



# Weekly Australian Climate, Water and Agricultural Update



No. 24/2021

24 June 2021

## Summary of key issues

- During the week ending 23 June 2021, a blocking high pressure system restricted rainfall across most of Australia for much of the week. A low-pressure system off the southern coast and associated cold fronts brought some rainfall to southern Australia towards the end of the week ([see Section 1.1](#)).
- Despite the low rainfall conditions in some cropping regions across south-eastern Australia, heavy falls from previous weeks and stored soil moisture are likely to have provided sufficient water availability to support the development of established crops in most regions.
- Analysis of oceanic and atmospheric indicators suggest that El Niño–Southern Oscillation conditions remain neutral, reducing its influence on Australia’s climate patterns. A negative Indian Ocean Dipole event is looking increasingly likely if current conditions in the Indian Ocean persist, which is typically associated with above average rainfall across southern Australia throughout winter and spring ([see Section 1.2](#)).
- The rainfall outlook for July to September 2021 suggests there is a greater than 75% chance of exceeding average rainfall across much of New South Wales, Queensland, Victoria, South Australia, Western Australia and the Northern Territory.
- The ACCESS-S climate model indicates a favourable July to September rainfall outlook for most Australian cropping regions. Above average soil moisture levels in New South Wales, and parts of Queensland and Western Australia and the probability of close to average in-season rainfall in July to September will assist with maintaining or improving current yield potential in most winter cropping regions.
- During the next 8 days to 1 July 2021, low pressure systems and cold fronts are likely to bring rainfall to parts of New South Wales, Queensland, Victoria, South Australia, Western Australia and Tasmania over the next few days ([see Section 1.4](#)).
- The forecast rainfall for eastern cropping regions will continue to support the growth of early sown crops, the germination and establishment for later sown crops, as well as boosting soil moisture. While parts of western Victoria and eastern South Australia have received some rainfall over the past week, the Mallee regions of Victoria and South Australia have largely missed out and are not expecting significant falls over the coming 8-days.
- Water storage in the Murray–Darling Basin (MDB) increased by 208 gigalitres (GL) between 16 June 2021 and 23 June 2021. The current volume of water held in storage is 15,541 GL, which represents 61% of total capacity. This is 44% or 4,768 GL more than at the same time last year.
- Allocation prices in the Victorian Murray below the Barmah Choke decreased from \$105 per ML on 11 June 2021 to \$94 per ML on 19 June 2021. Prices are lower in the Murrumbidgee due to the binding of the Murrumbidgee export limit.

# 1. Climate

## 1.1. Rainfall this week

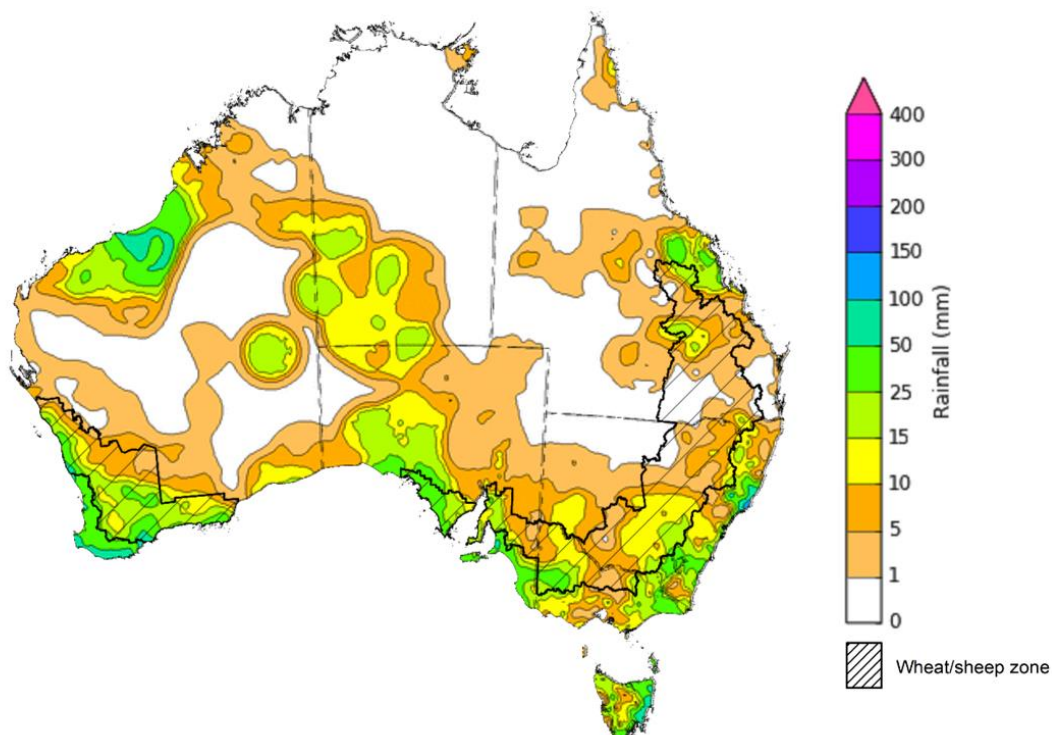
During the week ending 23 June 2021, a blocking high pressure system restricted rainfall across most of Australia for much of the week. A low pressure system off the southern coast and associated cold fronts brought some rainfall towards the end of the week.

