

SEASONAL CROP OUTLOOK

Wheat – August 2016

SUMMARY

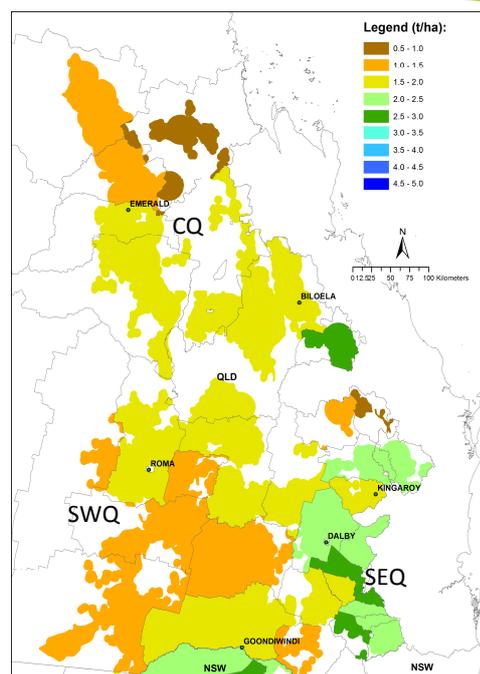
The current winter crop outlook for the state as a whole indicates a predicted crop yield (1.64 t/ha) close to the long-term median yield expectation (49th percentile ranking over all years). This outlook incorporates current *soil water conditions* and the *seasonal rainfall outlook* based on the southern oscillation index. However, large variation in the expected regional yield outcomes exist across the state's broad cropping region. Almost all of the northern and western 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). In contrast most parts of CQ are showing an above average yield outcome falling in the top 20% of all years. However, widespread above average rainfall is needed during the spring to improve the current cropping season outlook, specifically in most parts of northern and western Darling Downs. Note that all atmospheric and ocean indicators of ENSO remain in a "NEUTRAL" status at this stage. The range of yield predictions will narrow considerably over the next few months as the outlook is updated through the season. Previous years in history that had a similar SOI phase at end of July to this year included 2008, 2009 and 2014.

GENERAL CONDITIONS

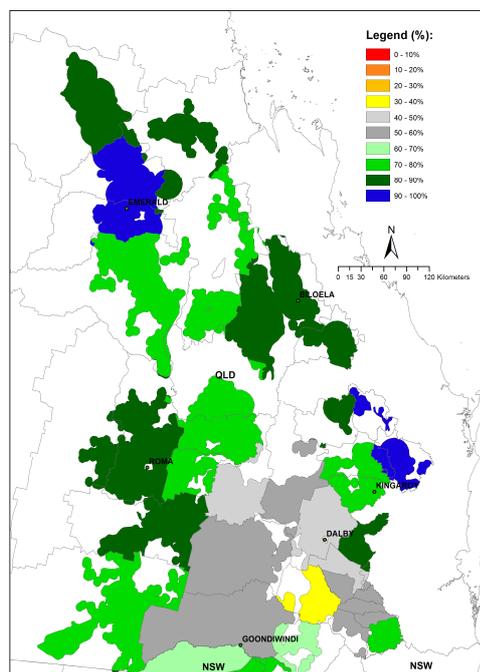
Rainfall during July resulted in a spatial dipole *footprint* with average rainfall received in the southern parts, while CQ recorded above to very much above average rainfall. Rainfall received during the previous 3 to 6 months had a similar dipole pattern across the state's cropping region. This resulted in soil moisture profile levels increasing to above 50% for most of SEQ (deeper soils), while parts of SWQ and CQ (shallower soils) now have soil moisture levels close to full profiles (>80%). Overall, the above average rainfall that was recorded during July has slightly improved the current wheat prospects across most parts of the QLD cropping region, specifically in the central Highlands areas of CQ. The recent pattern of the SOI remained "consistently near zero" for the June-July period and indicates chances close to climatology (50:50) of above average rainfall in most parts of the QLD cropping region, over the next 3-months (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. 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). Forecast median shire yield ranked relative to all years (%) is shown in Map 3. Any areas coloured in yellow to red are ranked below the long-term median yield, whereas areas coloured in green to blue are ranked above the long-term median yield expectation.



