

SEASONAL CROP OUTLOOK

Wheat – October 2016

SUMMARY

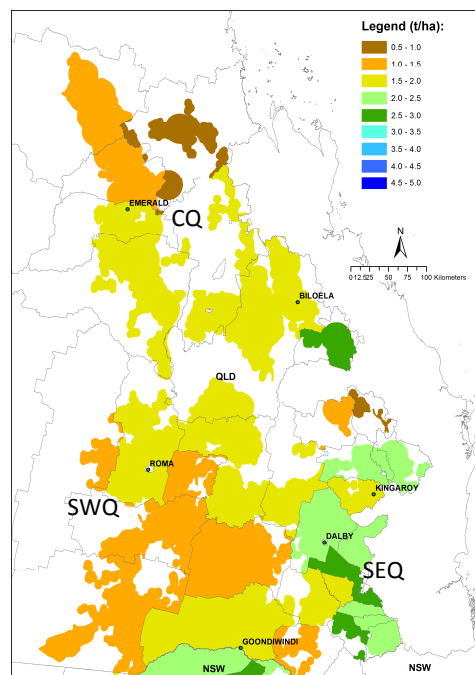
With the winter cropping season nearing an end, prospects continue to favour an above average winter season with a predicted wheat yield of 1.87 t/ha. This is 21% above the long-term median yield expectation and near to the top 20% ranking over all years. This outlook incorporates current *soil water conditions* and the *seasonal rainfall outlook* based on the southern oscillation index. However, some variation in the expected regional yield outcomes exist across the state's broad cropping region. Almost all of SEQ are showing yield outcomes ranked close to the long-term median, while most parts of SWQ and CQ are showing well above average yield outcomes falling in the top 25% of all years. This regional variation is also reflected in the deviation of final predicted yield from the long-term median. The main driver of the recent wetter conditions was the persistent and strong negative phase of the Indian Ocean Dipole (IOD) in conjunction with La Niña like conditions. Likely areas sown to winter crops are close to 42% and 65% of the total potential cropping land area available for QLD and northern NSW (North of Dubbo), respectively and will further contribute to an above average total crop production for QLD. However, a protracted wet finish to the winter cropping season, which has already occurred in many southern regions of the state, will increase the risk of diseases and harvesting problems.

GENERAL CONDITIONS

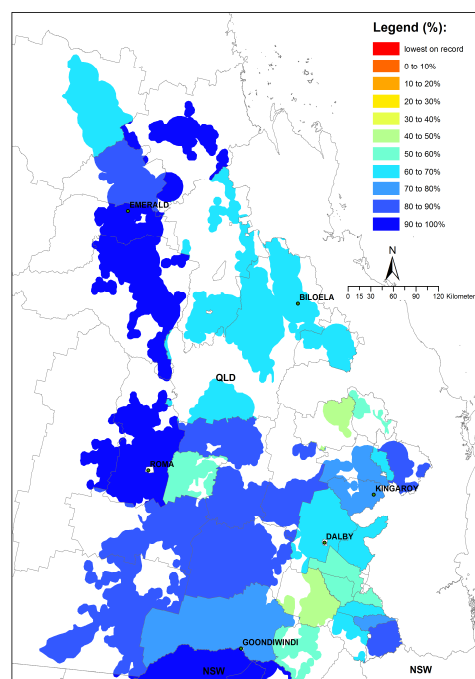
During September almost all areas of the state's cropping region recorded above to very much above average rainfall. This improved the expected yield outlook across the entire cropping region. A similar wetter than normal rainfall pattern occurred during the entire winter cropping season for QLD. Most crops in CQ have reached maturity and harvesting has commenced in most parts. Although some late plantings occurred in SEQ, crops in most areas of southern QLD are at or approaching the flowering/grain-filling stage and rainfall during this stage remains important in determining the final yield outcome. 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 changed to "rapidly rising" for the August-September period and indicates a slightly increased chance of above average rainfall in most parts of the QLD cropping region, over the next 3-months (www.longpaddock.qld.gov.au). Note: this outlook is only applicable to a summer (short) fallow period.

