

SEASONAL CROP OUTLOOK

Sorghum – February 2016

SUMMARY

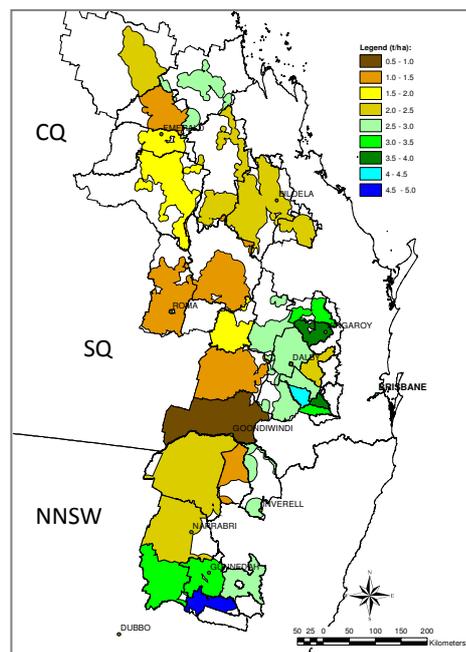
The average to above average rainfall recorded during January improved the outlook across all of the summer cropping region. Overall, chances have improved to close to, or slightly above, average for exceeding the long-term median sorghum yield across most of the north-eastern Australian (NEAUS) summer cropping region for 2015/16. The exception is for most parts of CQ, which have a reduced chance of exceeding the long-term median yield for that region. There remains, however, variation in the outlook among local regions. While most areas in central QLD (central highlands of CQ) are showing below average crop yield expectations, areas in southern QLD (especially SEQ) and northern NSW (NNSW) have yield outcomes above 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 months to improve and ensure the current crop outlook is realised across all areas of the NEAUS summer cropping region.

GENERAL CONDITIONS

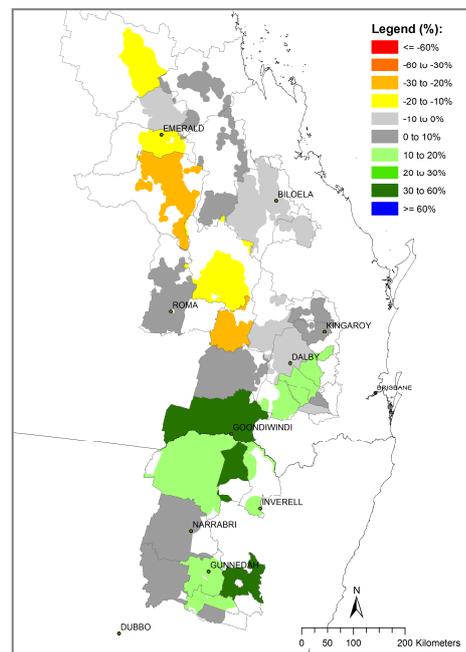
Rainfall recorded was above average for most parts of NNSW, southwest QLD and some isolated parts of southeast QLD, while the remainder of the cropping region in QLD recorded average rainfall during January. Rainfall from August 2015 to end of January 2016 was close to the long-term average except for some parts in CQ, which received less than the long-term average during this period. This resulted in a high recharge of soil water profiles for most areas where above average rainfall was recorded. *Long fallow* soils have higher soil water recharge levels and are not discussed in this report. 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 (“rapidly falling”) indicates increased chances of receiving above average rainfall in most of NNSW, some parts of CQ and southeast QLD cropping region for 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 114-years using an agro-climatic 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 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 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 falling” 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 (114 years)



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

Map 2 shows that for this season, most areas in the central Highlands of CQ and Western QLD have forecast yield expectations below (-30% to -10%) the long-term median yield, while most areas of NNSW and SEQ have forecast yields above (10% to 60%) the long-term expectation for that region. Some parts of Wide Bay Burnett, Far South West QLD and north-western NSW have final predicted yield outcomes close to the long-term median. Furthermore, for most of CQ and some parts of South Western QLD, relative yield outcomes are ranked in the bottom tercile (< 30th percentile), while almost all areas in SEQ, Far South West QLD and NNSW are having yield outcomes close to or above the top 30% (> 70th percentile) yield outcomes compared to all yield expectations over the last 114 years. The exception is for some parts of northern Darling Downs (in SEQ), which have yield expectations close to or slightly below the long-term median.

