SEASONAL CROP OUTLOOK

Wheat – October 2021

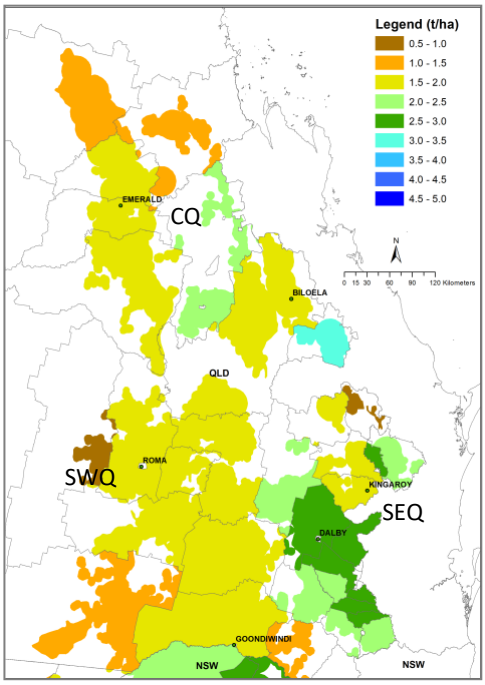
SUMMARY

With the winter cropping season nearing maturity and harvest, prospects continue to favour an above average winter season with a predicted state wheat yield of 2.29 t/ha. This is 20% above the long-term median yield expectation and falls within the top 10% of yield outcomes relative to all years. Specifically, SEQ, SWQ and CQ all have yield outcomes ranked in the top 25% of all years and yield departures of 17%, 26% and 19% above the long-term median, respectively. The range of yield predictions, at state level, has converged to a well above average winter crop season. All atmospheric and oceanic indicators of ENSO, are indicating a high chance of La Niña like conditions further developing towards December. This suggests a high liklehood of a wet finish to the winter cropping season, which might increase the risk of diseases and harvesting problems, especially for late sown crops.

GENERAL CONDITIONS

Rainfall during September was variable with some south-eastern cropping regions recording below average rainfall, while the remainder of the state's winter cropping region recorded average rainfall. Rainfall during July to September was mainly average across most of the state's cropping region. As much of the season has now passed rainfall during October has less overall effect except for a wet finish, which can affect grain quality and impede harvesting due to lodging.

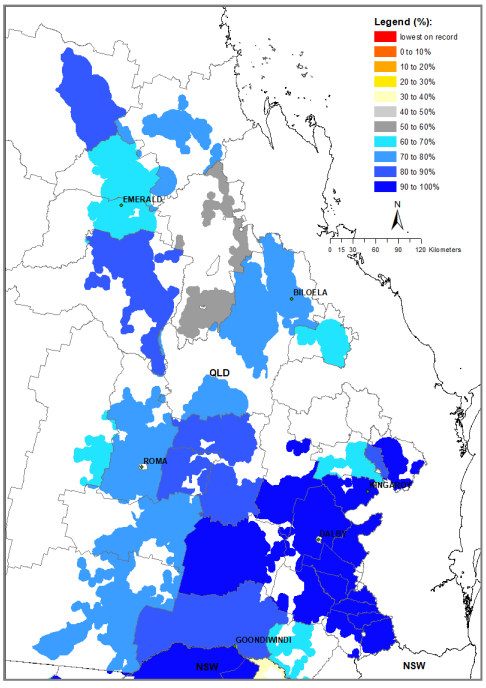
The recent pattern of the SOI, "consistently positive" at the end of September, indicates an increased chance (60% to 70%) for above average rainfall in all parts of the state's cropping region over the next 3-months (www.longpaddock.qld.gov.au). Note: This outlook is only applicable to a summer (short) fallow period.



Map 1: Simulated long-term median shire yield derived from the last 121-years with current technology.

OUTLOOK

This regional wheat crop outlook is based on the assumption of cropping after summer fallow. The benchmark for this outlook is the simulated long-term median shire wheat yield within the broad cropping region of Queensland (Map 1). The median yield is based on predicted performance over the past 121-years using an agro-climatic model for wheat with long-term rainfall records (see descriptive note for more details). The percentile and percentage departure of the forecast median for this season from the long-term median shire wheat yield are given in Maps 2 & 3. Any areas coloured in yellow to red are ranked below to very much below the long-term median, while areas coloured in green to blue are ranked above to very much above the long-term median. Areas in grey are ranked similar to the long-term median shire wheat yields relative to all years.



