAKE HOME MESSAGES

- Vixen, Ballista, Rockstar, Scepter and Sunblade CL Plus were high yielding wheat varieties in the Mallee and Wimmera in 2020 and are consistent performers over the long-term.
- RGT Planet, Rosalind, Leabrook and Fathom were consistently the highest yielding barley varieties over the last five years in the Mallee and Wimmera. Maximus CL and Commodus CL (in the Mallee) are suitable Spartacus replacements.
- In 2020 there was no consistent trend for certain maturity groups to yield better than others.
- Newer varieties are high yielding; however, no variety is consistently yielding 10% higher than another.

BACKGROUND

Choosing a wheat or barley variety to grow on farm is an ongoing process for growers and having access to variety trials such as the National Variety Trials (NVT) that highlight the new and old varieties across varying climatic and seasonal conditions can be very beneficial when making this decision.

The 2020 season saw some growers choose to grow more wheat than barley at the start of the season to mitigate possible losses due to the 80 per cent tariff imposed on Australian barley imports by China in May. This meant that in some instance's wheat was sown later than ideal due to the change from barley. Where this change did occur, it means that growers will have more wheat stubbles when planning rotations for 2021. From a gross margin point of view, in general in 2021 wheat had a higher gross income than barley largely due to prices.

Varying soil moisture levels were observed heading into sowing however combined with an adequate early break, it ensured most crops were sown into moisture for the first time in many years and all regions were off to a good start. The predicted La Nina that was to follow had many growers begin to proactively manage and organise seasonal inputs such as a fertiliser and fungicides.

Winter was dry with all regions receiving below average rainfall during June and July. Late rains in spring helped many wheat crops across the Mallee and North Central region but it came too late for a lot of barley to have substantial benefit. It was a welcome relief for many growers across the Wimmera and this helped the region reach average grain yields. Softer finishing conditions meant achieving quality was challenging with wheat generally low in protein across many areas with high yields. There were some exceptions to this with high proteins reached in the West Wimmera. Many barley crops achieved malt grade however the premium for malt was insignificant this season meaning yield was the key driver to barley profitability in 2020.

AIM

To summarise the long-term performance (MET analysis) of wheat and barley varieties in the Mallee, Wimmera and North Central GRDC funded NVT trials between 2016 and 2020.

METHOD

This research was conducted through the National Variety Trial (NVT) program delivered by the Grains Research and Development Corporation (GRDC). The NVT program involves a series of replicated field trials that test varieties across many crop types. The data displayed is an output of NVT Long Term Multi Environmental Trial (MET) analysis which incorporates similar trials across the regions and five-year long-term data to produce long term yield predictions.

Table 1. Sowing dates of 2020 wheat and barley NVT trials for Mallee, Wimmera and North Central regions.

Location	Sowing date	Location	Sowing date
Barley		**Wheat**	
Mallee			
Curyo (Birchip) Manangatang Murrayville Rainbow Ultima Walpeup	14 May 12 May 11 May 22 May 11 May 11 May	Balranald Curyo (Birchip) Hopetoun Manangatang Merrinee Quambatook Ultima Walpeup	12 May 14 May 13 May 12 May 12 May 13 May 11 May 11 May
Wimmera			
Brim Horsham Kaniva	8 May 11 May 15 May	Brim Horsham Minyip	8 May 12 May 21 April
North Central			
Charlton	19 May	Charlton Diggora	19 May 19 May

RESULTS AND INTERPRETATION

WHEAT

Mallee

Overall site averages of 3.4t/ha were recorded across the Mallee, ranging from an average of 4.6t/ha at Hopetoun on a lupin stubble, Balranald 2.3t/ha on a vetch stubble, through to Birchip in the Southern Mallee which yielded 5.4t/ha on average on a fallow paddock (Figure 1).

