Anapurna
Variety snapshot

- Dual purpose winter wheat, suitable for grazing and grain production
- Awned, red grained, feed quality wheat
- Delivers very high grain yields in long season environments
- Slow winter maturity, similar to RGT Accroc
- Good level of septoria tritici blotch resistance
- Excellent stripe rust resistance
- Maintains high grain yields in the absence of foliar fungicides
- Excellent lodging resistance in high yield potential environments
Breeder’s comments
Along with breeding improved long season wheat varieties in Australia, our winter wheat breeding programme at Wagga Wagga works to identify international germplasm that may be adapted to Australian wheat growing environments.

Emerging from a variety exchange with European breeding co-operative and AGT shareholder Limagrain, and through collaboration with the Hyper Yielding project run by the Foundation for Arable Research (FAR), we have identified the European variety Anapurna which excels in very long season, high rainfall environments of Australia.

The performance of Anapurna in the Hyper Yielding trials could not be ignored, and we are very proud to offer Anapurna to growers in high rainfall areas, helping to deliver on our commitment to provide quality varieties to all cropping zones of Australia.

Anapurna is an awned, dual purpose winter wheat variety with similar maturity to RGT Accroc and is largely suited to high rainfall environments throughout the mainland of southern Australia and Tasmania.

Anapurna has a long vegetative growth phase similar to RGT Accroc and SQP Revenue, providing a longer safe grazing period compared with mid-winter varieties like EGA Wedgetail and Illabo that reach stem elongation earlier. Its strong vernalisation requirement means Anapurna can be safely planted in early April.

Anapurna also has a useful disease package with good levels of septoria tritici blotch resistance, resulting in high yields being maintained in the absence of foliar fungicide application, despite the growing impact of this disease.

Furthermore, the compact canopy of Anapurna provides good standability with reduced susceptibility to lodging.

While Anapurna offers many potential benefits to high rainfall croppers, growers should be aware that Anapurna is a red grained wheat that can only be delivered into feed markets.

Seed availability
Commercial quantities of Anapurna may be available through AGT Affiliates, or your local retailer. Please consult the AGT website for AGT Affiliate contact details. Anapurna is able to be traded between growers upon the completion of a License Agreement as part of AGT’s Seed Sharing™ initiative.

EPR
Anapurna growers will be subject to a Growers License Agreement that acknowledges that an EPR of $3.20/tonne + GST has to be paid on all production other than seed saved for planting. Payment of EPR’s on this variety by growers will allow us to continue to develop even better varieties of this type into the future.
Maturity & sowing window
Data collected from FAR’s Hyper Yielding trials at Millicent during the 2019 growing season showed Anapurna had a very similar phenology to RGT Accroc, with both varieties reaching start of stem elongation (GS30) and mid flowering (GS65) at the same time (Figure 1).

Figure 1  Date of stem elongation (GS30) and mid flowering (GS65) of Anapurna
Observations from AGT trials conducted in south eastern Australia support the Hyper Yielding trial finding, with Anapurna heading around the same time as RGT Accroc, and approximately 12 days later than Illabo® (Figure 2). In addition, 2019 observations taken from Lake Bolac in Victoria, showed Anapurna reached first node around a fortnight later than quicker ‘mid-winter’ maturing varieties like Illabo® and EGA Wedgetail® (data not shown). A delay in the appearance of the first node provides a longer period of vegetative growth and grazing opportunities. Grazing dual purpose crops post first node is not recommended, potentially damaging the juvenile head and compromising subsequent grain yield.

**Figure 2**  Head emergence (GS55) of Anapurna compared with other winter wheats

Source AGT 2019 long season trials, average of 3 sites (Collingullie NSW, Lake Bolac Victoria and Roseworthy SA)
Grain yield
Anapurna has consistently ranked amongst the highest yielding wheat varieties in FAR’s Hyper Yielding trials over the past three seasons. Although Anapurna has been tested in the long season NVT trial series, we believe that the FAR Hyper Yielding trial project better replicates the situations that Anapurna should be used in. A combination of a long vegetative growth phase combined with more rapid reproductive growth by comparison with varieties like SQP Revenue® and Manning® has resulted in excellent adaptation to higher rainfall environments, both on the mainland and in Tasmania (Figures 3 & 4).

