

SEASONAL CROP OUTLOOK

Sorghum – December 2017

SUMMARY

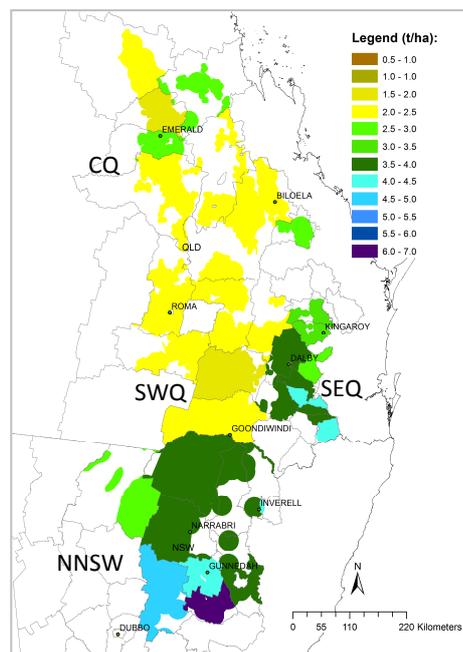
Simulated crop shire scale yield based on current soil moisture conditions up to the end of November 2017 and projected rainfall indicate an average yielding sorghum crop for the 2017/18 summer growing season. There remains, however, variation in the outlook among local regions. More specifically, most 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 induce good summer plantings and improve the current crop outlook across all areas of the north-eastern Australian (NEAUS) summer cropping region.

GENERAL CONDITIONS

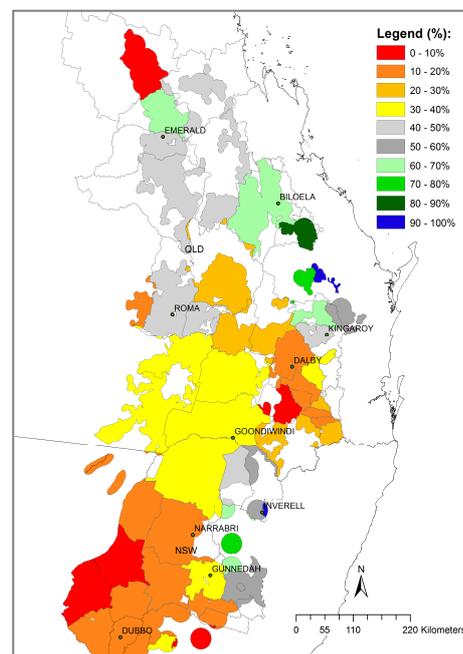
Rainfall recorded during November was average to below average across most of the NEAUS summer cropping region. However, rainfall during the last 3 months was above average for most parts of CQ and SWQ, while SEQ and NSW recorded average rainfall during that period. Currently, estimated stored soil moisture levels (simulated through winter fallow using APSIM) varied across the summer cropping region. 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 NNSW have recharged to one-third (30%) and less than one-third of the available soil moisture profile levels for that region, respectively (Map 2). Although some plantings have occurred widespread above average rainfall is needed over December to induce further planting opportunities across the entire summer cropping region. The recent pattern of the SOI remained “consistently positive” for the Oct/Nov period, indicates an increased chance of receiving above average rainfall for most of the northern and southern parts of the summer grains cropping region over the next 3-months (www.longpaddock.qld.gov.au). *Note: this outlook is only applicable to a winter fallow period.*

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 the end of November and projected forward based on rainfall conditions in years with SOI phase similar to this year i.e. “consistently positive” at the October to November 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 December 2017. A short 8-month winter fallow was simulated from 1st of April 2017 to end of October 2017.

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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 November 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 SNNSW are showing an increased chance of exceeding the long-term median shire yield (>60%). Conversely, some parts of SEQ, SWQ and NNSW are having 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.*

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 fall below the worst 10% (crop yield) of all years remains close to the long-term expectation (i.e. below the worst 10% of all years, data not shown).

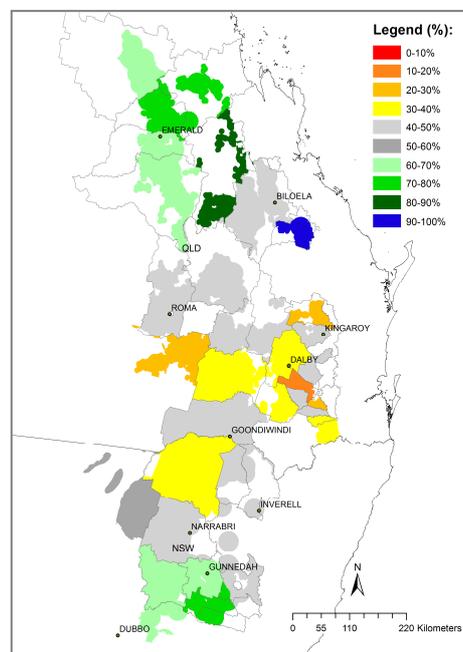
It should be noted that these values are calculated as broad indicators for shire scale. They do not apply to farm level.

STATE OUTLOOK

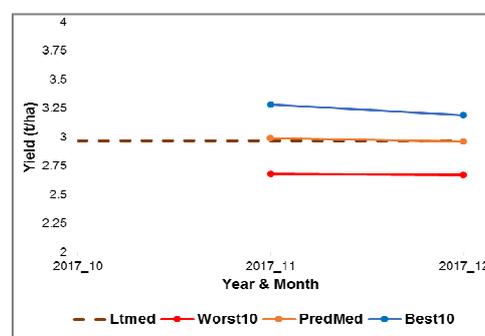
The current regional outlook shows the forecast median yield for NEAUS' sorghum-cropping region at the end of November as 2.96 t/ha, which is similar to the long-term median of 2.97 t/ha (Graph A). There is however, a 10% chance that the state yield could be lower than 2.67 t/ha, or higher than 3.19 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	1.92	2.32	2.54	2.19
SEQ	2.33	3.23	3.72	3.43
SWQ	1.76	2.05	2.58	2.12
QLD	2.03	2.48	2.86	2.50
NNSW	3.35	3.67	3.90	3.64

Apart from CQ, which has a slightly increased chance of exceeding the long-term median yield, all other 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 ("consistently positive") indicates an increased chance to receive above average rainfall in most parts of NEAUS summer cropping region over the next 3-months. Widespread above average rainfall is needed over the next couple of months to induce good planting opportunities across the entire region. This will further improve the current moderate crop yield outlook.



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)