

SEASONAL CROP OUTLOOK

Sorghum – February 2018

SUMMARY

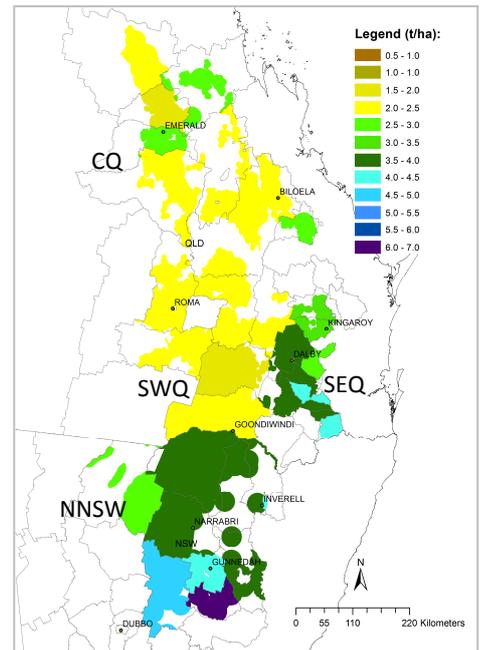
With the summer cropping season nearing completion, the chances for an above average yielding sorghum crop for the 2017/18 summer growing season in north-eastern Australia (NEAUS) have diminished for most parts of the cropping region. Although some variability exists, most regions have a below average crop expectation with predicted yield outcomes well below the long-term expectation. With the sowing window now closed, except for some parts of CQ, further rainfall will be needed during the next couple of weeks to prevent further deterioration in the current crop outlook across all areas of the NEAUS summer cropping region. This crop outlook is based on a crop-free (short fallow) practice through the winter season and therefore areas with longer fallow practices are likely to have better yield prospects.

GENERAL CONDITIONS

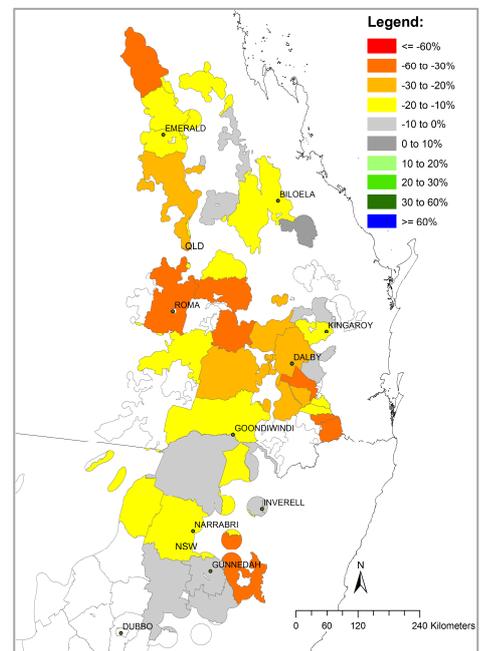
Well below average rainfall was recorded during January for most parts of the summer cropping region. This resulted in soil moisture profiles remaining low due to the lack of recharge across most of the region. In addition, most areas have experienced much warmer temperatures than normal during the past 3 months. Rainfall from August 2017 to end of January 2018 was mainly average to below average especially in parts of southern QLD and northern NSW. Any rainfall recorded in early February would most likely be too late for improving the yield of early planted crops but will improve the crop yield outcomes for those late planted areas mainly in CQ. It may also induce further very late sowings for that region. Planting ended for NNSW and southern QLD with late sowings (until middle of February) still a possibility for most parts of CQ. However, later plantings will usually result in a reduction in final crop yields. Harvesting has started on some very early planted sorghum crops in NNSW and SQ. The recent pattern of the SOI i.e. “rapidly rising” for the Dec-Jan period, indicates chances similar to climatology (i.e. 50:50) for most of the summer cropping region over the next 3-months (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 likelihood of having crops above the long-term median yield, whereas areas coloured in dark grey, green or blue have moderate to high chances of producing higher yielding crops. Map 2 & 3 are derived by considering conditions up to date (end of January) and projecting forward based on rainfall conditions in years with SOI phase similar to this year - “rapidly rising” in the December to January 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.

