

# SEASONAL CROP OUTLOOK

## Sorghum – March 2018

### SUMMARY

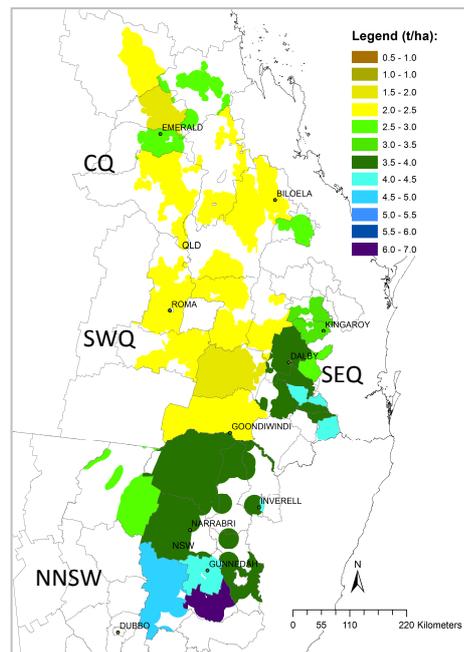
This late in the 2017/18 season, predicted average crop yield for north eastern Australia's (NEAUS) summer cropping region has converged to 2.73 t/ha, which is well below (17<sup>th</sup> percentile) the long-term median expectation. However, large variation exists across regions, with Central Queensland (CQ) having an above median forecast yield of 2.34 t/ha (73<sup>rd</sup> percentile). The SEQ, SWQ and NNSW regions have below average yield outcomes predicted with forecast median yields (and percentiles) of 2.88 t/ha (21<sup>st</sup>), 1.77 t/ha (11<sup>th</sup>) and 3.32 t/ha (16<sup>th</sup>), respectively. Note that large local variation in crop yields exists within shires. The recent above average rainfall recorded late in February in most parts of QLD summer cropping region will increase the risk of damage due to pests or diseases and cause harvesting problems. In addition, this crop outlook is based on a crop-free (fallow) practice through the winter season and therefore areas with longer fallow practices are likely to have better yield prospects for the coming season.

### GENERAL CONDITIONS

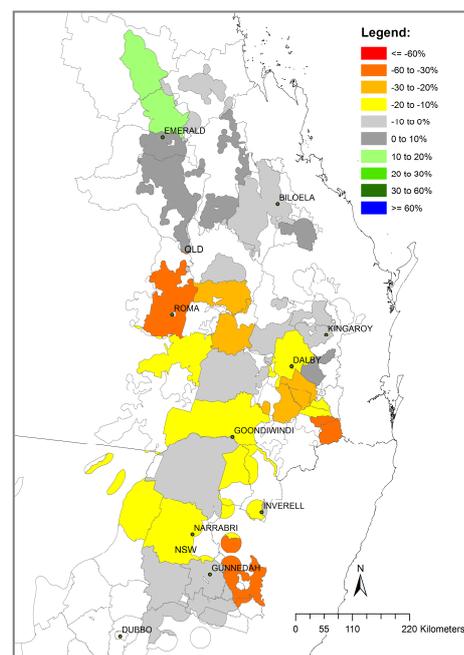
The current summer cropping season started off with an average season expected. However, rainfall was variable with few early sowing opportunities. Subsequently, grain development was effected by an extended dry period later during crop growth across most regions. Over the past three months, including February, below to very much below average rainfall was recorded across most of SWQ and NNSW. However, most parts of CQ and SEQ received well above average rainfall, with most recorded during the February. The recent pattern of the SOI i.e. "rapidly falling" for the Jan-Feb period, indicates chances similar to climatology (i.e. 50:50) of receiving above average rainfall for most of the summer grains cropping region over the next 3-months ([www.longpaddock.qld.gov.au](http://www.longpaddock.qld.gov.au)).

### OUTLOOK

This regional sorghum crop outlook is based on the assumption of cropping after winter fallow. The benchmark for this outlook is the simulated long-term median shire sorghum yield within the broad NEAUS cropping region (Map 1). The median yield is based on predicted performance over the past 115-years using an agroclimatic model for sorghum with long-term rainfall records (see descriptive note for more details). The percentage departure of the forecast median for this season from the long-term median shire sorghum yield is given in Map 2. Map 3 shows the current forecast shire median yield ranked relative to all years. Any areas coloured in light grey, yellow or red have a poor to very poor chance of having crops above the long-term median yield, whereas areas coloured in dark grey, green or blue have good to very good chances of producing higher yielding crops. Map 2 & 3 are derived by considering conditions up to date (end of February) and projecting forward based on rainfall conditions in years with SOI phase similar to this year - "rapidly falling" in the January to February period. 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 (e.g. heat waves).



Map 1: Long-term median simulated shire sorghum yield (115 years)



Map 2: Percentage departure of the current forecast median shire yield from the long-term shire median yield.