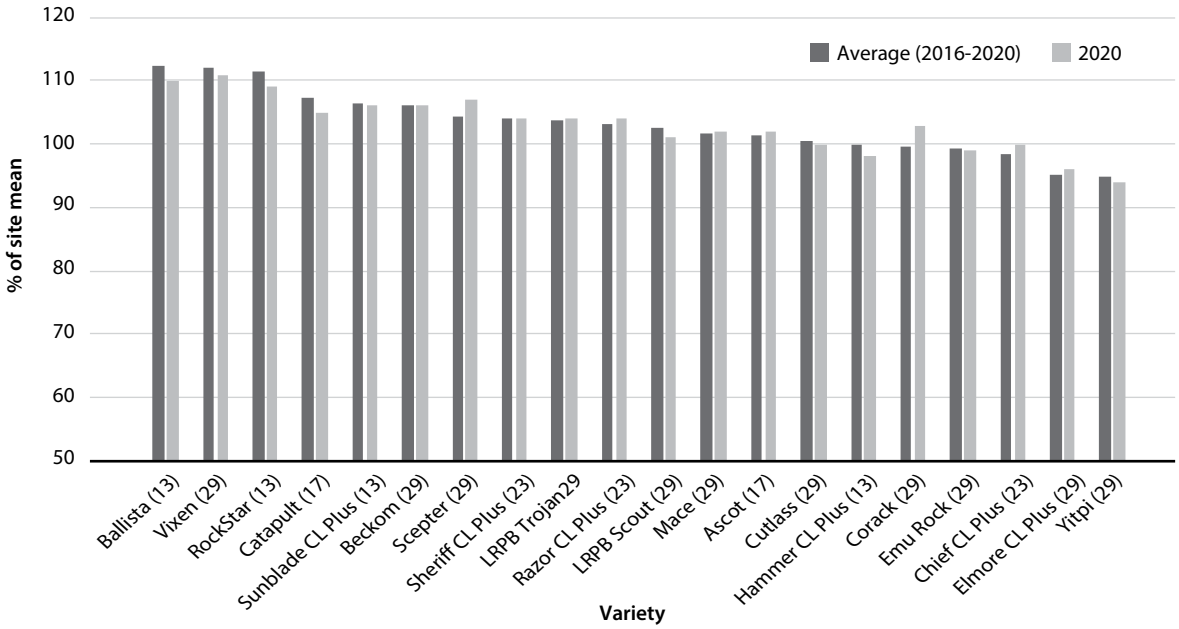

Figure 1. Mallee wheat NVT average yields as a percentage of site mean 2016-2020. The yield results are NVT multi environmental trial (MET) data. The number in brackets denotes the number of trials the variety has been in since 2016.

Wimmera

The Wimmera region had average yields of 3.8t/ha across all trials, ranging from 5t/ha at Kaniva through to Horsham which yielded 3.9t/ha and Minyip which had a mean yield of 3.5t/ha (Figure 2).

