

SEASONAL CROP OUTLOOK

Sorghum – January 2018

SUMMARY

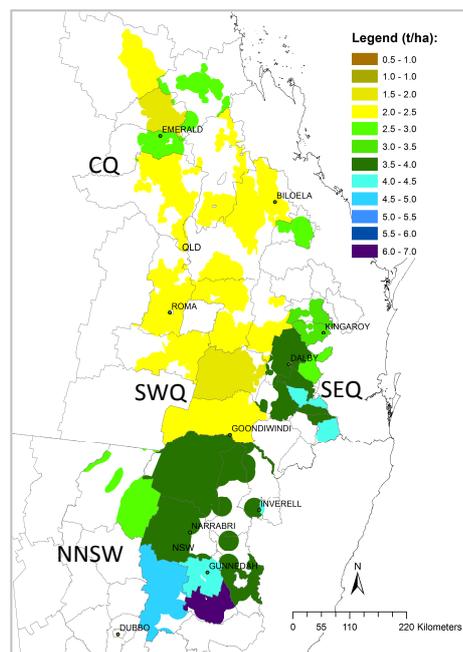
The outlook is for a close to average yielding sorghum crop for the 2017/18 summer growing season in north-eastern Australia (NEAUS). However, some variation in the outlook among local regions exists. More specifically, some areas in CQ are showing slightly above average crop yield expectations, while most areas in southern QLD and NNSW are having sorghum yield outcomes close to or below the long-term expectation. It should be noted, this is still early in the growing season and the range of likely sorghum yield outcomes remains wide. Widespread average to above average rainfall is needed, during the next couple of months to improve the current crop outlook across all areas of the north-eastern Australian (NEAUS) summer cropping region. **It should be noted**, this is still early in the growing season and the range of likely sorghum yield outcomes remains wide. 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 for the coming season.

GENERAL CONDITIONS

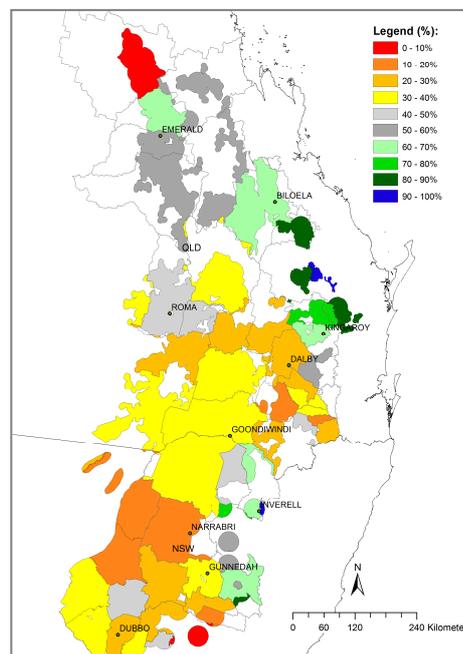
Although most parts of the summer cropping region recorded average rainfall during December it varied with some parts recording below average rainfall. Currently, estimated stored soil moisture levels (simulated through a short winter fallow using APSIM) varied across the summer cropping region (Map 2). Most areas of CQ region have soil water recharge levels close to or slightly above 50% of the total plant available soil water capacity (50% to 60%). Conversely, most areas in southern QLD and NSW have recharged to one-third (30%) and less than one-third of the available soil moisture profile levels for that region, respectively. Rainfall that occurred during October to end of December was average to above average, which resulted in most areas of southern parts of the NEAUS cropping region receiving sowing opportunities. However, there remains a need for widespread above average rainfall over the next month to induce late plantings specifically, in parts of CQ and improve the current crop outlook across the entire summer cropping region. The recent pattern of the SOI i.e. “rapidly falling” for the Nov-Dec 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 agro-climatic model for sorghum with long-term rainfall records (see descriptive note for more details). Probability of exceeding the long-term shire median yield for this year is shown in Map 3. Any areas coloured in light grey, yellow and red have a poor to very poor chance of having crops above the long-term median yield, whereas areas coloured in dark grey, green and blue have good to very good chances of producing higher yielding crops. Map 3 is derived by considering conditions up to date (end of December) and projecting forward based on rainfall conditions in years with SOI phase similar to this year - “rapidly falling” in the November to December 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: Aggregated soil water recharge status (%) as at 1st January 2018. A short winter fallow simulated from 1st of April 2017.

