Summary of key issues

- During the week ending 6 November 2019 rainfall was recorded across areas of eastern, southern and northern Australia.

- Across cropping regions, rainfall totals of between 10 to 50 millimetres were recorded across much of New South Wales, Victoria, and parts of north-eastern Queensland, southern Western Australia and eastern South Australia. Higher rainfall totals greater than 50 millimetres were recorded across isolated cropping regions in north-western New South Wales.

- Rainfall for October 2019 was well below average across large areas of Australia, ranking this October as equal fifth-driest out of the 120 Octobers on record.

- Much of southern Australia recorded well below average rainfall during October, with rainfall totals less than 25 millimetres across most regions. These low rainfall totals in October, along with above average temperatures and evapotranspiration rates, are expected to adversely affect yield prospects. The planting of dryland summer crops in New South Wales and Queensland was limited during September and early October due to persistent hot and dry conditions and subsequent low soil moisture.

- Lower layer soil moisture in October was extremely low to very much below average across cropping regions in much of New South Wales, southern Queensland and northern and eastern Western Australia.

- The northern rainfall onset has occurred in small parts of eastern and central Queensland, and the far north of the Northern Territory. Elsewhere, the late withdrawal of the Indian monsoon and the prolonged positive Indian Ocean Dipole (IOD) are likely contribute to a delayed onset of the Australian monsoon.

- Over the next eight days, a series of high-pressure systems are expected to persist over southern Australia, restricting the movement of rain-bearing systems across the continent and restricting substantial rainfall to far south-eastern Australia.

- Across Australia’s cropping regions, the 8-day rainfall forecast indicates that falls of between 5 and 10 millimetres are expected across parts of southern Victoria. Little to no rainfall is expected across remaining cropping regions.

- Water storage levels in the Murray-Darling Basin (MDB) decreased between 30 October and 6 November 2019 by 18 gigalitres (GL). Current volume of water held in storage is 9,922 GL which represents 39 per cent of total capacity. This is 28 percentage points or 3,909 GL less than at the same time last year.

- Allocation prices in the Victorian Murray below the Barmah Choke decreased from $970 per ML on 31 October 2019 to $950 per ML on 7 November 2019.

For more information or to subscribe, email Climate_Update@agriculture.gov.au
1. Climate

1.1. Rainfall this week

During the week ending 6 November 2019 rainfall was recorded across areas of eastern, southern and northern Australia.

Across cropping regions, rainfall totals of between 10 to 50 millimetres were recorded across much of New South Wales, Victoria, and parts of north-eastern Queensland, southern Western Australia and eastern South Australia. Higher rainfall totals greater than 50 millimetres were recorded across isolated cropping regions in north-western New South Wales. Lighter falls between 1 and 10 millimetres were recorded across remaining cropping regions in Queensland, Western Australia and western South Australia.

Significant rainfall totals of between 10 and 100 millimetres were recorded across drought-affected areas of south-west and central Queensland during the week ending 6 November 2019. These falls have provided a great start to the northern wet season and are likely to increase soil moisture profiles, initiate pasture growth and boost stream flows and on farm water storage levels.

Additionally, over the weekend a low pressure trough and cold front moving over south-eastern Australia resulted in substantial rainfall across south-eastern Australia. Variable rainfall totals of between 15 and 100 millimetres were recorded over the two-day period across large areas of New South Wales, Victoria and parts of southern Queensland. While the harvesting of winter crop may have been disrupted in some regions, this rainfall is likely to benefit yield prospects in crops that are yet to ripen.

As soil moisture in most summer cropping regions remains at, or near, record low levels, it is unlikely that this event provided sufficient moisture to initiate the widespread sowing of dryland summer crops. These falls are likely to provide some short-term benefit to areas with summer active pastures, however areas that rely on winter active pastures are unlikely to see improvement.