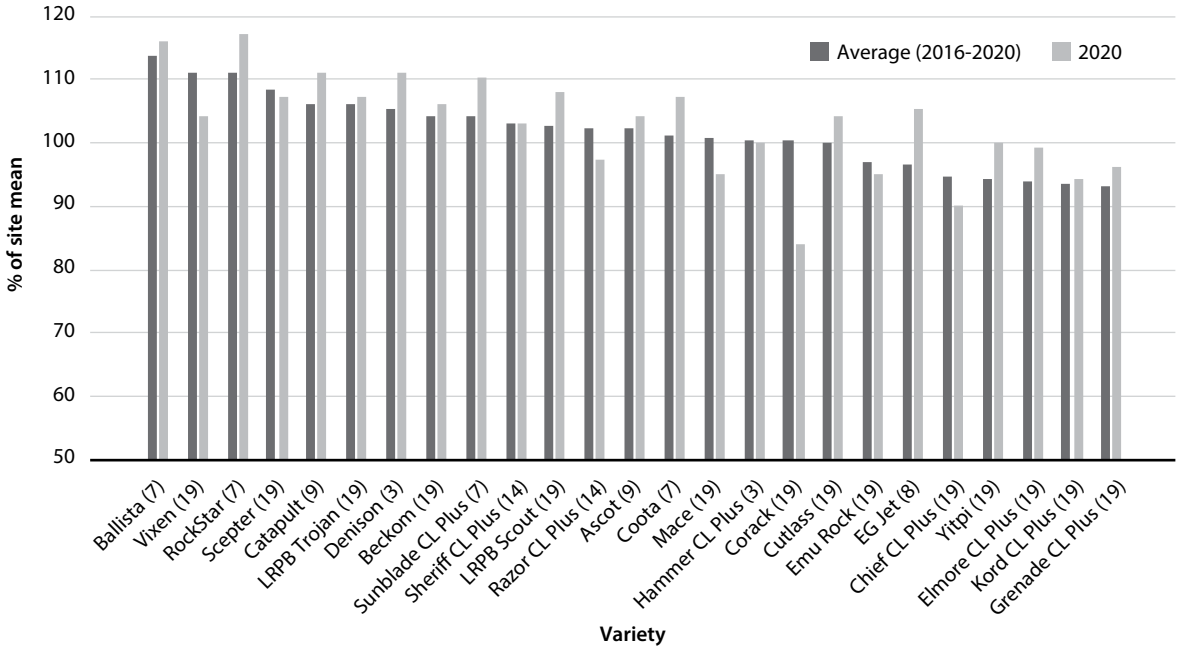

Figure 2. Wimmera wheat NVT average yields as a percentage of site mean 2016-2020. The yield results are NVT multi environmental trial (MET) data. The number in brackets denotes the number of trials the variety has been in since 2016.

North Central

The North Central region included trials at Charlton and Diggora. Yields in this region ranged from 3.9t/ha at Charlton to 4.9t/ha at Diggora (Figure 3).

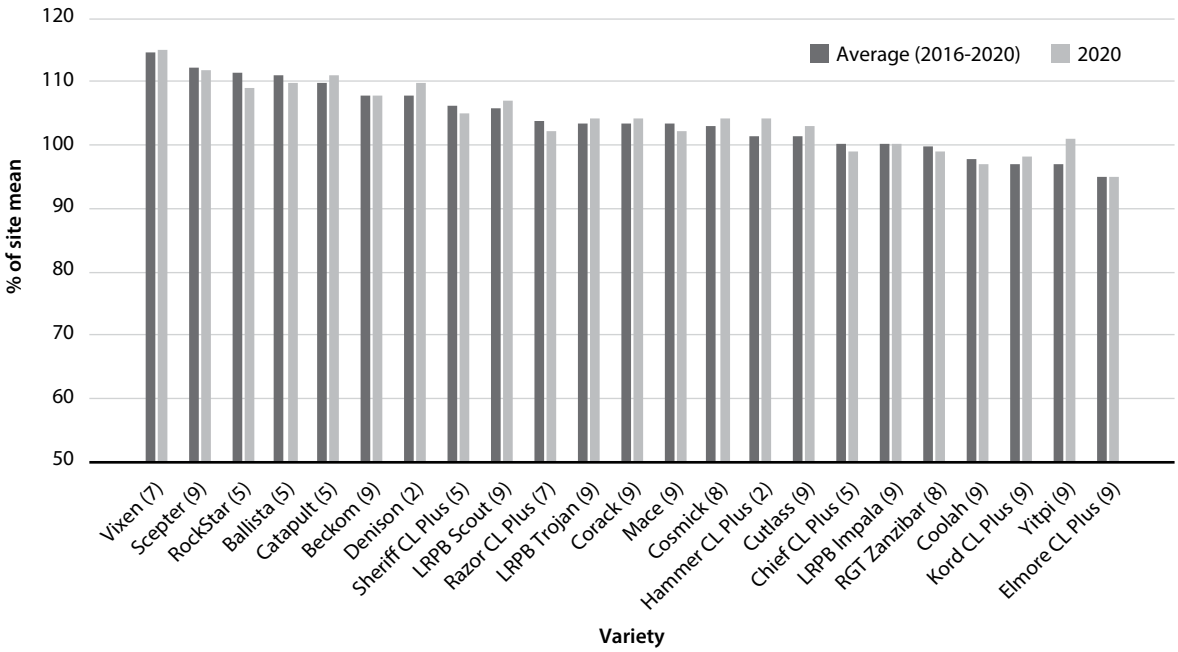

Figure 3. North Central wheat NVT average yields as a percentage of site mean 2016-2020 (note no yield data for 2018). The yield results are NVT multi environmental trial (MET) data. The number in brackets denotes the number of trials the variety has been in since 2016.

Wheat varieties that have consistently performed well across the regions include Vixen, Scepter, Rockstar, Catapult and Ballista.

Vixen is a quick maturing wheat with Mace parentage and slightly quicker in maturity, it would be suited to sowing mid-May. It was the first variety to flower at the Birchip NVT site, on 22 September. In many years this would potentially put Vixen at a higher risk of frost damage however, 2020 was a mild year for frosts in the Mallee and the Birchip site wasn't affected by frost during September, also the sowing time of mid-May could have been beneficial for Vixen.

Rockstar is a mid-slow maturing variety similar to Mace, has now been in NVT trials for two years, and has shown consistency.