Yield outcomes vary geographically across most of the NEAUS summer cropping region. Map 2 shows that most areas in CQ have forecast yield expectations slightly above the long-term median (0 – 20%), while most of SWQ, SEQ and NNSW have forecast yields below (-20% to 0) to very much below (-60% to -20%) long-term median expectation. Finally, yield outcomes for CQ are in the top 30<sup>th</sup> percentile ranked relative to all years, while the remainder of the NEAUS regions have crop yield outcomes ranked in the bottom 30% of all years (Map 3). The slight improvement in yield prospects, especially that of late planted crops, for CQ and some parts of SEQ, is due to the very much above rainfall recorded during February across most parts of that region. Note that a wet finish will have a compounding negative impact on yield of early planted crops as well as on grain quality.

## POOR CROP CHANCE

With the growing season nearing an end, chances for this season’s sorghum crop to be similar to the worst 10% of crop yield for all years are close to the long-term expectation for almost all regions (i.e. 10%). However, the exception is for some shires in southwest QLD (SWQ), where there is an increased chance for 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 yields do not apply to farm level.

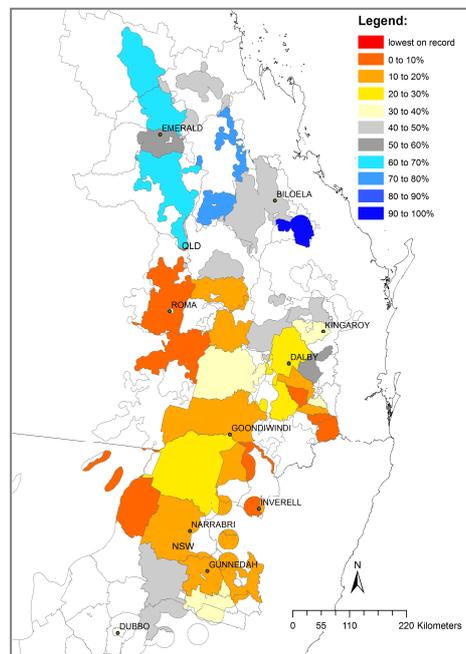
## STATE OUTLOOK

The current regional outlook shows the forecast median yield for the entire NEAUS sorghum-cropping region at the end of February as 2.73 t/ha, which is below the long-term median of 2.97 t/ha (Graph A). At present the forecast indicates an increased chance of a below median-yielding crop across most parts of the summer crop growing region with the forecast distribution converging well below the long-term median (17<sup>th</sup> percentile). However, some variation exists at local regional level. For Queensland (QLD), central Qld (CQ), southwest QLD (SWQ), southeast Qld (SEQ) and northern NSW (NNSW) regions (Map 1), the forecast yield (t/ha) ranges are:

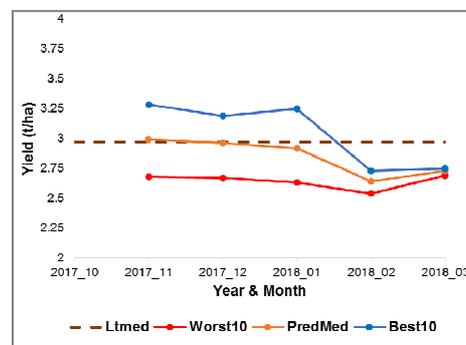
Region	Median (50%)	DFY (%)	Percentile (%)	Lt median
CQ	2.34	7	73 <sup>rd</sup>	2.19
SEQ	2.88	-16	21 <sup>st</sup>	3.43
SWQ	1.77	-17	11 <sup>th</sup>	2.12
QLD	2.25	-10	25 <sup>th</sup>	2.50
NNSW	3.32	-9	16 <sup>th</sup>	3.64

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

With most of the summer cropping season well into harvest all of southern QLD and NNSW regions have yield expectations well below the long-term regional sorghum yield expectation. However, for CQ the crop yield expectation is slightly above the long-term median. The current SOI phase (“rapidly falling”) indicates chances to receive above average rainfall are close to climatology (50:50) in most parts of NEAUS summer cropping region over the next 3-months. The range of possible outcomes has now converged across most regions and projected rainfall will have less impact on final predicted yields except for late planted crops in CQ. This report applies to likely sorghum yield in those regions where a crop was planted and is therefore not a total production estimate.



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



Graph A: NE AUS sorghum yield forecast trajectories (Ltmed: long-term median, Worst10: 10<sup>th</sup>, PredMed: 50<sup>th</sup> and Best10: 90<sup>th</sup> percentiles).

### DESCRIPTIVE NOTE:

The seasonal sorghum outlook is based on the integration of (i) a simple agro-climatic sorghum stress index model (i.e. Bare fallow routine - Ritchie, 1972; Sorghum 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 sorghum model is run from 1 April the year before harvest in order to account for the influence of the winter fallow on starting soil moisture conditions. The model shire input parameters (i.e. plant available water content, planting rain & stress index period) have been selected based on the best fit when calibrated against actual shire sorghum yields from the Australian Bureau of Statistics (ABS) census years for the period 1983 – 2000, 2006, 2011. Oz-Sorghum MII showed cross-validated correlations (r) ranging from 0.6 to 0.92 within the main sorghum producing shires of NE Australia (35 in total). These shires contributes to 96% of total average production of all sorghum producing shires. (For more detail see Potgieter et al., 2005)