It should be noted that at this stage of the season, the range of likely yield outcomes for the 2015/2016 season has narrowed considerably as much of the actual growing season has been included in the forecast.

POOR CROP CHANCE

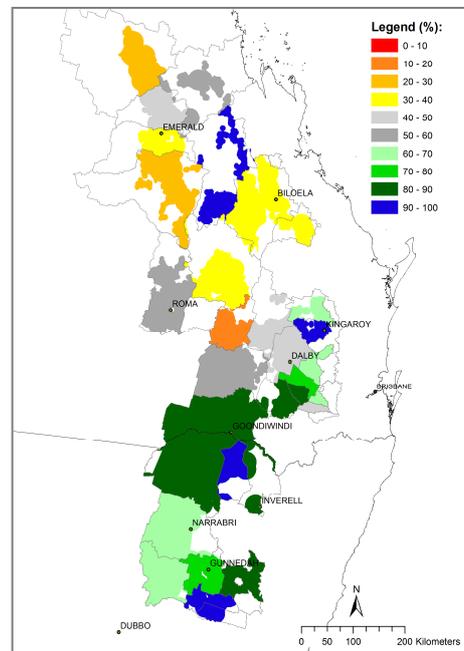
At present, chances for this season’s sorghum crop to fall below the worst 10% (crop yield) of all years remains low with the exception of some parts of northern parts of the Central Highlands in CQ that are showing a moderately increased chance of falling in that category (i.e. below the worst 10% of all years)(data not shown).

STATE OUTLOOK

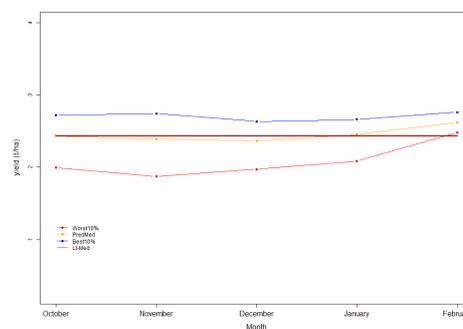
The current regional outlook shows the forecast median yield for the entire NEAUS sorghum-cropping region at the end of January has increased to 2.62 t/ha (68th percentile), which is above the long-term median of 2.43 t/ha (Graph A). There is however, a 10% chance that the state yield could be lower than 2.48 t/ha, or higher than 2.76 t/ha. At local regional level, Central Qld (CQ) and Southern Qld (SQ), Queensland (QLD) and northern NSW (NNSW) (see Map 1), the forecast yield (t/ha) ranges are as follows:

Region	Median (50%)	Percentile (%)	Lt median
CQ	1.96	38	2.08
SQ	2.66	67	2.50
QLD	2.34	58	2.24
NNSW	3.63	91	3.10

The average to above average rainfall during January has improved the predicted yield outcomes across all regions, except for CQ. SQ and QLD regions have forecast median yields slightly above (67th and 58th percentiles) the long-term regional sorghum yield expectation, while NNSW yield outcomes are predicted to be in the top 10% (91st percentile) of all years compared to all yield expectations over the last 114 years for that region. Yield outcomes for CQ are ranked at the 38th percentile, which is slightly below the long-term expected yield outcome compared to all years. The current SOI phase (“rapidly falling” in Dec-Jan) indicates that chances to receive above average rainfall are increased across most parts of the NNSW and the eastern QLD summer cropping region, while the remainder of the cropping region has a slightly reduced chance of exceeding the long-term median rainfall 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 for late planted crops.



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



Graph A: NE AUS sorghum yield forecast trajectories (10th, 50th and 90th percentiles).

DESCRIPTIVE NOTE:

The seasonal sorghum outlook is based on the integration of (i) a simple agro-climatic sorghum stress index model (SSIM) (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) for the period 1983 - 1997. Cross-validated correlations ranged from 0.6 to 0.9 within the main sorghum producing shires of NE Australia (31 in total). (Potgieter et. al., 2005)