Rainfall totals of between 10 and 50 millimetres were recorded across parts of New South Wales, eastern Queensland, Victoria, southern and central areas of South Australia, as well as parts of Western Australia and the Northern Territory. Rainfall totals in excess of 50 millimetres were recorded in isolated parts of eastern New South Wales, Western Australia and Tasmania.

In cropping regions, rainfall totals of between 10 and 50 millimetres were recorded in parts of southern New South Wales, central Queensland, western Victoria, western and central South Australia and much of Western Australia. Little to no rainfall was recorded across cropping regions in northern New South Wales and southern Queensland during the week ending 23 June 2021.

Despite the low rainfall conditions in some cropping regions across south-eastern Australia, previous heavy falls and stored soil moisture are likely to have provided sufficient water availability to support the development of established crops in most regions.

**Rainfall for the week ending 23 June 2021**



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Note: The rainfall analyses and associated maps utilise data contained in the Bureau of Meteorology climate database, the Australian Data Archive for Meteorology (ADAM). The analyses are initially produced automatically from real-time data with limited quality control. They are intended to provide a general overview of rainfall across Australia as quickly as possible after the observations are received. For further information go to <http://www.bom.gov.au/climate/rainfall/>

## 1.2. Climate Drivers

Throughout winter the climate drivers with the largest potential impact on Australia's climate patterns are the El Niño–Southern Oscillation (ENSO), the Indian Ocean Dipole (IOD) and the Southern Annular Mode (SAM). These climate drivers will likely influence the outlook for Australia's winter cropping season.

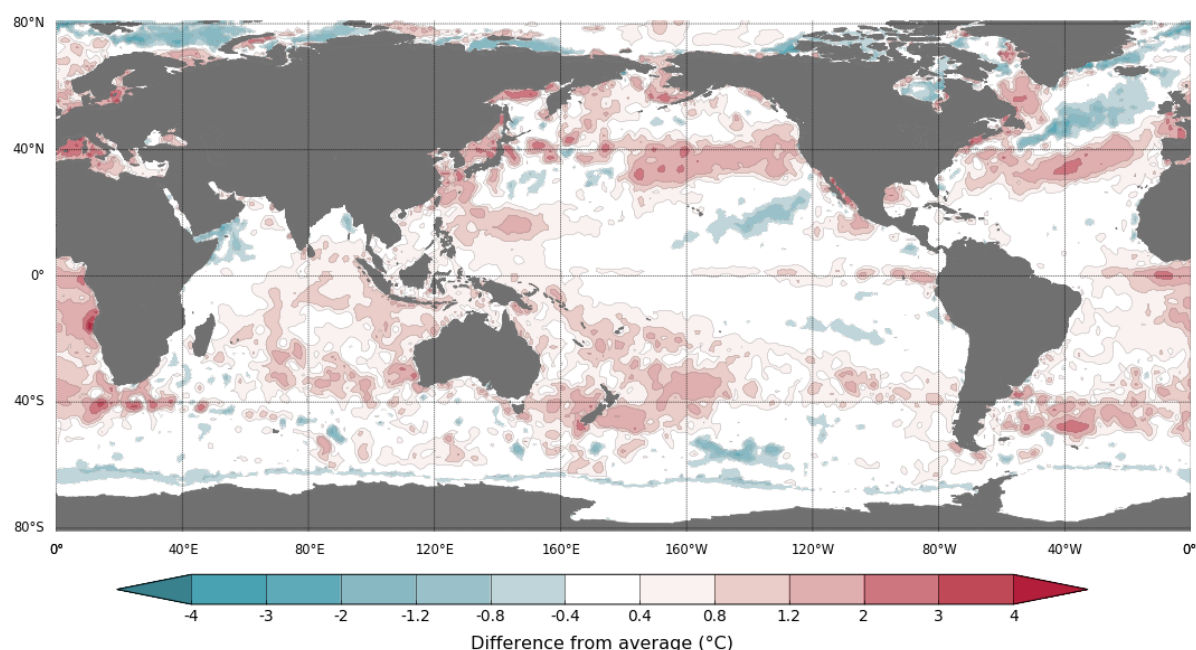
Analysis of oceanic and atmospheric indicators suggest that ENSO conditions remain neutral, reducing its influence on Australia's climate patterns. International climate models expect the ENSO to remain neutral throughout winter, with two of the seven models predicting the development of a La Niña event in late spring. Meanwhile, sea surface temperatures in the tropical Indian Ocean suggest the continued development of a negative IOD event. The SAM became strongly positive over the preceding couple of weeks. Given current and expected conditions, the IOD and SAM are likely to be the major influences on winter rainfall across Australia.

A negative IOD event is looking increasingly likely if current conditions in the Indian Ocean persist. Warmer than average water temperatures in the east Indian Ocean and cooler than average temperatures in the west is associated with above average rainfall across southern Australia throughout winter and spring, as well as the far north. It is also associated with the onset of early northern rainfall.

