

SEASONAL CROP OUTLOOK

Wheat – July 2016

SUMMARY

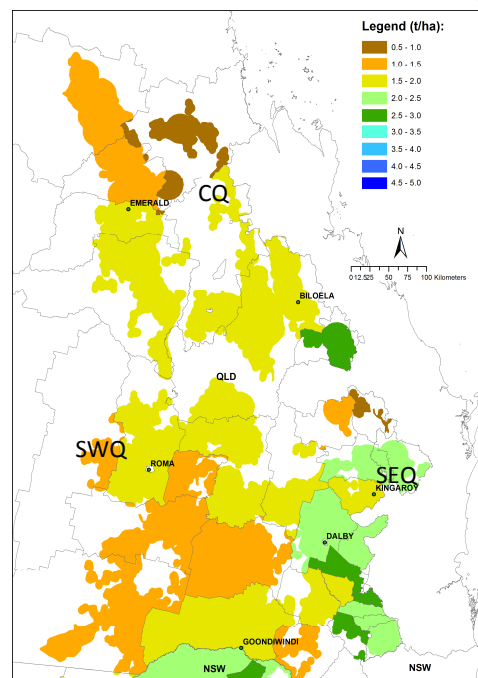
The current winter crop outlook for the state as a whole indicates a predicted crop yield (1.56 t/ha) close to the long-term median yield expectation (44th percentile ranking over all years). This outlook incorporates current *soil water conditions* and the *seasonal rainfall outlook* based on the southern oscillation index. However, large variation in the expected regional yield outcomes exist across the state's broad cropping region. Almost all of eastern SWQ and northern Darling Downs in SEQ are showing yield outcomes ranked in the bottom tercile (33%) of all years, while most parts of Far South West and Maranoa of western SWQ are showing yield outcomes ranked close to the long-term median (50th percentile). The exception is for most parts of CQ, which are showing an above average yield outcome falling in the top 25% of all years. However, widespread above average rainfall is needed during the next month to improve the current cropping season outlook, specifically in most parts of northern Darling Downs. Note that all atmospheric and ocean indicators of ENSO are currently in a "NEUTRAL" status. The range of yield predictions will narrow considerably over the next few months as the outlook is updated through the season.

GENERAL CONDITIONS

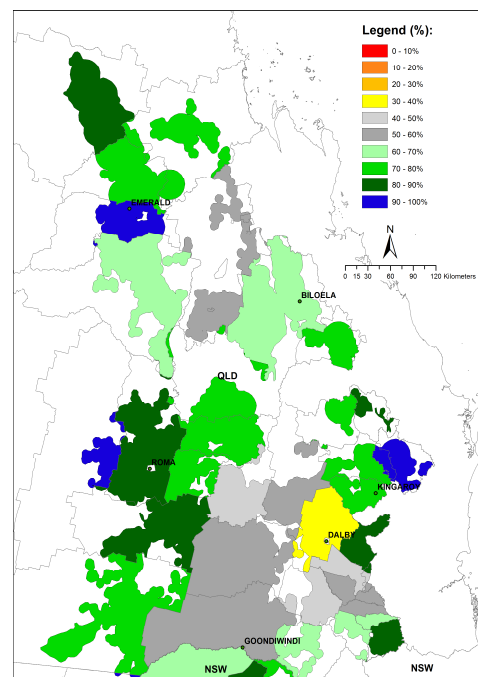
Almost all of the state's cropping region received average to above average rainfall during June. The exception was for most parts of CQ that recorded very much above average rainfall during that period. This resulted in replenishment of soil water levels across most of the state's cropping region (Map 2). Specifically, soil moisture profile levels have increased to 50% for most of SEQ (deeper soils), while parts of SWQ and CQ (shallower soils) are having soil moisture levels close to full profiles (80%). Overall, the above average rainfall that was recorded during early June has improved the current wheat prospects across most parts of the QLD cropping region. The exception is for some southern and eastern parts of the wheat cropping region where rainfall totals were not as high. This resulted in some sowing opportunities across most of the cropping region. However, rainfall received during January to June was below average for most parts of SEQ, which resulted in a poorer start to the season for that region. The recent pattern of the SOI, "consistently near zero" for the May-June period, indicates slightly reduced chances of above average rainfall in most southern parts of the QLD cropping region, over the next 3-months, respectively, (www.longpaddock.qld.gov.au). 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. Progress of the SOI should be followed closely during the next few months.

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). Forecast median shire yield ranked relative to all years (%) is shown in Map 3. Any areas coloured in yellow to red have a reduced chance of exceeding the median yield, whereas areas coloured in green to blue have an increased chance.