Ballista has AH quality and is a quick maturing variety, released in 2020 and has good CCN resistance to suit tight cereal rotations.

Sunblade CL Plus, Razor CL Plus and Hammer CL Plus are the highest yielding Clearfield varieties over the long term. Razor CL Plus is a consistent performer with ASW quality, however if wanting an AH quality variety, it is worthwhile considering Sunblade CL Plus or Hammer CL Plus which have AH quality characteristics. Sunblade CL Plus is a mid-maturing variety with the potential to express higher screenings in sharp finishes on heavier soils. Hammer CL Plus is closely related to Mace and is suitable for tight cereal rotation it has good CCN resistance.

A mix of maturities did well this season with no clear yield advantage in maturity group yielding higher than another when averaged out across the regions.

Barley

The mean yield across all the Mallee sites were above average (3.6t/ha) in 2020. The Southern Mallee site, Birchip, had the highest yielding site with an average of 5.6t/ achieved off a chemical fallow in 2019. The lowest yielding site average was recorded at the furthest north west site located at Murrayville (2.5t/ha) on a canola stubble.

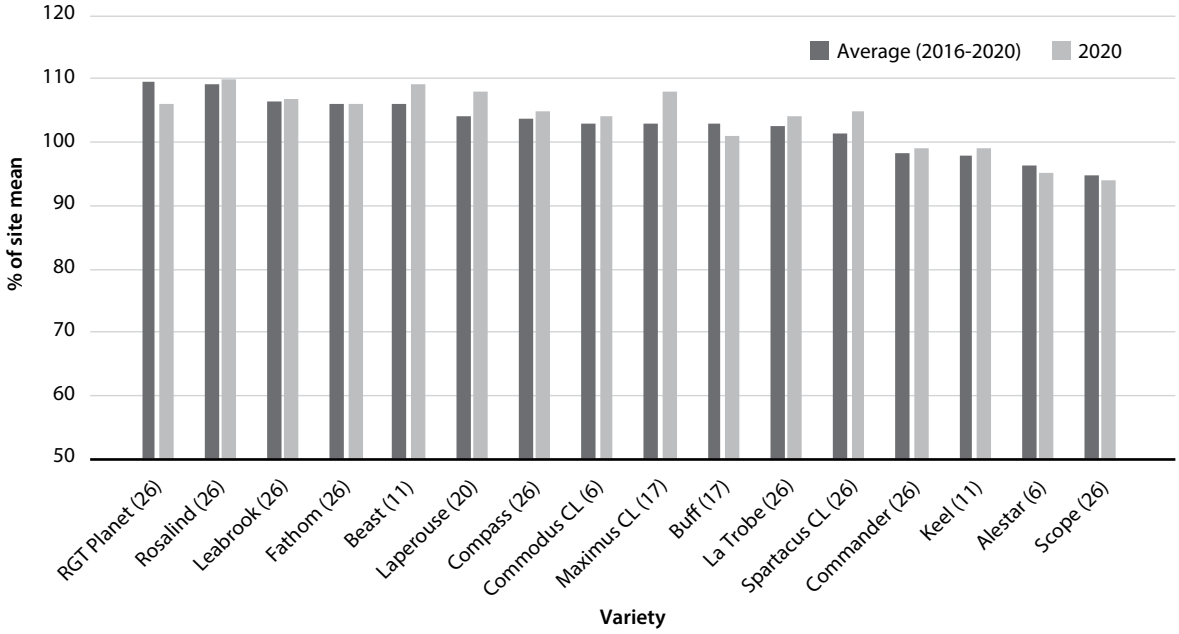

Figure 4. Mallee barley NVT average yield as a percentage of site mean 2016-2020. The yield results are NVT multi environmental trial (MET) data. The number in brackets denotes the number of trials the variety has been in since 2016.

The average barley yield in the Wimmera in 2020 was 4.7t/ha. Yields ranged from an average of 3t/ha at the Brim site and 6.3t/ha at Horsham.