Sea surface temperature anomalies have been close to average across the tropical Pacific Ocean over the previous week. There has been an increase in warm anomalies in the western Pacific, the Maritime continent and along the east coast of Australia. Neutral Pacific equatorial sea surface temperatures are associated with neutral ENSO conditions. As of 22 June 2021, all of the international climate models surveyed predict sea surface temperatures in the tropical Pacific to remain neutral throughout winter. However, two of the seven models indicate the possibility of a La Niña event in late spring.

Warm sea surface temperature anomalies have become more widespread near Western Australia and Indonesia. Meanwhile, sea surface temperatures in the western Indian Ocean remained neutral over the past week. The warm anomalies in the eastern Indian Ocean and the ocean surrounding Australia underpin the ongoing development of a potential negative IOD.

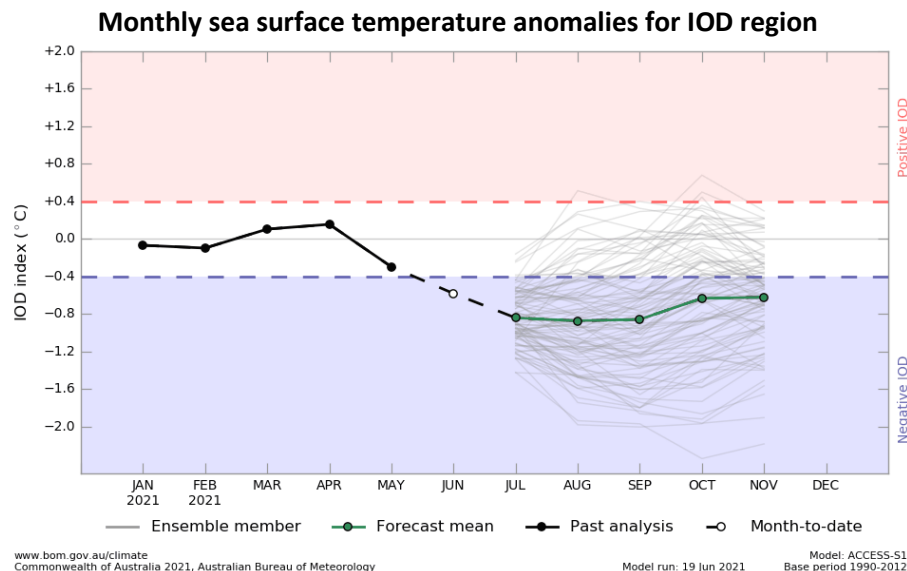
**Difference from average sea surface temperature observations 14 June to 20 June 2021**



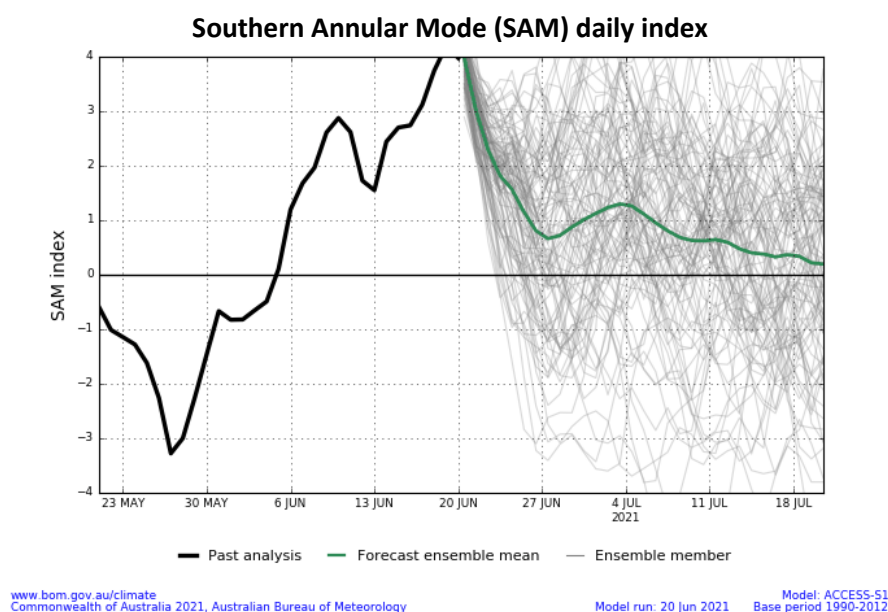
Data: BOM SST  
Climatology baseline: 1961 to 1990  
© Commonwealth of Australia 2021, Australian Bureau of Meteorology

<http://www.bom.gov.au/climate> Weekly average: 20 June 2021  
Created: 21/06/2021

As at 20 June, the Indian Ocean Dipole (IOD) weekly value was  $-0.70^{\circ}\text{C}$ . This is the fifth consecutive week that the IOD has been below the negative threshold ( $-0.4^{\circ}\text{C}$ ). While a negative IOD values must be sustained for 8 consecutive weeks before a negative IOD event is declared, the persistence of negative values may result in increased rainfall for central and southern Australia. Forecasts from international climate models surveyed by the Bureau of Meteorology have mixed expectations for the months ahead. Two of the five models predict a negative IOD in July, while three anticipate the IOD remaining neutral. By September, all five models predict a negative IOD, but only two models anticipate the negative IOD to remain until November.