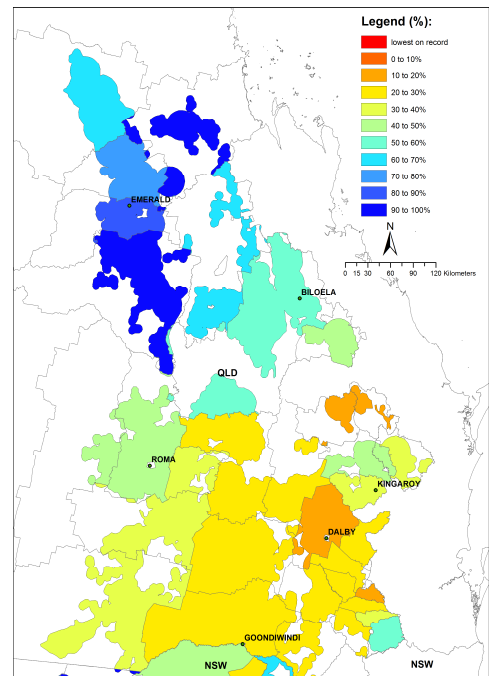
Map 1: Long-term median simulated shire yield using 2015 technology (115 years)



Map 2: Aggregated soil water recharge status (%) as at 1st July 2016. Summer fallow simulated from 1st of October the previous year.

Map 3 is derived by considering conditions up to the end of June and projecting forward based on rainfall conditions in years from the historical record with SOI phase similar to this year - “consistently near zero” in May/June. 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. This outlook is only applicable to a summer (short) fallow period. The current state wheat outlook, at this very early stage in the season, varies across most of the state’s cropping area. Forecast yield outcomes vary geographically with most of SEQ falling around the 20th to 30th percentile relative to all years. Conversely, most parts of South West are having yield outcomes ranked similar to the long-term median (40th to 60th percentile relative to all years). The exception is the CQ region where yield outcomes are ranked in the top 25th percentile or higher compared to all years. Widespread above average rainfall during the next month is needed to significantly improve the current wheat yield outlook across of the state’s cropping region, especially parts of southern QLD where late sowings are still an option.

It should be noted that at this stage of the season, there is a wide range of likely yield outcomes for the 2016 season (see State Outlook section) as all of the growing season remains in the projected forecast. The current seasonal climate forecast skill will improve towards the end of July. Updating of actual climate and thus shortening of the forecast period will cause the range of yield outcomes to narrow towards the final realised yield at the end of the season.



Map 3: Forecast median shire yield ranked relative to all years (%)

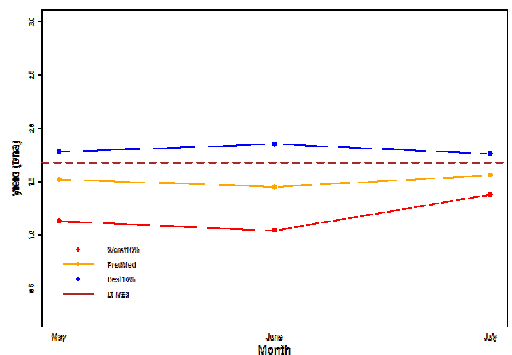
POOR CROP CHANCE

At present, this early in the growing season, the “hotspot” region is around north-western parts of SEQ, which are showing a moderately increased chances (>30%) 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 June this year of 1.56 t/ha, which is slightly below the long-term median of 1.68 t/ha (Graph A). There is however, a 10% chance that the state yield could be lower than 1.38 t/ha or higher than 1.76 t/ha. At present - this early in the season - the forecast indicates a close to average-yielding crop for the state as a whole. However, keep in mind that it is very early in the growing season and that widespread above average rainfall during the July is needed to induce good sowing conditions and improve the outlook 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	0.92	1.20	1.55	1.51
SEQ	1.43	1.67	2.03	2.13
CQ	1.92	1.95	1.99	1.50

Forecast medians for SWQ (1.20 t/ha) and SEQ (1.67 t/ha) are slightly below the long-term median expectation for regional wheat yields, while the yield outcome in CQ of 1.95 t/ha is well above the long-term median for that region. The SOI phase of “consistently near zero” at end of June indicates a slightly reduced chance of above average rainfall over the next 3-months for most areas of QLD’s cropping region. There remains, however, quite a wide range of possible outcomes, specifically in southern QLD, that will depend on conditions in the remainder of the growing season. However, given the increasing skill in forecasts as the season progresses, it is advisable to closely monitor progress of the SOI over the next month.

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 R² > 0.60.