Rainfall for the week ending 6 November 2019
1.2. Monthly temperatures

October 2019 mean maximum temperatures were well above average for much of Australia. Mean minimum temperatures were above average across most of Australia, with third-warmest temperatures on record for South Australia and Western Australia, and cooler than average temperatures for parts of the north and much of Tasmania. The national mean temperature was third-warmest on record at 2.17 °C above average. Mean maximum temperatures were the second-warmest on record for October at 2.91°C above average and mean minimum temperatures were the eight-warmest on record at 1.42°C above average.

Maximum temperature deciles for October 2019

Minimum temperature deciles for October 2019

Note: Maximum and minimum temperatures for October 2019 compared with temperature recorded for that period during the historical record (1900 to present). For further information go to: http://www.bom.gov.au/jsp/awap/temp/index.jsp.
1.3. Monthly rainfall

High-pressure systems persisted over the north and east of Australia for much of October, restricting movement of rain bearing systems. Rainfall was well below average across large areas of Australia, ranking this October as equal fifth-driest out of the 120 Octobers on record. Rainfall totals for the month were amongst the fifth-lowest on record for October for the Murray-Darling Basin as a whole, and in the ten lowest on record for New South Wales, Victoria, Tasmania, South Australia and Western Australia. In contrast, rainfall was above average for this time of year across small parts of central Queensland, northern and central Western Australia and in the north-east of the Northern Territory.

January to October 2019 rainfall has been below to very much below average across much of Australia. Nationally, this has been the second driest January to October period on record and the driest since 1902. It has also been the second-driest January to October for South Australia and amongst the five driest for New South Wales, Western Australia and the Northern Territory.

After below average rainfall during winter and the start of spring for much of Australia, timely and sufficient rainfall during October was required to boost crop and pasture production. Unfortunately, most cropping regions across Australia have recorded well below average rainfall during October, with rainfall totals less than 25 millimetres across most regions. The low rainfall totals in October, along with above average temperatures and evapotranspiration, are expected to adversely affect yield prospects. The planting of dryland summer crops in New South Wales and Queensland was limited during September and early October due to persistent hot and dry conditions and subsequent low soil moisture.

Rainfall totals greater than 25 millimetres were limited to parts of eastern New South Wales, southern and eastern Victoria, eastern and central Queensland, the far south-west of Western Australia, isolated parts of the tropical north and much of Tasmania. These falls are likely to have been sufficient to support some pasture growth and may have benefitted winter crops that were still ripening in southern growing regions.

Rainfall percentiles for October 2019

Source: Bureau of Meteorology
Note: Rainfall for October 2019 is compared with rainfall recorded for that period during the historical record (1900 to present). For further information, go to http://www.bom.gov.au/jsp/awap/
1.4. Monthly soil moisture

Upper layer soil moisture for October 2019 was generally average to above average across parts of south-western and coastal Queensland, northern Western Australia and parts of the Northern Territory. In contrast, it was extremely low to very much below average across most of New South Wales, parts of South Australia, and isolated parts of southern and central Queensland, southern Western Australia and the Northern Territory.

In cropping regions, upper layer soil moisture was generally average across parts of north-eastern Queensland and Western Australia. Upper layer soil moisture was below average to very much below average across cropping regions in New South Wales, Victoria, South Australia, parts of Western Australia, and remaining areas of Queensland. Soil moisture in cropping regions across parts of north-eastern New South Wales was extremely low during October.