The Southern Annular Mode (SAM) has become increasingly positive over the past fortnight but is expected to return to neutral values and remain neutral over the coming weeks. The SAM refers to the north-south shift of the band of rain-bearing westerly winds and weather systems in the Southern Ocean compared to the usual position. A positive SAM in winter is associated with increased rainfall for parts of eastern Australia. It is also associated with decreased rainfall for western and central Victoria, the south-east of South Australia, the west of Western Australia and Tasmania.





### 1.3. National Climate Outlook

These climate outlooks are generated by ACCESS–S (Australian Community Climate Earth-System Simulator–Seasonal). ACCESS–S is the Bureau of Meteorology's dynamical (physics-based) weather and climate model used for monthly, seasonal and longer-lead climate outlooks.

For further information, go to <http://www.bom.gov.au/climate/ahead/about/>

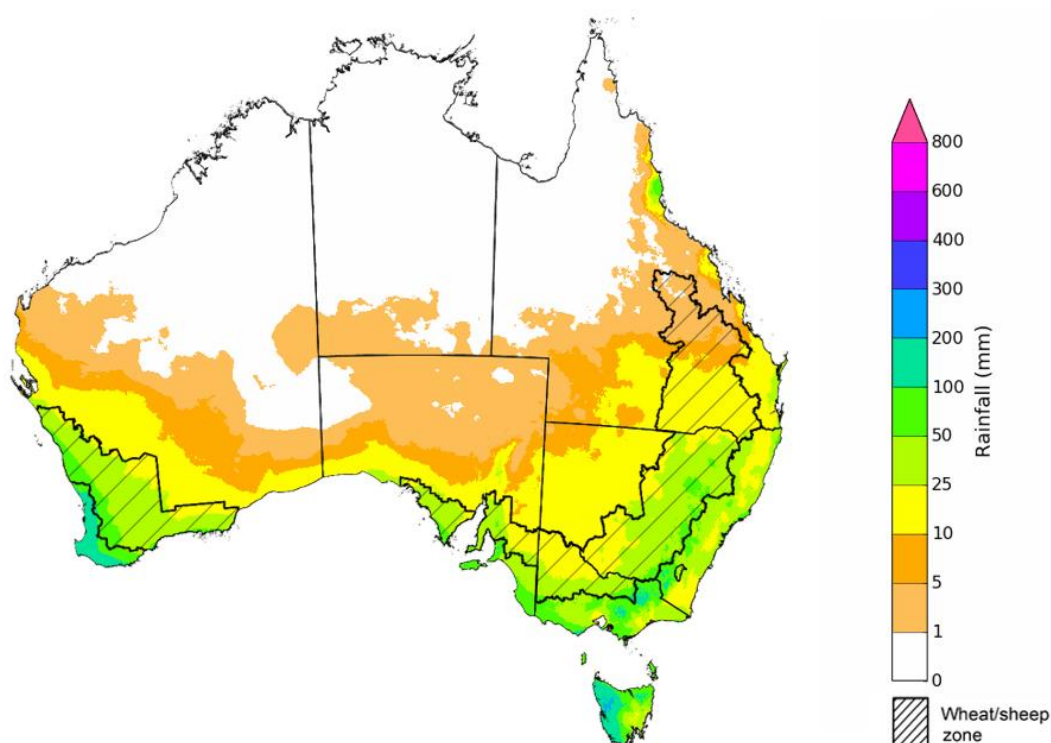
The Bureau of Meteorology's latest rainfall outlook indicated wetter than average conditions are expected for much of eastern and central Australia during July. The wetter than average conditions expected for much of New South Wales and Queensland reaffirms the positive outlook for Australia's winter cropping season.

The ACCESS-S climate model suggests there is close to a 75% chance of recording average July rainfall totals across much of Australia. The outlook for July 2021 indicates that there is a 75% chance of rainfall totals between 10 and 100 millimetres across parts of eastern, south-western and far southern Australia. Rainfall totals in excess of 100 millimetres are expected across alpine regions of New South Wales and Victoria, the west coast of Tasmania and isolated parts of south-western Australia.

Across cropping regions there is a 75% chance of rainfall totals of between 5 and 10 millimetres in parts of central Queensland. There is a 75% chance of rainfall totals between 10 and 50 millimetres for New South Wales, southern Queensland, Victoria, South Australia and Western Australia. If the forecast rainfalls are to eventuate, they will support the ongoing establishment and growth, and eventual yield development, of winter crops

The cropping regions of western Victoria and eastern South Australia, which have yet to receive substantial opening season rainfall, also have a 75% chance of receiving 10 to 25 millimetres. These falls are likely to be sufficient to support crop grow if adequate rainfall is received during early July to initiate the germination and establishment of dry-planted crops.

