

SEASONAL CROP OUTLOOK

Wheat – August 2017

SUMMARY

The current winter crop outlook for the state as a whole indicates a predicted crop yield of 1.29 t/ha, which is 22% below the long-term median yield expectation of the state. This outlook incorporates current soil water conditions and the seasonal rainfall outlook based on the southern oscillation index. The average rainfall recorded during July across most of the state's cropping region brought some respite to the winter crop outlook. However, variation exists among regions. Specifically, most parts of SWQ and CQ have yield outcomes ranked in the bottom 30% of all years, while most parts of SEQ have yield outcomes ranked in the 30th to 50th percentiles. Widespread above average rainfall is needed during the next month to improve the current below average outlook.

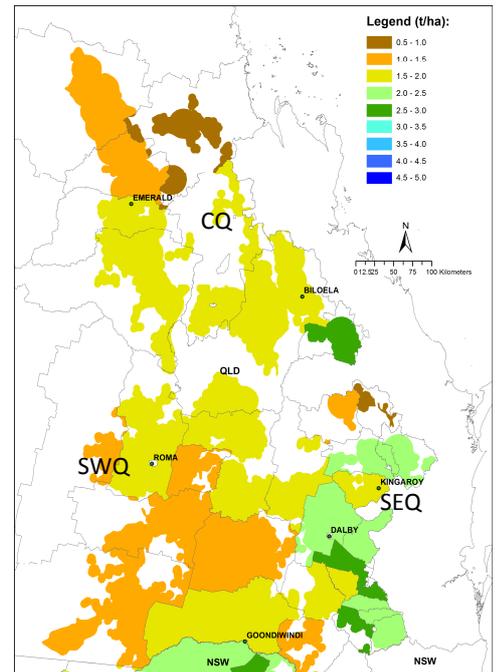
GENERAL CONDITIONS

After a protracted three month drier period, average rainfall was recorded during July for most parts of the state's winter cropping region. The exception was for parts of CQ and SWQ, which received below average rainfall during that period. While this mitigated the impact of the continued below average rainfall on crop yield, prospects across most of the winter cropping region remain poor. With the traditional planting window now closed, wide spread above average rainfall is needed to improve the current crop outlook across the state's winter crop region.

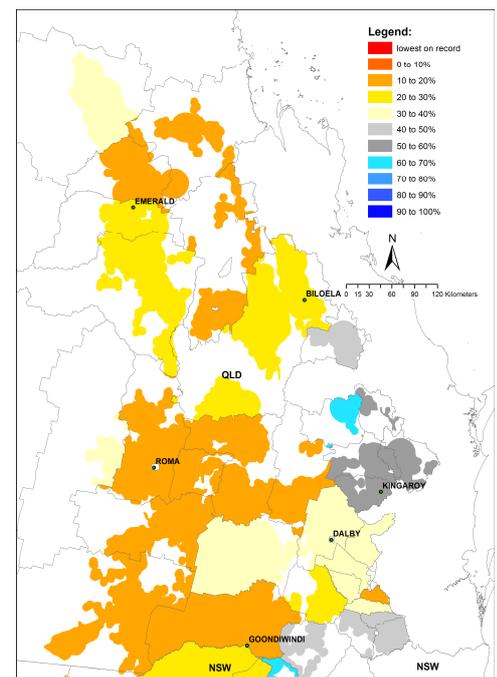
The recent pattern of the SOI, "rapidly rising" at the end of July, indicates chances are slightly increased for above average rainfall in most parts of the state's cropping region over the next 3-months (www.longpaddock.qld.gov.au). This however, will change depending on the movement in the SOI as the season progresses over the next month. Crops sown into profiles with low soil water are more dependent on in-crop rainfall, and in such situations forecasts based on SOI phases can be most useful.

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 grey to red have a reduced chance of exceeding the median yield, whereas areas coloured in dark grey to dark blue have an increased chance.



Map 2: Long-term median simulated shire yield using 2017 technology (115 years)

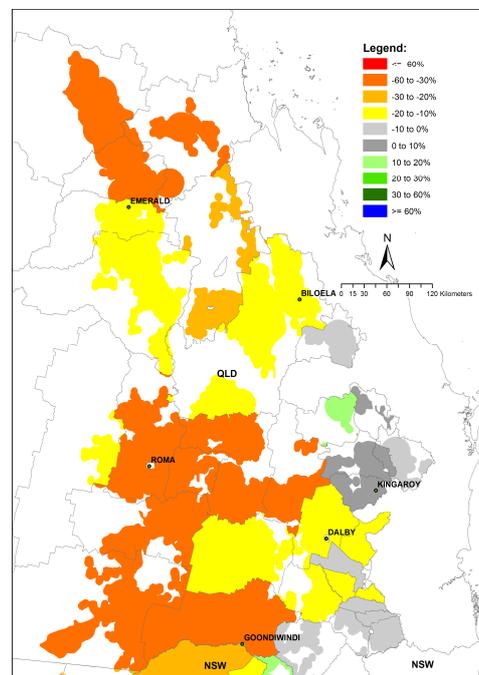


Map 21: Forecast median shire yield ranked relative to all years (%)

Maps 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 all of Central QLD (CQ) and SWQ cropping region falling below the 30th percentile of all years (i.e. in the lowest yielding 30% of years). However, in some parts of SEQ region, rankings remain closer to the median level and in the 30th – 40th 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 large negative deviations (i.e. worse than -20%) for most of CQ and SWQ. The exception is for parts of SEQ, which has predicted yield outcomes close to or below (-20% to 0%) the long-term median (Map 2). Note that this forecast does not take into account those areas that could not be planted due to a lack of sowing rainfall.



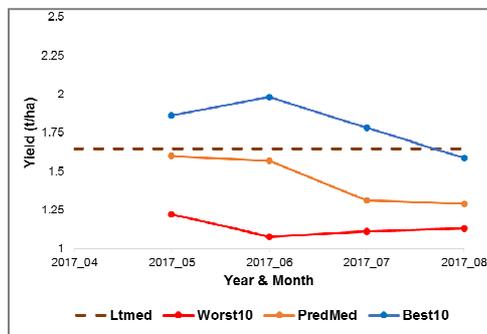
Map 3: Percentage departure of the forecast shire median yield from the long-term shire median wheat yield.

POOR CROP CHANCE

With the sowing window now closed, almost all parts of the SWQ are showing increased chances (> 20%) for wheat yield being similar to 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

The current state wheat outlook shows a forecast median yield at the end of July this year of 1.29 t/ha, which is well below the long-term median of 1.65 t/ha (Graph A). There is however, a 10% chance that the state yield could be lower than 1.13 t/ha or higher than 1.59 t/ha. With 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.



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

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	0.83	0.96	1.40	1.53
SEQ	1.55	1.85	2.31	2.13
CQ	1.18	1.18	1.19	1.52

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 0.96, 1.85 and 1.18 t/ha, respectively. The SOI phase of “rapidly rising” at end of July indicates a slightly increased chance for above average rainfall, over the next 3-months in most of the state’s winter cropping region. Widespread rainfall is needed to prevent a deterioration in the current predicted yield outcomes across all regions.

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 $R^2 > 0.60$.