Modelled upper layer soil moisture for October 2019

![Map of Australia showing soil moisture conditions](image)

Source: Bureau of Meteorology (Australian Water Resources Assessment Landscape model)

Note: This map shows the levels of modelled upper layer soil moisture (0 to 10 centimetres) during October 2019. This map shows how modelled soil conditions during October 2019 compare with October conditions modelled over the reference period (1911 to 2015). Dark blue areas on the maps were much wetter in October 2019 than during the reference period. The dark red areas were much drier than during the reference period. The bulk of plant roots occur in the top 20 centimetres of the soil profile. Soil moisture in the upper layer of the soil profile is therefore useful indicator of the availability of water, particularly for germinating seed.
Lower layer soil moisture for October 2019 was extremely low to very much below average across most of New South Wales, large areas of the west and south of Western Australia, parts of northern and eastern Victoria, southern and northern Queensland, northern and western South Australia, northern Tasmania and north of the Northern Territory. In contrast, it was average to above average across much of eastern Western Australia, south of the Northern Territory and parts southern Victoria, south-western Queensland and South Australia.

In cropping regions, lower layer soil moisture in October was extremely low to very much below average across much of New South Wales, southern Queensland and northern and eastern Western Australia. In contrast, lower layer soil moisture was average across cropping regions in parts of northern Queensland and western South Australia.

Modelled lower layer soil moisture for October 2019

Source: Bureau of Meteorology (Australian Water Resources Assessment Landscape model)

Note: This map shows the levels of modelled lower layer soil moisture (10 to 100 centimetres) during October 2019. This map shows how modelled soil conditions during October 2019 compare with October conditions modelled over the reference period (1911 to 2015). Dark blue areas on the maps were much wetter in October 2019 than during the reference period. The dark red areas were much drier than during the reference period. The bulk of plant roots occur in the top 20 centimetres of the soil profile. The lower layer soil moisture is a larger, deeper store that is slower to respond to rainfall and tends to reflect accumulated rainfall events over longer time periods.
1.5. **Northern Rainfall Onset**

The northern rainfall onset occurs when the total rainfall after 1 September reaches 50 millimetres. This is considered approximately the amount of rainfall required to stimulate plant growth. The northern rainfall onset has occurred in small parts of eastern and central Queensland, and the far north of the Northern Territory that have recorded rainfall totals between 50 to 100 millimetres from 1 September to 5 November 2019.

Elsewhere, the late withdrawal of the Indian monsoon that commenced on the 9 October 2019, is likely influencing a late onset of the Australian monsoon, which is characterised by the reversal of the prevailing winds and widespread heavy rainfall in northern Australia. The prolonged positive Indian Ocean Dipole (IOD) may have contributed to the late withdrawal of the Indian monsoon and could contribute to a delay of the Australian monsoon onset.

**Median Northern Rainfall Onset in Neutral El Niño-Southern Oscillation (ENSO) Years**

![Map of Northern Rainfall Onset](image1)

**Northern Rainfall Totals since 1 September to 5 November 2019**

![Map of Rainfall Totals](image2)
1.6. Rainfall forecast for the next eight days

Over the next eight days, a series of high-pressure systems are expected to persist over southern Australia, restricting the movement of rain-bearing systems across the continent and restricting substantial rainfall to far south-eastern Australia.

Rainfall totals of between 10 and 100 millimetres are forecast for southern Victoria, Tasmania and an isolated part of southern New South Wales. Higher rainfall totals greater than 100 millimetres are forecast for isolated parts of western Tasmania.

In cropping regions, rainfall of between 5 and 10 millimetres is expected across parts of southern Victoria. Little to no rainfall is expected across cropping regions in New South Wales, Queensland, Western Australia, South Australia and remaining cropping regions in Victoria.

Total forecast rainfall (mm) for the period 7 November to 14 November 2019

©Commonwealth of Australia 2019, Australian Bureau of Meteorology
Issued: 07/11/2019

Note: This rainfall forecast is produced from computer models. As the model outputs are not altered by weather forecasters, it is important to check local forecasts and warnings issued by the Bureau of Meteorology.
2. Water

2.1. Water markets – current week

Water storage in the Murray–Darling Basin (MDB) decreased by 18 gigalitres (GL) between 30 October and 6 November 2019. The current volume of water held in storage is 9,922 GL, which represents 39% of total capacity. This is 28% or 3,909 GL less than at the same time last year. Water storage data is sourced from the BOM.