The current outlook is the combination of recharge of starting soil moisture profiles and the current crop outlook based on SOI phase analogue years from history similar to the phase as at the end of December 2017. This resulted in the current crop outlook for close to average chances (50:50) of exceeding the long-term median yield for most areas in QLD cropping region. More specially, most of CQ and southern NNSW are showing an increased chance of exceeding the long-term median shire yield (>60%). Conversely, most parts of SEQ, SWQ and NNSW are having close to or average or slightly reduced chances of exceeding the long-term median yield for that region. *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.*

At this early stage of the season, the range of likely yield outcomes for the 2017/2018 season (see Regional Outlook section) is still wide as much of the growing season remains in the projected forecast. Updating each month, as the season progresses, causes the range of yield outcomes to narrow towards the final realised yield at the end of the season.

POOR CROP CHANCE

At present, this early in the growing season, 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%). The exception is for some shires of SWQ, SEQ and NNSW, which are having a slightly increased chance for yield being similar to the worst 10% of all years (data not shown).

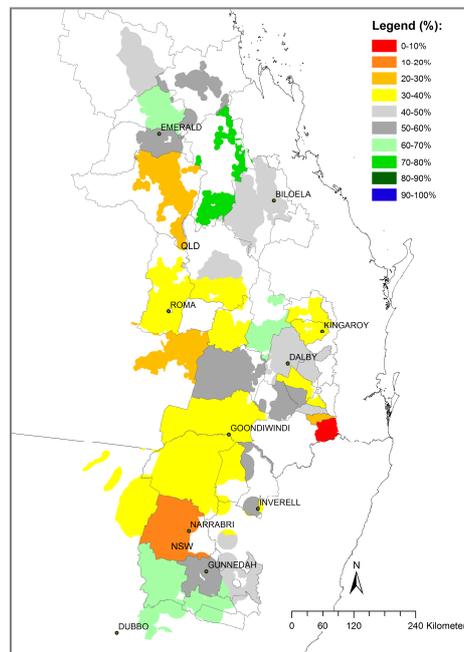
It should be noted that these values are calculated as broad indicators for shire scale yield and do not apply to farm level.

REGIONAL OUTLOOK

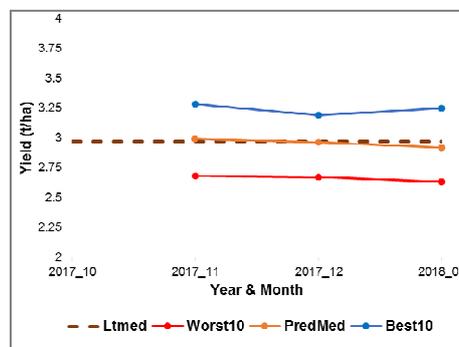
The current regional outlook shows the forecast median yield for the entire NEAUS’ sorghum-cropping region at the end of December as 2.92 t/ha, which is similar to the long-term median of 2.97 t/ha (Graph A). There is however, a 10% chance that the state yield could be lower than 2.63 t/ha, or higher than 3.25 t/ha. 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	Worst 10%	Median (50%)	Best (%)	Lt median
CQ	1.77	2.16	2.49	2.19
SEQ	2.43	3.36	3.78	3.43
SWQ	1.71	2.03	2.45	2.12
QLD	2.04	2.45	2.78	2.50
NNSW	3.22	3.59	3.92	3.64

At this early stage of the season, all regions are showing yield expectations close to the long-term regional sorghum yield expectation. However, a wide range of possible outcomes still exists, which will narrow as the season progresses and the actual climate experienced is incorporated in the analysis. The current SOI phase of “rapidly falling” indicates chances to receive above average rainfall are close to climatology (50:50) in most parts of NE AUS summer cropping region over the next 3-months.



Map 3: Probability of exceeding the long-term simulated median shire sorghum yield.



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)