#### Rainfall totals that have a 75% chance of occurring July 2021



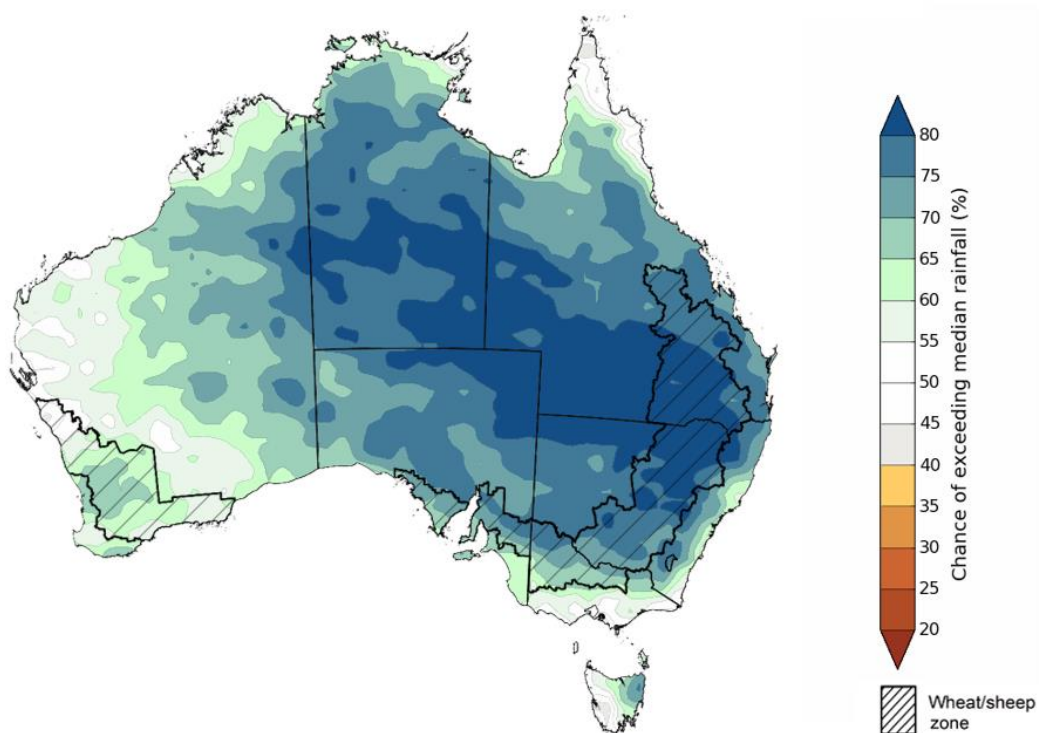
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The rainfall outlook for July to September suggests there is a greater than 75% chance of exceeding average rainfall across much of New South Wales, Queensland, Victoria, South Australia, Western Australia and the Northern Territory. There is no strong tendency toward above or average rainfall across isolated parts of northern Queensland, southern Victoria, north-western Western Australia and western Tasmania (Bureau of Meteorology 'National Climate Outlook', 17 June 2021).

Bureau of Meteorology rainfall outlooks for July to September have greater than 55% past accuracy across most of Australia. Outlook accuracy is greater than 65% across much of New South Wales, central and southern Queensland, the north of South Australia and much of the Northern Territory. On the other hand, there is low past accuracy for isolated areas of southern Western Australia.

#### Chance of exceeding the median rainfall July to September 2021



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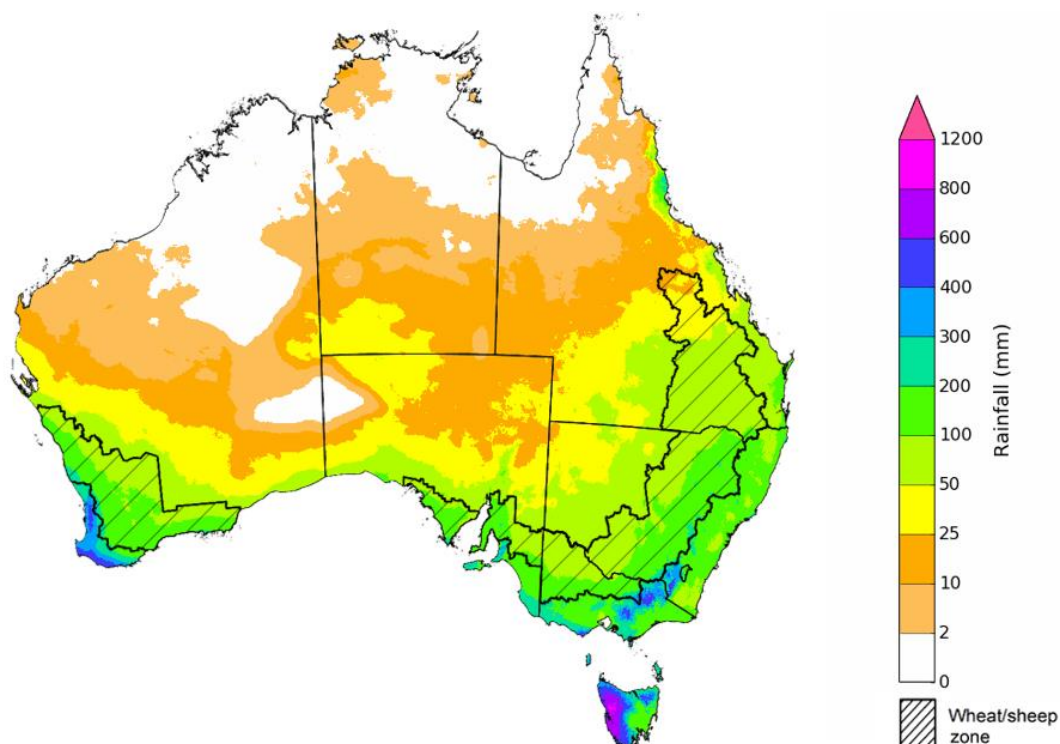
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The outlook for July to September suggests there is a 75% chance of rainfall totals between 50 and 200 millimetres across much of New South Wales and Victoria, and parts of south-eastern Queensland, the south of Southern Australia, the south of Western Australia and eastern Tasmania. Rainfall totals in excess of 300 millimetres are likely across parts of alpine regions of New South Wales and Victoria, and the far south-west of Western Australia and western Tasmania.