Map 1: Forecast median shire yield ranked relative to all years (%).

WORKING TOGETHER WITH THE QUEENSLAND GOVERNMENT

Map 2 and 3 are derived by considering conditions up to the end of September and projecting forward based on rainfall conditions in years from the historical record with SOI phase similar to this year - "consistently positive" in Aug/Sept. The calculation of benchmark yields, and outlook chances do not take into account effects of poor crop nutrition or damage due to pests, diseases, frosts, or extreme events.

Forecast yield outcomes (Map 2) vary geographically with almost the entire state's cropping region having yield outcomes expected to be well above average. Specifically, yield outcomes for almost all regions are now falling in the top 25% of all years.

Percentage departure of the forecast median yield from the long-term expectation is shown in Map 3. The spatial pattern is similar to that of the predicted percentile yields with positive deviations of between 20% to 60% for almost the entire state's winter crop region. Except for parts of SEQ where it is closer to the long-term average yield (0 to 20%). Note that this forecast only takes into account those areas that could be planted.

Poor Crop Chance

With the sowing window now closed, there are no regions with a highly increased chance of predicted wheat yield being below the bottom 10% yield of all years (data not shown). It should be noted that these values are calculated as broad indicators for shire scale. They do not apply to farm level.

State Outlook

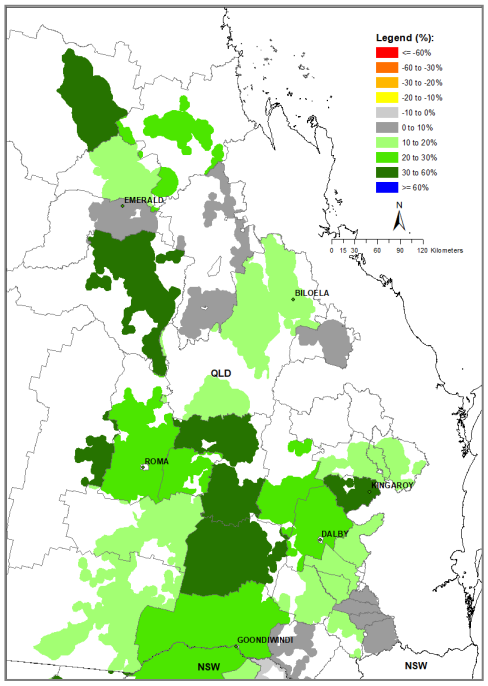
At present, the current state wheat outlook shows a final predicted yield at the end of September of 2.29 t/ha, which is 20% above the long-term median of 1.91 t/ha (Graph A). At present, the forecast indicates a well-above-average yielding crop for the entire state.

At regional level, Southwest Qld (SWQ), Southeast Qld (SEQ) and Central Qld (CQ) (see Map 1), the forecast yield (t/ha) ranges are as follows:

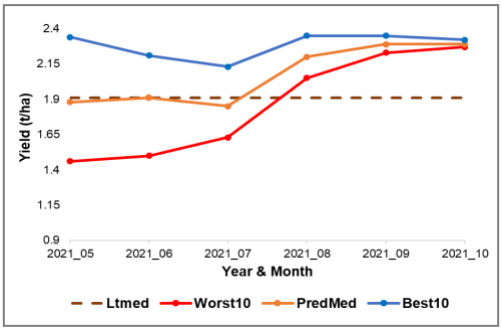
Region	Median (50%)	DFY (%)	Percentile (%)	LT-median
SWQ	2.11	+26	85th	1.67
SEQ	2.79	+17	98th	2.39
CQ	2.05	+19	78th	1.72

DFY is the percentage departure of the forecast shire median yield from the long-term shire median wheat yield. LT is the long-term. Percentiles are calculated for forecast median yield relative to all years.

All regions have forecast medians well above the long-term median expectations. Expected final predicted yields are 2.11 t/ha, 2.79 t/ha and 2.05 t/ha for SWQ, SEQ and CQ, respectively. The SOI phase of "consistently positive" at end of September reflects an increased chance (60-70%) for above average rainfall, over the next 3-months in most of southern parts of QLD.



Map 2: Percentage departure of the forecast shire median yield from the long-term shire median wheat yield.



Graph A: State level yield forecast trajectories (10th, 50th and 90th percentiles).

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 historical analogue years based on similarity to the prevailing phase of the Southern Oscillation Index (SOI) (Stone et al., 1996). The Oz-Wheat model is run from the end of the wheat crop the year before sowing in order 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 shire have $R^2 > 0.60$.