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



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

Map 3 is 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 - “consistently near zero” 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. The current state wheat outlook, at this stage in the season, varies considerably across the state’s cropping area. Forecast yield outcomes in the South West and SEQ are around the 20th to 30th percentile relative to all years while most northern parts of West and Maranoa have yield outcomes ranked similar to the long-term median (40th to 60th percentile relative to all years). In contrast, yield outcomes in the CQ region are ranked in the top 20th percentile or higher compared to all years. Widespread above average rainfall during the next month is needed to realise or significantly improve the current wheat yield outlook across of the state’s cropping region, especially in most parts of southern QLD where soil moisture profile levels are not at full capacity.

It should be noted that at this stage of the season, there is still a considerable range of likely yield outcomes for the 2016 season (see State Outlook section) as much of the growing season remains in the projected forecast. 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.

POOR CROP CHANCE

At present, at this early stage in the growing season, the “hotspot” region is around the north-western parts of the Darling Downs in 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.

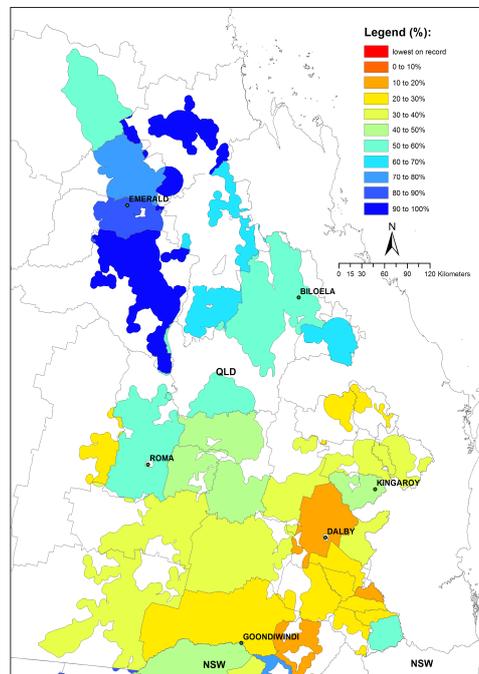
STATE OUTLOOK

The current state wheat outlook shows a forecast median yield at the end of July this year of 1.64 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 1.48 t/ha or higher than 1.85 t/ha. At present, the forecast indicates a close to average-yielding crop for the state as a whole. However, keep in mind that it is early in the growing season and that widespread above average rainfall during the spring is needed to improve the outlook across the region.

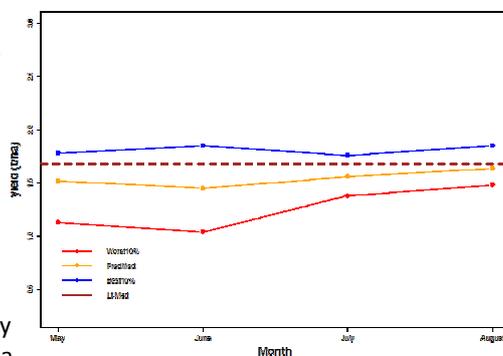
At regional level, Southwest Qld (SWQ), Southeast Qld (SEQ) and Central Qld (CQ) (see Map 1), the forecast yield (t/ha) ranges are as follows:

Region	Worst 10%	Median (50%)	Best 10%	Lt median
SWQ	1.14	1.35	1.69	1.51
SEQ	1.50	1.69	1.98	2.13
CQ	1.97	1.98	2.02	1.50

Forecast medians for SWQ (1.35 t/ha) and SEQ (1.69 t/ha) are slightly below the long-term median expectation for regional wheat yields, while the yield outcome in CQ of 2.02 t/ha is well above the long-term median for that region. The SOI phase of “consistently near zero” at end of July indicates a chance similar to average (50:50) 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 that will depend on conditions in the remainder of the growing season.



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



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 R² > 0.60.