Allocation prices in the Victorian Murray below the Barmah Choke decreased from $970 per ML on 31 October 2019 to $950 per ML on 7 November 2019. Binding trade limits, maturing almond trees and dry seasonal conditions, have left the catchments below the Barmah Choke exposed to high water prices. Prices in other catchments in the southern Murray-Darling Basin remain lower (see table).

<table>
<thead>
<tr>
<th>Region</th>
<th>$/ML</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSW Murray Above</td>
<td>620</td>
</tr>
<tr>
<td>NSW Murrumbidgee</td>
<td>638</td>
</tr>
<tr>
<td>VIC Goulburn-Broken</td>
<td>535</td>
</tr>
<tr>
<td>VIC Murray Below</td>
<td>950</td>
</tr>
</tbody>
</table>

Surface water trade activity, Southern Murray–Darling Basin

The trades shown reflect estimated market activity and do not encompass all register trades. The price is shown for the VIC Murray below the Barmah choke. Historical prices (before 1 July 2019) are ABARES estimates after removing outliers from BOM water register data. Prices after 1 July 2019 and prior to the 30 October 2019 reflect recorded transaction prices as sourced from Ruralco. Prices after the 30 October 2019 are sourced from Waterflow. Data for volume traded is sourced from the BOM water register. Data shown is current at 7 November 2019.

To access the full, interactive, weekly water dashboard, which contains the latest and historical water storage, water market and water allocation information, please visit http://www.agriculture.gov.au/abares/publications/weekly_update/weekly-update-071119
### 3. Commodities

