

# SEASONAL CROP OUTLOOK

## Wheat – September 2016

### SUMMARY

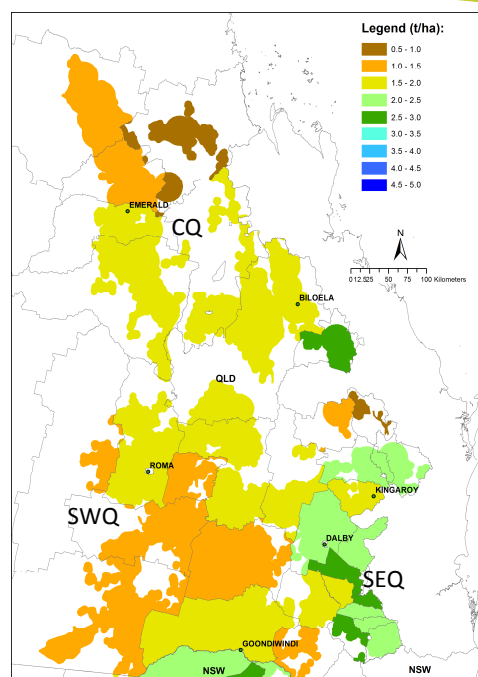
The current winter crop outlook for the state as a whole indicates a predicted crop yield of 1.87 t/ha, which is above the long-term median yield expectation and near to the top 30% ranking yields over all years. This outlook incorporates current *soil water conditions* and the *seasonal rainfall outlook* 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 South West 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. Although there is a slight chance of a weak La Niña developing later, all atmospheric and ocean indicators of ENSO remain in a "NEUTRAL" status at this stage. The range of yield predictions will narrow further over the last few months of the season. A wet finish to the winter cropping season, however, might increase the risk of diseases and harvesting problems, especially for late sown crops.

### GENERAL CONDITIONS

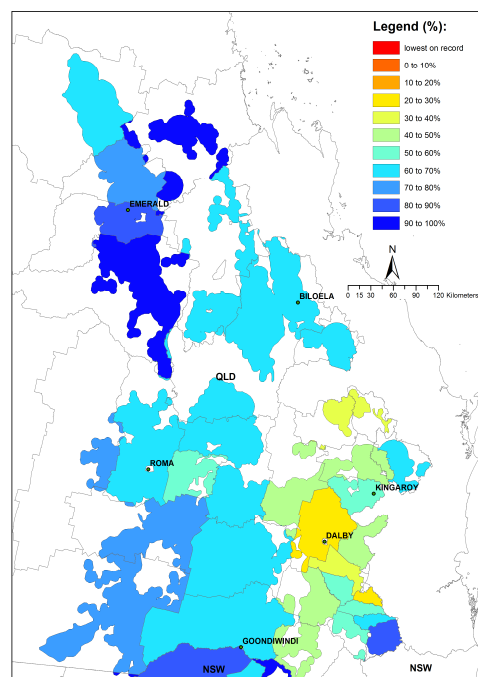
During the last six months most of southern QLD recorded average rainfall while almost all of CQ received above average rainfall. The opposite occurred during August with most of CQ recording average rainfall and southern QLD receiving above to very much above average rainfall. This has improved the crop yield outcomes across most of the state's southern cropping region. Sowings occurred during May in most areas while some late plantings occurred in June. The exception is for some parts of northern Darling Downs (Wambo shire) where soil moisture levels remained low even with some significant rainfall recorded during July and August. The recent pattern of the SOI remained "consistently near zero" for the July-August 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](http://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 yellow and red are expected to have crops below to very much below the long-term median yield expectation, whereas areas coloured from green to blue are expected to be above to very much above the long-term shire wheat yield median expectation.



Map 2: Long-term median simulated shire yield using 2015 technology (115 years)



Map 1: Forecast median shire yield ranked relative to all years (%)

Map 3 is derived by considering conditions up to the end of August and projecting forward based on rainfall conditions in years from the historical record with SOI phase similar to this year - “consistently near zero” in July-August. 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 vary geographically with almost all of Central QLD (CQ) and SWQ cropping region falling above the 70<sup>th</sup> percentile of all years (i.e. top 30% of years). However, in some parts of SEQ region, rankings remain below the median level and in the 20<sup>th</sup> – 40<sup>th</sup> percentile relative to all years (i.e. bottom 30% of 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 or below 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.

### POOR CROP CHANCE

At present, at this early stage in the growing season 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

The current state wheat outlook shows a forecast median yield at the end of August this year of 1.87 t/ha, which is above the long-term median of 1.68 t/ha (Graph A). At present, the forecast indicates a slightly above average-yielding crop for the state as a whole.

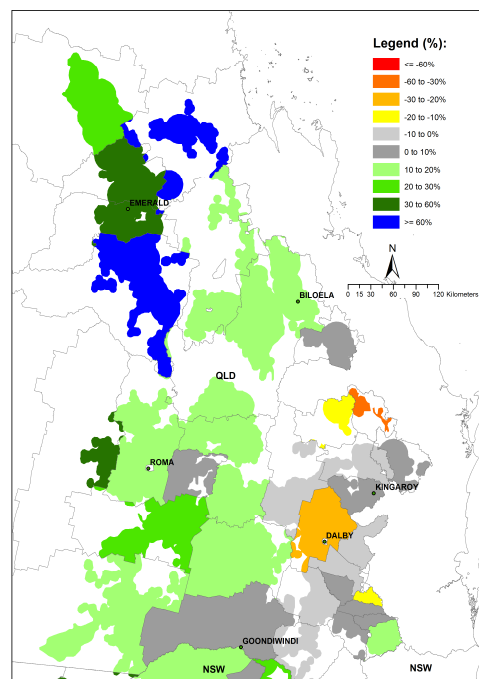
At regional level, Southwest Qld (SWQ), Southeast Qld (SEQ) and Central Qld

(CQ) (see Map 1), the forecast yield (t/ha) ranges are as follows:

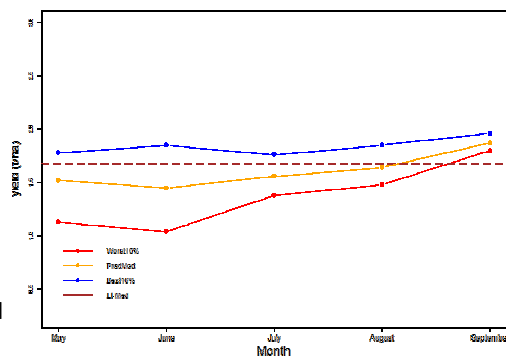
Region	Median (50%)	DFY (%)	Percentile (%)	Lt median
CQ	2.02	35	84	1.50
SEQ	1.96	-8	41	2.13
SWQ	1.71	13	74	1.51

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

Forecast medians for SWQ (1.71 t/ha) and CQ (2.02 t/ha) are well above the long-term median expectation for regional wheat yields, while the yield outcome in SEQ of 1.96 t/ha is similar to the long-term median for that region. The SOI phase of “consistently near zero” at end of August 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.



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 (10<sup>th</sup>, 50<sup>th</sup> and 90<sup>th</sup> 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 (MII) 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<sup>2</sup> > 0.60.