National Wheat Outlook
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Disclaimer: Crop industry forecast, and outlook reports are based on data collated by researchers at The University of Queensland and should only be used as a guide when making business decisions.
Simulated shire wheat yield long-term median (OZ-Wheat MII, from 1901-2022)

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Probability of exceeding the long-term simulated median shire wheat yield (OZ- Wheat MII).

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Percentage departure of the forecast shire median yield from the long-term shire median wheat yield (OZ-Wheat MII).

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The Queensland Alliance for Agriculture and Food Innovation (QAAFI) is a research institute of The University of Queensland (UQ), supported by the Queensland Government.

### National & State Summary

<table>
<thead>
<tr>
<th>Region</th>
<th>Year</th>
<th>Month</th>
<th>Worst10</th>
<th>PredMed</th>
<th>Best10</th>
<th>Ltmed</th>
<th>Pred%</th>
<th>DFY%</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUS</td>
<td>2023</td>
<td>6</td>
<td>2.17</td>
<td>2.2</td>
<td>2.23</td>
<td>2.26</td>
<td>37%</td>
<td>-3</td>
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<tr>
<td>NSW</td>
<td>2023</td>
<td>6</td>
<td>2.62</td>
<td>2.73</td>
<td>2.81</td>
<td>2.59</td>
<td>61%</td>
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<td>QLD</td>
<td>2023</td>
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<td>1.77</td>
<td>1.85</td>
<td>1.96</td>
<td>1.95</td>
<td>43%</td>
<td>-5</td>
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<tr>
<td>SA</td>
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<td>2.34</td>
<td>2.41</td>
<td>2.47</td>
<td>2.55</td>
<td>29%</td>
<td>-5</td>
</tr>
<tr>
<td>VIC</td>
<td>2023</td>
<td>6</td>
<td>2.26</td>
<td>2.37</td>
<td>2.47</td>
<td>2.53</td>
<td>38%</td>
<td>-6</td>
</tr>
<tr>
<td>WA</td>
<td>2023</td>
<td>6</td>
<td>1.89</td>
<td>1.92</td>
<td>1.95</td>
<td>2.02</td>
<td>28%</td>
<td>-5</td>
</tr>
</tbody>
</table>

- **Worst10** - forecast 10\(^{th}\) percentile
- **Best10** - forecast 90\(^{th}\) percentile
- **PredMed** - Forecast median
- **Ltmed** - Long-term median yield;
- **DFY\%** - Departure of forecast median from long-term median yield as a percentage.
- **Pred\%** - Forecast median yield ranked relative to all years (%)

The projected data are drawn from daily climate ensembles generated by ACCESS-S2 (http://www.bom.gov.au/climate/outlooks/#/rainfall/summary) and downscaled (Schepen et. al., 2020a - doi.org/10.1002/joc.6346; 2020b - doi.org/10.1016/j.agrformet.2020.107991) for every long-term climate station and crop producing shire (source: CropVision project in collaboration from Dr Andrew Schepen, CSIRO).
The first forecast driven by general circulation model (ACCESS-S2) of wheat yields across the main wheat producing shires of Australia. This project is part of the ARC LP (LP190100240) project with various national and international industry partners.

Research papers of background methods

OZ-Wheat MII: Regional scale crop simulation model developed by UQ QAAFI.

Descriptive note:

The seasonal wheat outlook is based on the integration of (i) a simple agro-climatic wheat stress index model (Oz-Wheat MII) (i.e. Bare fallow routine - Ritchie, 1972; Wheat stress index model adapted from - Fitzpatrick and Nix, 1969; Nix and Fitzpatrick, 1969), which is sensitive to water deficit or excess during the growing season, (ii) actual climate data up to the forecasting date and (iii) projected climate data after that date. These projected data are drawn from daily climate ensembles generated by ACCESS-S2 (http://www.bom.gov.au/climate/outlooks/#/rainfall/summary) and downscaled (Schepen et. al., 2020a - doi.org/10.1002/joc.6346; 2020b - doi.org/10.1016/j.agrformet.2020.107991) for every long-term climate station and crop producing shire. The Oz-Wheat model is run from 1 October the year before sowing to account for the influence of the summer fallow on starting soil moisture conditions. The model input parameters for each shire (i.e., potential available water content, planting rain & stress index period) have been selected based on the best fit when calibrated against actual shire wheat yields from the Australian Bureau of Statistics (ABS) for the period 1976 – 2000, 2005, 2010 & 2015 (MII). Cross validated spatial correlation when predicting the shire wheat yields for the 2000 season (MI) was 0.8 across all main wheat producing shires in Australia (Potgieter et. al., 2006). For the updated MII 75% of the 237 shires have R2s > 0.60.

Variability explain (R2) and lead time of forecast against observed yields at National scale from before sowing to harvest in December. Observed data is based on the last 30-years of actual Australian Bureau of Statistics (ABS) data. Predicted median yields were simulated using Oz-Wheat MII.