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Unit</th>
<th>Week ended</th>
<th>Latest price</th>
<th>Price week prior</th>
<th>Weekly change</th>
<th>Price 12 months prior</th>
<th>Year on year change</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Selected World Indicator Prices</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Australian Dollar – AUD/USD Exchange Rate</td>
<td>US$/A$</td>
<td>06-Nov</td>
<td>0.69</td>
<td>0.68</td>
<td>1%</td>
<td>0.72</td>
<td>-4%</td>
</tr>
<tr>
<td>Wheat – US no. 2 hard red winter wheat, fob Gulf</td>
<td>US$/t</td>
<td>05-Nov</td>
<td>216</td>
<td>214</td>
<td>&lt;1%</td>
<td>237</td>
<td>-9%</td>
</tr>
<tr>
<td>Coarse Grains – US no. 2 yellow corn, fob Gulf</td>
<td>US$/t</td>
<td>06-Nov</td>
<td>170</td>
<td>167</td>
<td>2%</td>
<td>164</td>
<td>4%</td>
</tr>
<tr>
<td>Rapeseed, Europe, fob Hamburg</td>
<td>US$/t</td>
<td>05-Nov</td>
<td>425</td>
<td>422</td>
<td>&lt;1%</td>
<td>430</td>
<td>-1%</td>
</tr>
<tr>
<td>Cotton – Cotlook 'A' Index</td>
<td>USc/lb</td>
<td>06-Nov</td>
<td>75.3</td>
<td>75.4</td>
<td>&lt;1%</td>
<td>87.7</td>
<td>-14%</td>
</tr>
<tr>
<td>Sugar – Intercontinental Exchange, nearby futures, no.11 contract</td>
<td>USc/lb</td>
<td>06-Nov</td>
<td>12.5</td>
<td>12.4</td>
<td>&lt;1%</td>
<td>13.2</td>
<td>-5%</td>
</tr>
<tr>
<td>Wool – Eastern Market Indicator</td>
<td>Ac/kg clean</td>
<td>31-Oct</td>
<td>1,594</td>
<td>1,545</td>
<td>3%</td>
<td>1,854</td>
<td>-14%</td>
</tr>
<tr>
<td>Wool – Western Market Indicator</td>
<td>Ac/kg clean</td>
<td>01-Nov</td>
<td>1,687</td>
<td>1,672</td>
<td>&lt;1%</td>
<td>1,931</td>
<td>-13%</td>
</tr>
<tr>
<td><strong>Selected domestic crop indicator prices</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Milling Wheat – ASW1, track quote, Port Adelaide, SA</td>
<td>A$/t</td>
<td>05-Nov</td>
<td>287</td>
<td>300</td>
<td>-4%</td>
<td>377</td>
<td>-24%</td>
</tr>
<tr>
<td>Feed Wheat – General purpose, Sydney, NSW</td>
<td>A$/t</td>
<td>06-Nov</td>
<td>380</td>
<td>380</td>
<td>0%</td>
<td>450</td>
<td>-16%</td>
</tr>
<tr>
<td>Feed Barley – Sydney, NSW</td>
<td>A$/t</td>
<td>06-Nov</td>
<td>360</td>
<td>360</td>
<td>0%</td>
<td>435</td>
<td>-17%</td>
</tr>
<tr>
<td>Grain Sorghum – Sydney, NSW</td>
<td>A$/t</td>
<td>06-Nov</td>
<td>345</td>
<td>345</td>
<td>0%</td>
<td>410</td>
<td>-16%</td>
</tr>
<tr>
<td><strong>Selected domestic livestock indicator prices</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beef – Eastern Young Cattle Indicator</td>
<td>Ac/kg cwt</td>
<td>31-Oct</td>
<td>511</td>
<td>501</td>
<td>2%</td>
<td>535</td>
<td>-4%</td>
</tr>
<tr>
<td>Mutton – Mutton indicator (18–24 kg fat score 2–3), Vic</td>
<td>Ac/kg cwt</td>
<td>01-Nov</td>
<td>582</td>
<td>611</td>
<td>-5%</td>
<td>422</td>
<td>38%</td>
</tr>
<tr>
<td>Lamb – Eastern States Trade Lamb Indicator</td>
<td>Ac/kg cwt</td>
<td>31-Oct</td>
<td>760</td>
<td>772</td>
<td>-2%</td>
<td>711</td>
<td>7%</td>
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<tr>
<td>Pig – Eastern Seaboard (60.1–75 kg), average of buyers &amp; sellers</td>
<td>Ac/kg cwt</td>
<td>25-Oct</td>
<td>409</td>
<td>405</td>
<td>&lt;1%</td>
<td>279</td>
<td>47%</td>
</tr>
<tr>
<td>Goat – Eastern States (12.1–16 kg)</td>
<td>Ac/kg cwt</td>
<td>04-Nov</td>
<td>874</td>
<td>874</td>
<td>0%</td>
<td>538</td>
<td>62%</td>
</tr>
<tr>
<td>Live cattle – Light steers ex Darwin to Indonesia</td>
<td>Ac/kg lwt</td>
<td>02-Nov</td>
<td>315</td>
<td>315</td>
<td>0%</td>
<td>310</td>
<td>2%</td>
</tr>
<tr>
<td>Live sheep – Live wether (Muchea WA saleyard) to Middle East</td>
<td>$/head</td>
<td>21-Oct</td>
<td>86</td>
<td>na</td>
<td>na</td>
<td>108</td>
<td>na</td>
</tr>
<tr>
<td>Indicator</td>
<td>Week ended</td>
<td>Unit</td>
<td>Latest price</td>
<td>Price week prior</td>
<td>Weekly change</td>
<td>Price 12 months prior</td>
<td>Year on year change</td>
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</tr>
<tr>
<td><strong>Global Dairy Trade (GDT) weighted average prices</strong> <em>a</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dairy – Whole milk powder</td>
<td>05-Nov</td>
<td>US$/t</td>
<td>3,254</td>
<td>3,133</td>
<td>4% ⇤</td>
<td>2,655</td>
<td>23% ⇤</td>
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<tr>
<td>Dairy – Skim milk powder</td>
<td>05-Nov</td>
<td>US$/t</td>
<td>2,924</td>
<td>2,743</td>
<td>7% ⇤</td>
<td>1,997</td>
<td>46% ⇤</td>
</tr>
<tr>
<td>Dairy – Cheddar cheese</td>
<td>05-Nov</td>
<td>US$/t</td>
<td>3,609</td>
<td>3,636</td>
<td>&lt;1% ⇩</td>
<td>3,250</td>
<td>11% ⇤</td>
</tr>
<tr>
<td>Dairy – Anhydrous milk fat</td>
<td>05-Nov</td>
<td>US$/t</td>
<td>5,191</td>
<td>5,065</td>
<td>2% ⇤</td>
<td>5,044</td>
<td>3% ⇤</td>
</tr>
</tbody>
</table>