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Yield outcomes vary slightly across most of the NEAUS summer cropping region. Map 2 shows that for this season, most areas in CQ and NNSW are having forecast yield expectations slightly below the long-term median (-20% – 0%), while most areas in southern QLD area having forecast yield deviations well below the long-term median expectation for that region (-60% to -20%). Furthermore, while almost all yield outcomes in CQ are low and falling in the 20 to 30th percentile compared to all yields over the last 115 years, yield estimates in southern QLD and parts of NNSW are even lower, with yield outcomes in the 10th to 20th percentile range relative to all years (Map 3). *Note: Final summer crop yield is usually more affected by in-crop rainfall and temperatures (during crop growth) than by the soil moisture at sowing although it remains important in final crop yield expectations.*

POOR CROP CHANCE

With the season approaching a close, chances for this season’s sorghum crop to be similar to the worst 10% of crop yield for all years remains close to the long-term expectation for almost all regions (i.e. 10%). However, the exception is for some shires in southern QLD, where there are increased chances 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 yield and do not apply to farm level.

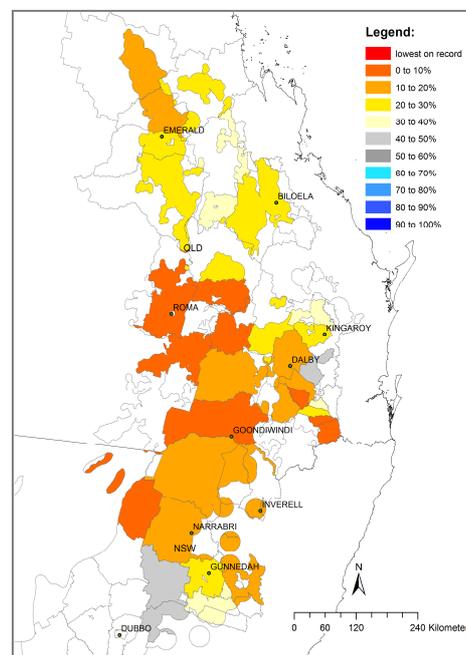
REGIONAL OUTLOOK

The current regional outlook shows the forecast median yield for the entire NEAUS’ sorghum-cropping region at the end of January as 2.64 t/ha, which is below the long-term median of 2.97 t/ha (Graph A). The outlook forecast range has narrowed considerably so that the entire distribution is now below the long-term median. At local regional level, Queensland (QLD), central Qld (CQ), southwest QLD (SWQ), southeast Qld (SEQ) and northern NSW (NNSW) (Map 1), the forecast yield (t/ha) ranges are as follows:

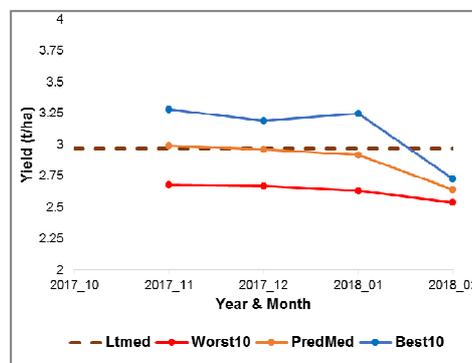
Region	Median (50%)	DFY (%)	Percentile (%)	Lt median
CQ	1.85	-16	22	2.19
SEQ	2.62	-24	11	3.43
SWQ	1.58	-25	3	2.12
QLD	1.97	-21	6	2.50
NNSW	3.34	-8	17	3.64

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

With the summer cropping season approaching harvest all of southern QLD regions have yield expectations below the long-term regional sorghum yield expectation. The exception is for CQ and NNSW having crop yield outcomes close to the long-term median expectation. The range of possible outcomes has narrowed considerably and most of the predicted yield distribution is below the long-term medians across all regions. The current SOI phase of “rapidly rising” indicates chances to receive above average rainfall are similar to climatology (50:50) in most parts of NEAUS summer cropping region over the next 3-months. Widespread average rainfall is needed over the next couple of months to ensure good crop growth conditions especially around flowering and grain filling for late planted crops. Finally, this report only discusses the likely sorghum yield if 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: NEAUS sorghum yield forecast trajectories (Ltmed: long-term median, Worst10: 10th, PredMed: 50th and Best10: 90th 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)