Across cropping regions, there is a 75% chance of receiving between 50 and 200 millimetres in New South Wales, Victoria, South Australia and Western Australia, as well as much of Queensland. Totals of less than 50 millimetres are expected in the northern cropping regions of Queensland.

These rainfall totals are close to average for this three-month period across most cropping regions. Above average soil moisture levels in New South Wales, and parts of Queensland and Western Australia and the probability of close to average in-season rainfall in July to September will assist with maintaining or improving current yield potential in most winter cropping regions.

### Rainfall totals that have a 75% chance of occurring July to September 2021

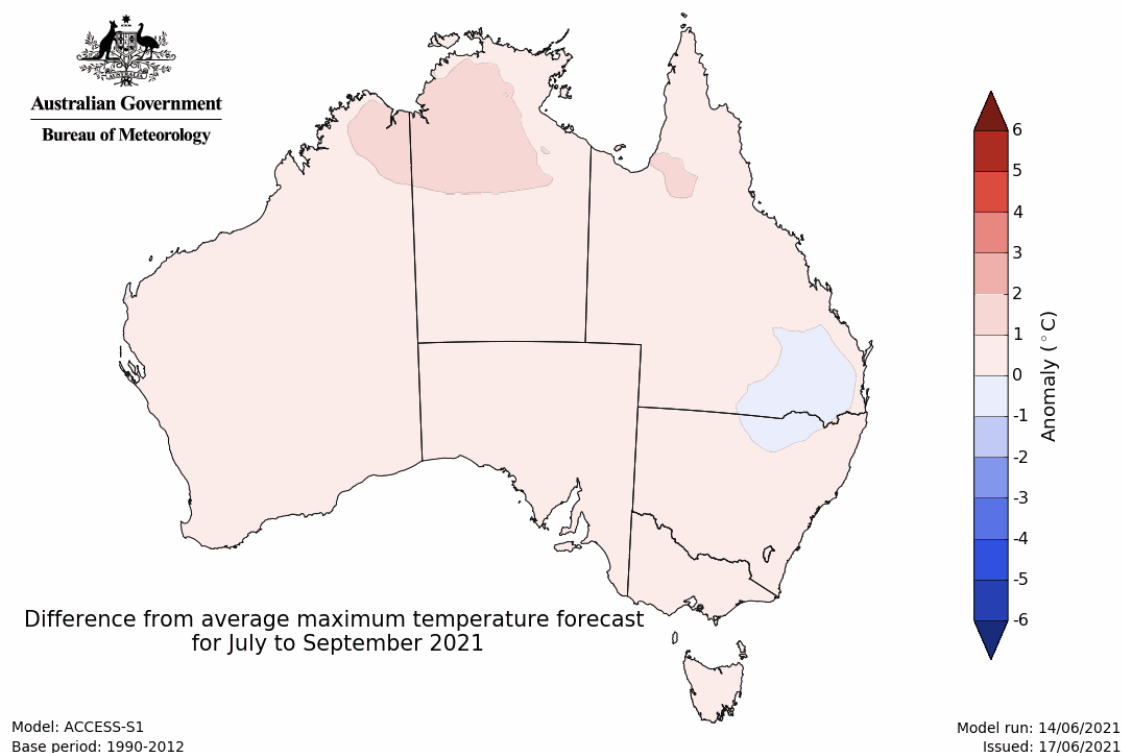


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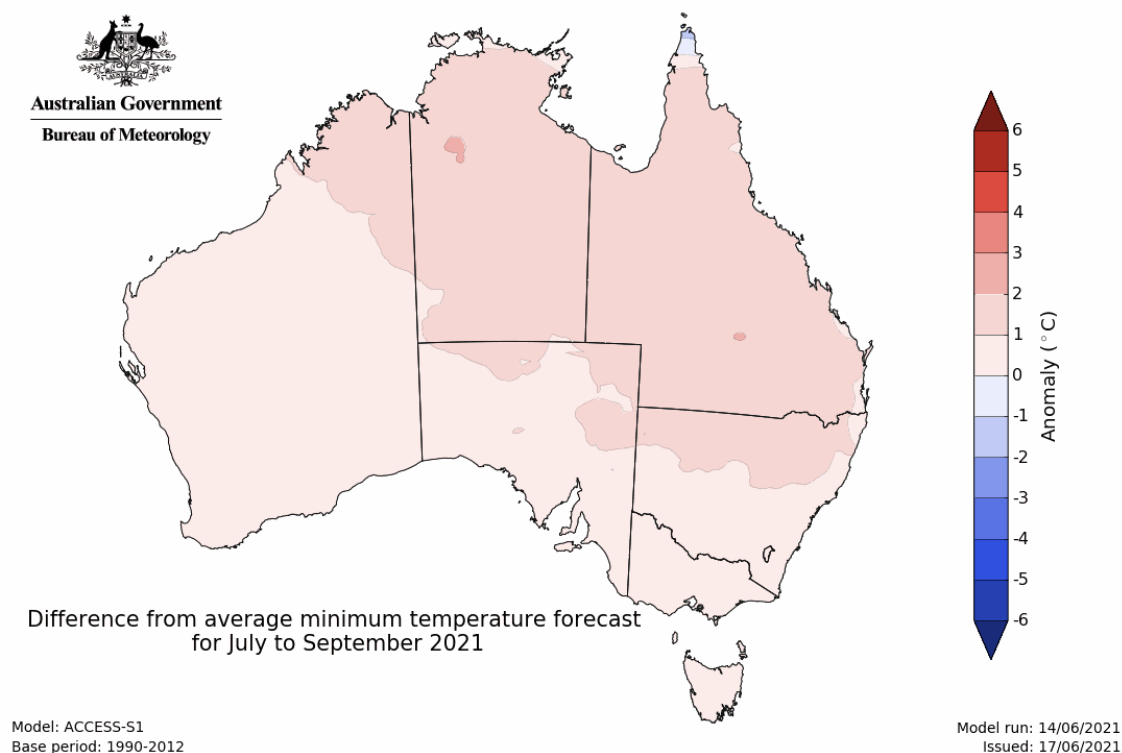
Issued: 17/06/2021

The temperature outlook for July to September 2021 indicates that maximum temperatures across most of Australia are likely to be close to the 1990-2012 average ( $-1^{\circ}\text{C}$  to  $1^{\circ}\text{C}$ ) with some above average anomalies in parts of northern Australia. Minimum temperatures are expected to be slightly above average for much of Queensland and the Northern Territory, as well as parts of New South Wales, South Australia and Western Australia (Bureau of Meteorology 'National Climate Outlook', 17 June 2021).

### Predicted maximum temperature anomaly for July to September 2021



### Predicted minimum temperature anomaly for July to September 2021





## 1.4. Rainfall forecast for the next eight days

Low pressure systems and cold fronts in the east are likely to bring rainfall to parts of New South Wales, Queensland and Victoria over the next few days. However, high pressure systems are expected to form preventing rainfall across much of Australia for the remainder of the next 8 days to 1 July 2021.

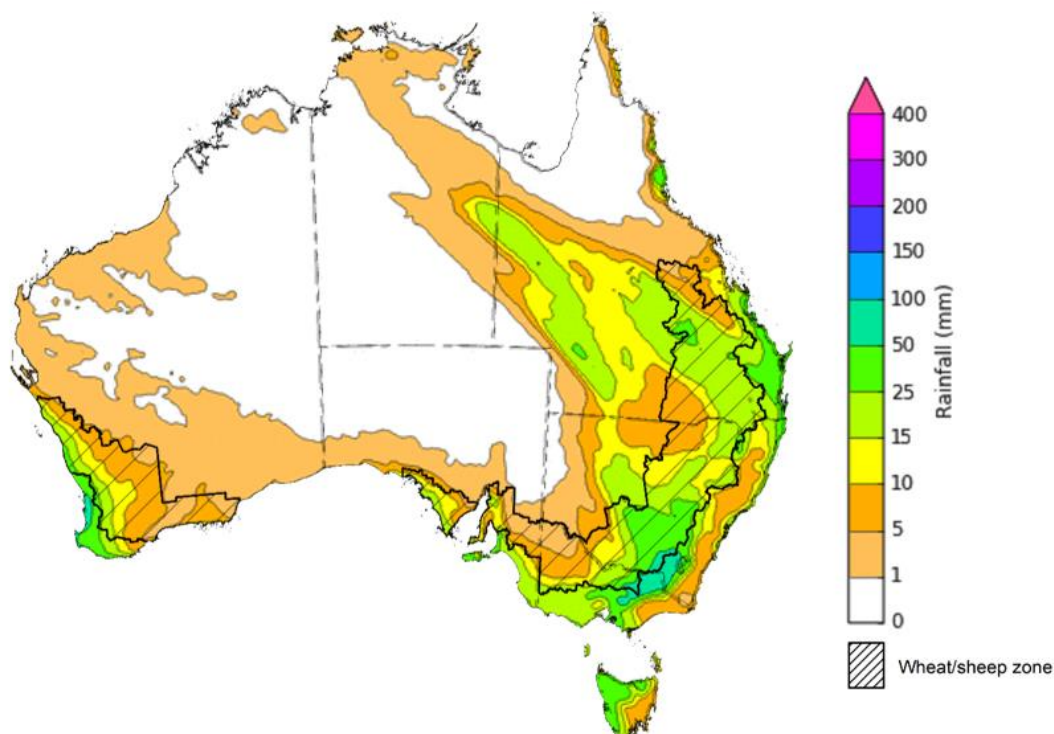
Rainfall totals of between 10 and 50 millimetres are forecast for central and southern New South Wales and Queensland, as well as much of Victoria, the south of South Australia, south-west Western Australia and western Tasmania.