*a* Global Dairy Trade prices are updated twice monthly on the first and third Tuesday of each month.
3.1. Selected world indicator prices

World wheat indicator price
US No. 2, hard red winter wheat, fob Gulf
Week ended 5 November 2019

World coarse grains indicator price
US corn No. 2, fob Gulf
Week ended 6 November 2019

World canola indicator price
Europe fob Hamburg
Week ended 5 November 2019

World cotton indicator price
Cotlook ‘A’ index
Week ended 6 November 2019
World sugar indicator price
Intercontinental exchange, nearby futures, No. 11 contract
Week ended 6 November 2019

Eastern Market Indicator wool price
Week ended 31 October 2019

Australian exchange rate
US dollars in one Australian dollar
Week ended 6 November 2019

Western Market Indicator wool price
Week ended 1 November 2019
3.2. Global Dairy Trade (GDT) weighted average prices

Whole milk powder price
5 November 2019

Skim milk powder price
5 November 2019

Cheddar cheese price
5 November 2019

Anhydrous milk fat price
5 November 2019
3.3. Selected domestic crop indicator prices

Grain sorghum indicator price
Sydney, NSW
Week ended 6 November 2019

Feed barley indicator price
Sydney, NSW
Week ended 6 November 2019

Feed wheat indicator price
General Purpose, Sydney, NSW
Week ended 6 November 2019

Milling wheat indicator price
ASW1, track quote, Port Adelaide, SA
Week ended 5 November 2019
3.4. Selected domestic livestock indicator prices

- **Eastern Young Cattle Indicator**
  - Week ended 31 October 2019

- **Mutton indicator price in Victoria**
  - (18–24 kg fat score 2–3)
  - Week ended 1 November 2019

- **Eastern States Trade Lamb Indicator**
  - Week ended 31 October 2019

- **Pig indicator price Eastern Seaboard**
  - (60.1–75 kg)
  - Week ended 25 October 2019
3.5. Selected fruit and vegetable prices – week ended 7 November 2019

[Graphs showing weekly wholesale prices for blueberry, pineapple, watermelon, and banana.]
4. Data attribution

Climate
Bureau of Meteorology

Water
New South Wales
Queensland
- Sunwater: www.sunwater.com.au
- Seqwater: http://seqwater.com.au
South Australia
- South Australian Department of Environment, Water and Natural Resources: www.environment.sa.gov.au
Victoria
- Goulburn–Murray Water: www.g-mwater.com.au

Commodities
Fruit and vegetables
- Datafresh: www.freshstate.com.au
Pigs
- Australian Pork Limited: www.australianpork.com.au
Dairy
World wheat, canola
- International Grains Council
World coarse grains
- United States Department of Agriculture
World cotton
- Cotlook: www.cotlook.com/
World sugar
- New York Stock Exchange - Intercontinental Exchange
Wool
Milling wheat
- ProFarmer
Domestic wheat, barley, sorghum
- The Land: hardcopy or online at www.theland.farmonline.com.au/markets
Domestic canola
- The Weekly Times: hardcopy
Cattle, beef, mutton, lamb, goat and live export