

SEASONAL CROP OUTLOOK

Wheat – August 2018

SUMMARY

The current winter crop outlook for Queensland as a whole indicates a predicted crop yield of 1.56 t/ha, which is 16% below the long-term median yield expectation and within the lowest 20% relative to all years. This outlook incorporates current soil water conditions and the seasonal rainfall outlook based on the southern oscillation index (SOI). The crop outlook for the state as a whole remains steady below average. Specifically, all regions have yield outcomes ranked in the bottom 30% of all years, while some northern parts of SWQ and SEQ have yield outcomes ranked in the 20th to 40th percentiles. Widespread above average rainfall is needed during the next month to improve the current below average outlook. The range of yield predictions will narrow considerably over the next few months as the outlook is updated through the season, while the the Bureau's ENSO Outlook remains at El Niño WATCH status.

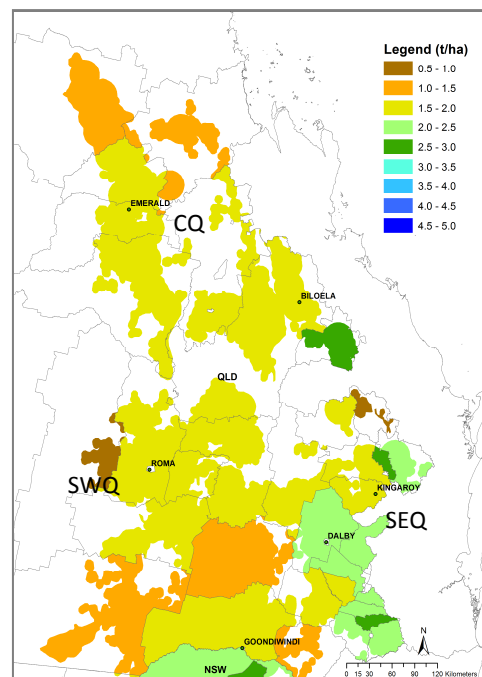
GENERAL CONDITIONS

Rainfall during July was average to below average for most parts of the state's winter cropping region. This resulted in little to no planting opportunities during the conclusion of the traditional sowing window period. Thus, prospects for total production across most of the winter cropping region remain poor. The exception is in parts of CQ where some winter crops were planted but the expected yield outcomes are below average. With the traditional planting window now closed, widespread above average rainfall is needed to improve the current crop outlook across the state's winter crop region, especially for those regions that had good subsoil moisture levels and did manage to get reasonable crop root establishment early in the cropping period.

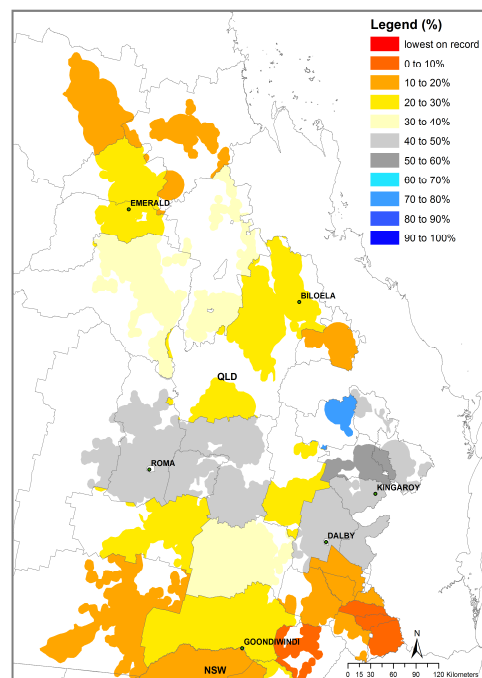
The recent pattern of the SOI, "rapidly rising" at the end of July, indicates chances are similar to climatology (50:50) or slightly increased for above average rainfall in most parts of the state's cropping region over the next 3-months (www.longpaddock.qld.gov.au). This however, will change depending on the movement in the SOI as the season progresses over the next month. SOI movements should be monitored closely as global climate models are suggestive of possible El Niño development.

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 118-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. And areas in grey are ranked similar to the long term median shire wheat yields relative to all years.