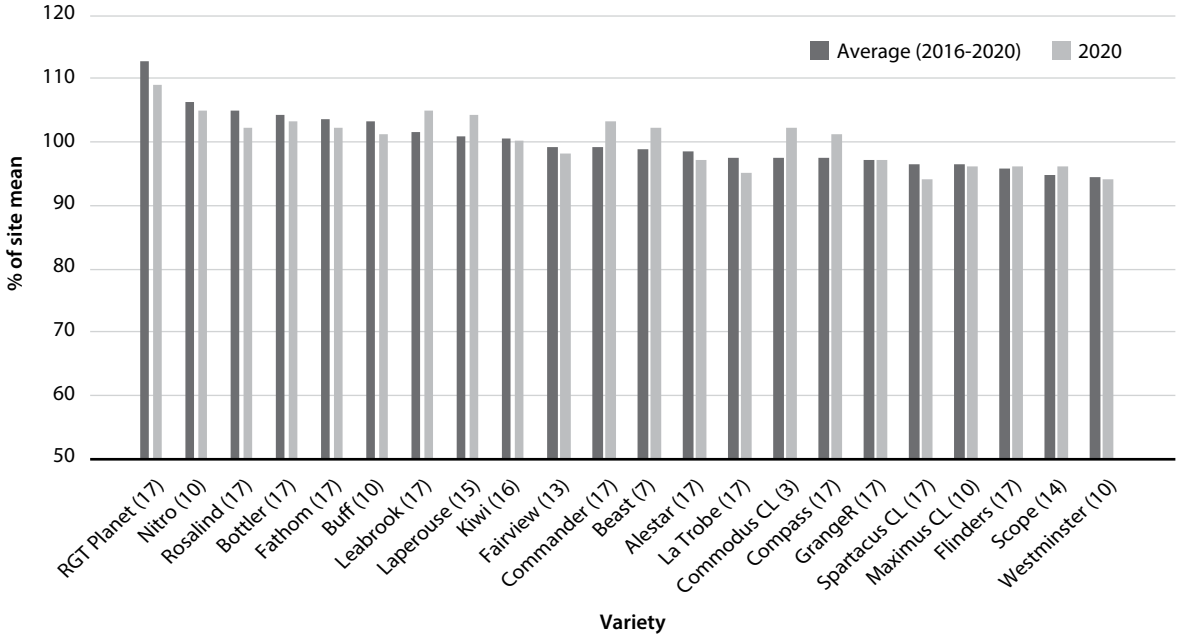

Figure 5. Wimmera barley NVT average yield as a percentage of site mean 2016-2020. The yield results are NVT multi environmental trial (MET) data. The number in brackets denotes the number of trials the variety has been in since 2016.

In the north central region, there was only one trial this season which was located at Charlton and averaged 4.4t/ha yield. This site was on a vetch hay stubble and received some wind just prior to harvest causing head loss in susceptible varieties including Compass and Commodus CL.