Figure 3  Grain yield of Anapurna versus comparators – Hagley, Tasmania
Figure 4  Grain yield of Anapurna versus comparators – Millicent, SA

Source FAR Australia, Hyper Yielding project
A key attribute identified through the Hyper Yielding project is the ability of Anapurna to maintain high yields in the absence of foliar fungicides (Figure 5). The yield for Anapurna was class-leading and considerably higher than more disease susceptible varieties like DS Bennett. This attribute may be useful for growers in high rainfall areas where crops are often exposed to high disease pressure and optimal timing of fungicide application is difficult due to wet paddocks.

**Figure 5  Yield of Anapurna compared with other winter wheat varieties in the absence of fungicide – Hagley, Tasmania**
Dry matter yield
At Collingullie during the 2019 growing season, Anapurna accumulated more dry matter before reaching first node compared with some of the quicker maturing ‘mid-winter’ types, like EGA Wedgetail® (Figure 6).

Figure 6  Dry matter production of Anapurna versus comparators

Source AGT grazing trials, Collingullie NSW, 2019. Measurements taken at GS30
Lodging
Anapurna has a relatively compact plant canopy, and this may contribute to reduced lodging (Figure 7).

Figure 7  Lodging of Anapurna versus comparators.
$0 = \text{no lodging}, \ 5 = \text{entire canopy lying on the ground}$

Source  FAR Australia Hyper Yielding trial at Hagley, Tasmania, 2017
Disease resistance
Provisional ratings suggest Anapurna has excellent levels of stripe rust resistance and useful levels of resistance to both yellow leaf spot and septoria *tritici* blotch. Stem rust is Anapurna’s main foliar disease weakness, and should be monitored for infection when environmental conditions are conducive.

Table 1  Disease resistance ratings and physical attributes of Anapurna versus comparators

<table>
<thead>
<tr>
<th></th>
<th>Anapurna*</th>
<th>RGT Accroc</th>
<th>Manning*</th>
<th>DS Bennett*</th>
<th>Illabo*</th>
<th>LRPB Kittyhawk*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stem rust</td>
<td>MSS</td>
<td>MS</td>
<td>MR</td>
<td>MRMS</td>
<td>MRMS</td>
<td>MRMS</td>
</tr>
<tr>
<td>Stripe rust</td>
<td>R</td>
<td>R</td>
<td>RMR</td>
<td>S</td>
<td>MR*</td>
<td>RMR</td>
</tr>
<tr>
<td>Leaf rust</td>
<td>MS</td>
<td>SVS</td>
<td>MSS</td>
<td>SVS</td>
<td>S</td>
<td>MS</td>
</tr>
<tr>
<td>Yellow leaf spot</td>
<td>MRMS</td>
<td>MR</td>
<td>MR</td>
<td>MRMS</td>
<td>MS</td>
<td>MRMS</td>
</tr>
<tr>
<td>Septoria <em>tritici</em> blotch</td>
<td>MRMS</td>
<td>MRMS</td>
<td>MRMS</td>
<td>MSS</td>
<td>MSS</td>
<td>MRMS</td>
</tr>
<tr>
<td>Grain colour</td>
<td>Red</td>
<td>Red</td>
<td>White</td>
<td>White</td>
<td>White</td>
<td>White</td>
</tr>
<tr>
<td>Head type</td>
<td>Awned</td>
<td>Awned</td>
<td>Awnless</td>
<td>Awnless</td>
<td>Awned</td>
<td>Awned</td>
</tr>
<tr>
<td>Quality classification – Southern Zone</td>
<td>Feed</td>
<td>Feed</td>
<td>Feed</td>
<td>ASW</td>
<td>AH</td>
<td>AH</td>
</tr>
<tr>
<td>Quality classification – South Eastern Zone</td>
<td>Feed</td>
<td>Feed</td>
<td>Feed</td>
<td>ASW</td>
<td>APH</td>
<td>APH</td>
</tr>
</tbody>
</table>

R  Resistant  T  Tolerant
MR Moderately Resistant  MT  Moderately Tolerant
MS Moderately Susceptible  MI  Moderately Intolerant
S  Susceptible  I  Intolerant
VS Very Susceptible  VI  Very Intolerant

* Provisional ratings
Source / Agriculture Victoria
2020 Cereal Disease Guide, NVT and AGT data.

Acknowledgement
The Foundation for Arable Research (FAR) Australia has supplied much of the data presented in this fact sheet, from the Hyper Yielding Cereals Project funded through the Grains Research and Development Corporation (GRDC).
Disclaimer / The information contained in this brochure is based on knowledge and understanding at the time of writing. Growers should be aware of the need to regularly consult with their advisors on local conditions and currency of information.