Map 1: Simulated long-term median shire yield derived from 1901 to 2017 using 2018 technology.



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

Map 2 and 3 are derived by considering conditions up to the end of July and projecting forward based on rainfall conditions in years from the historical record with SOI phase similar to this year - "rapidly rising" in June/July. 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 below average. Specifically, yield outcomes for most of CQ and SWQ are falling below the 30th percentile of all years (i.e. in the lowest yielding 30% of years). The exception is for the southern parts of SEQ that are having predicted yield outcomes falling below the bottom 20% of 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 large negative deviations less than -20% for most of CQ and SWQ. The exception is for parts of SEQ, which has predicted yield outcomes below -30% of the long-term median. Note that this forecast only takes into account those areas that could be planted.

POOR CROP CHANCE

With the sowing window now closed, most parts of the southern SEQ and northern CQ are showing significantly increased chances for wheat yield being in the bottom 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.

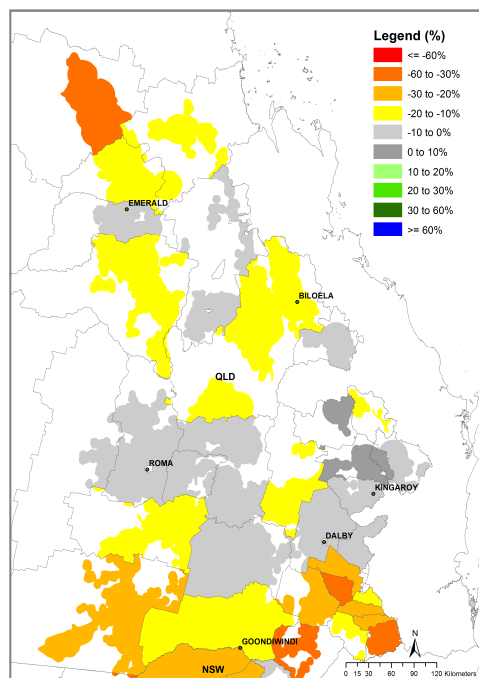
STATE OUTLOOK

At present, the current state wheat outlook shows a forecast median yield at the end of July of 1.56 t/ha, which is well below the long-term median of 1.86 t/ha (Graph A). There is however, a 10% chance that the state yield could be lower than 1.30 t/ha or higher than 1.97 t/ha. With almost 80% of the forecast distribution now falling below the long-term median expectation, the current forecast indicates a below average-yielding crop for the state as a whole. Widespread above average rainfall during the next month is needed to prevent the outlook deteriorating further at shire and regional scales.

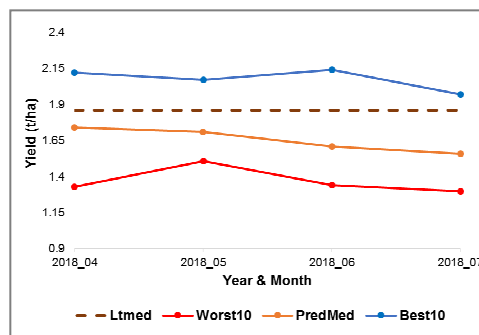
At regional level, Southwest Qld (SWQ), Southeast Qld (SEQ) and Central Qld (CQ) (see Map 1), the forecast yield (t/ha) ranges are as follows:

Region	Worst 10%	Median (50%)	Best 10%	LT-median
SWQ	1.12	1.34	1.82	1.62
SEQ	1.65	1.98	2.51	2.35
CQ	1.26	1.40	1.81	1.68

Forecast medians have reduced to below the long-term median expectations for all regions of the state. All regions have yield outcomes in the bottom 30% relative to all years. More specifically, SWQ, SEQ and CQ have forecast medians of 1.34, 1.98 and 1.40 t/ha, respectively. The SOI phase of "rapidly rising" at end of July indicates an average (50:50) to slightly increased chance for above average rainfall, over the next 3-months in most of the state's winter cropping region but movements should be monitored closely as global climate models are suggestive of possible El Niño development. Widespread rainfall is needed to prevent a deterioration in the current predicted yield outcomes across all regions.



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 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 R² > 0.60.