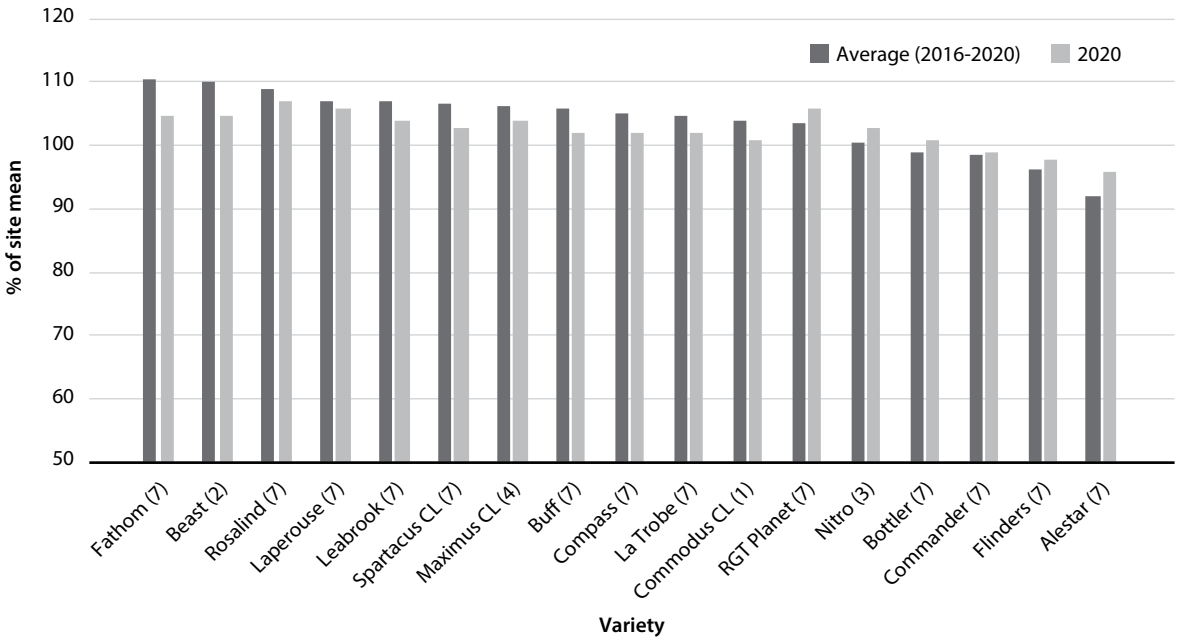

Figure 6. North Central barley NVT average yield as a percentage of site mean 2016-2020. The yield results are NVT multi environmental trial (MET) data. The number in brackets denotes the number of trials the variety has been in since 2016.

Barley varieties that consistently perform across these regions include RGT Planet, Rosalind and Fathom with RGT Planet performing extremely well in the Wimmera. Compass is common variety grown but sits amongst the middle of the pack in terms of yields in NVTs.

New varieties have potential to become replacements for these varieties and are performing well across the NVTs. Beast, which was released in spring of 2020, has a similar plant type and grain size to Compass and is slightly quicker maturing. It is targeted at low rainfall environments. Laperouse was also released in 2020 and its phenology could suit earlier sowing times than other spring varieties. It is a quick variety comparable to Commander, with head loss resistance as a quality characteristic and is suited to medium to high rainfall areas. Leabrook, another 2020 release, is a variety similar to Compass with early-mid maturity suited to medium to low rainfall areas. Beast, Laperouse are Leabrook are all currently undergoing malt accreditation.

Focusing on the Clearfield herbicide tolerance varieties, Spartacus CL is the variety most commonly grown. New varieties that may be suitable replacements for Spartacus CL include Maximus CL and Commodus CL. Maximus CL is a very quick maturing variety that has an overall improved disease package than Spartacus CL and Commodus CL is ideally suited to lighter soils and medium to low rainfall environments. Commodus CL is agronomically similar to Compass so risks similar lodging susceptibility as Compass. However, like Compass, Commodus CL has good early vigour and is suited to those areas where greater competition against weeds is warranted. Maximus CL and Commodus CL are both undergoing malt accreditation.

COMMERCIAL PRACTICE AND ON-FARM PROFITABILITY

While this summary focusses on yield results (MET analysis), choosing a variety should not be based exclusively off yield performance. It is important to remember what challenges are present in the system that a variety needs to overcome and combine the knowledge of the genetic potential of varieties from NVT with your own knowledge of the management required in your farming system. One important management consideration is matching variety maturity length to sowing date where possible. Some further options to consider include disease resistance, tolerance to herbicides, threshing ability and resistance to lodging and shattering.
Changing varieties is not the only way to increase yield. Factors such as agronomic management; summer weed control and in-season nitrogen inputs will all play a part in the outcome of a new variety.

When making the decision to change a variety it is important to consider the return on investment that could be achieved by changing varieties. Often a 10 per cent yield gain is warranted to justify the effort of changing varieties and the costs associated with this. New varieties are generally half to one percent better than previous varieties so in five years' time a variety has the potential to be five percent better.

Scepter is the most commonly grown variety across the three regions, and it is difficult to say if any of the newer varieties could replace it as the main wheat variety just yet. No variety has yielded 10% greater than Scepter. However as previously discussed there are other benefits associated with the new varieties that may see them having a fit for individual farming systems or specific problem paddocks.

Choosing wheat varieties with Clearfield herbicide tolerance may have a yield penalty, however there is great upside to be gained if the varieties are being grown to solve a specific weed problem. Prioritise these varieties in situations where they will have the most benefit for the paddock and subsequent rotations.

Current market differentials between malt and feed barley price make it hard to justify trying to achieve malt barley. The price premium is not there now for producing malt barley. The economics around growing a high yielding feed variety can sometimes be higher than a malt variety due to the extra yield which can be achieved.

Australian Crop Breeders LTD (ACB) has developed new guidelines for cereal maturity classifications in 2020. The classifications now range from very quick (VQ) to very slow (VS). These classifications have been developed to provide a consistent approach to describing wheat maturity across the industry and will be used by breeders, research and extension groups and the rest of the industry moving into the future.

REFERENCES

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ACKNOWLEDGEMENTS

This research was funded by GRDC as part of the National Variety Trials project (BWD00029).
This summary has been funded by BCG members through their membership.