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 115-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 light green (yellow for Map 3) to red are expected to have crops below to very much below the long-term median yield expectation, whereas areas coloured from cyan (light green for Map 3) to dark blue are expected to be above to very much above the long-term shire wheat yield median expectation.



Map 1: Long-term median simulated shire yield using 2015 technology (115 years)



Map 2: Forecast median shire yield ranked relative to all years (%)

Map 2 & 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 - “rapidly rising” in August-September. The calculation of benchmark yields and outlook chances do not take into account effects of poor crop nutrition or damages due to pests, diseases, frosts or extreme events.

Forecast yield outcomes vary geographically with almost all of Central QLD (CQ) and SWQ cropping region falling above the 70th percentile of all years (i.e. top 30% of years). However, in some southern parts of SEQ region, rankings are similar to the long-term expected median i.e. the 40th – 60th percentile relative to all years (Map 2).

Percentage departure of the forecast median yield from the long-term expectation is shown in Map 3. The impact pattern is similar to that of the predicted percentile with strong positive effects except for SEQ, which is showing yield outcomes close to the long-term median (Map 3). Note that this forecast does not take into account those areas that could not be planted due to a lack of sowing rainfall.

POOR CROP CHANCE

At present all areas in the state’s cropping region are showing chances similar to climatology (0% to 10%) of the shire wheat yield falling in the worst 10% 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.

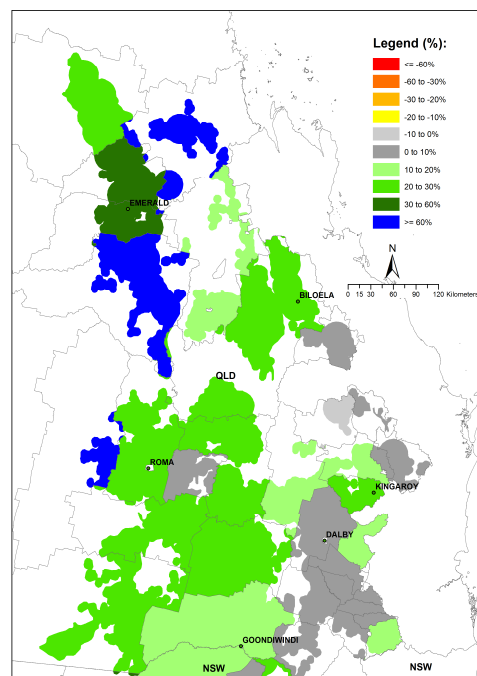
STATE OUTLOOK

Depicting an increasing yield trend during the last two months, the current state wheat outlook shows a forecast median yield at the end of September this year of 2.03 t/ha (Graph A). This is above the long-term median of 1.68 t/ha. At present, the forecast indicates an above average-yielding crop for the state as a whole. 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:

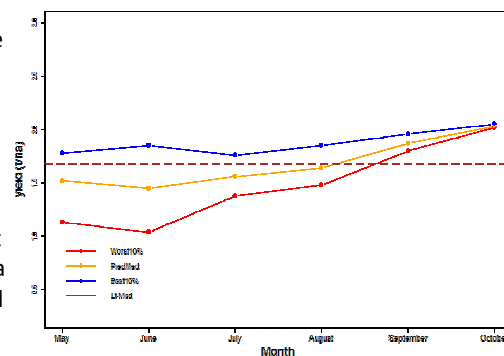
Region	Median (50%)	DFY (%)	Percentile (%)	Lt median
CQ	2.07	38	88	1.50
SEQ	2.28	7	65	2.13
SWQ	1.83	21	86	1.51

DFY is the percentage departure of the forecast shire median yield from the long-term shire median wheat yield.

Forecast medians for SWQ (1.83 t/ha) and CQ (2.07 t/ha) are well above the long-term median expectation for regional wheat yields, while the yield outcome in SEQ has increased to 2.28 t/ha, from the previous month, and is slightly greater than the long-term median for that region. The SOI phase of “rapidly rising” at end of September indicates slightly increased chance of above average rainfall over the next 3-months for most areas of QLD’s cropping region.



Map 3: 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 1 October 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 1975 – 2000, 2005 & 2010 (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 $R^2 > 0.60$.