In Australia's cropping regions, rainfall totals of between 10 and 25 millimetres are forecast for much of New South Wales and Queensland, and parts of Victoria, South Australia and Western Australia. Rainfall totals in excess of 25 millimetres are forecast in isolated parts of southern New South Wales and central Victoria.

The forecast rainfall for eastern cropping regions will continue to support the growth of early sown crops, the germination and establishment of later sown crops, as well as boosting soil moisture. While parts of western Victoria and eastern South Australia have received some rainfall over the past week, the Mallee regions of Victoria and South Australia have largely missed out and are not expecting significant falls over the coming 8-days.

The Gippsland region of Victoria is also unlikely to receive further heavy rainfall, providing a reprieve from recent flooding. However, the falls in central New South Wales may exacerbate waterlogging, as these areas have already recorded June rainfall totals in excess of 150% of the monthly average for June, negatively affecting crop growth.

**Total forecast rainfall (mm) for the period 24 June to 1 July 2021**



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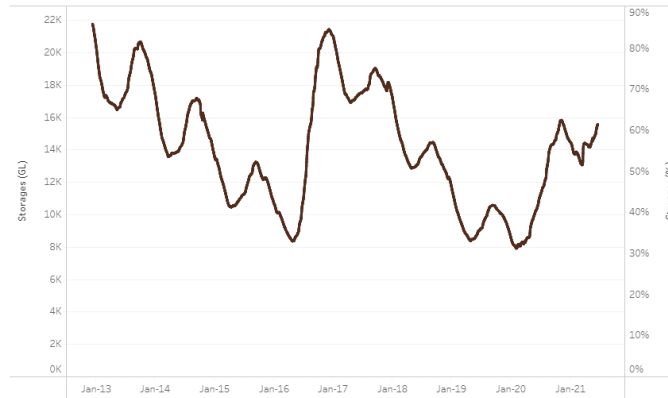
Note: This rainfall forecast is produced from computer models. As the model outputs are not altered by weather forecasters, it is important to check local forecasts and warnings issued by the Bureau of Meteorology.

## 2. Water

### 2.1. Water markets – current week

Water storage in the Murray–Darling Basin (MDB) increased by 208 gigalitres (GL) between 16 June 2021 and 23 June 2021. The current volume of water held in storage is 15,541 GL, which represents 61% of total capacity. This is 44% or 4,768 GL more than at the same time last year.

**Water storages in the Murray-Darling Basin, 2013–2021**

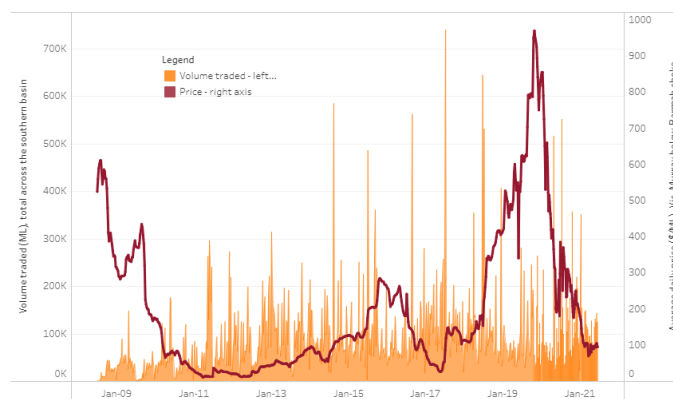


Water storage data is sourced from the Bureau of Meteorology.

Allocation prices in the Victorian Murray below the Barmah Choke decreased from \$105 per ML on 11 June 2021 to \$94 per ML on 19 June 2021. Prices are lower in the Murrumbidgee due to the binding of the Murrumbidgee export limit.

Region	\$/ML
NSW Murray Above	90
NSW Murrumbidgee	87
VIC Goulburn-Broken	67
VIC Murray Below	94

**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 24 June 2021.

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/products/weekly\\_update/weekly-update-240621](http://www.agriculture.gov.au/abares/products/weekly_update/weekly-update-240621)

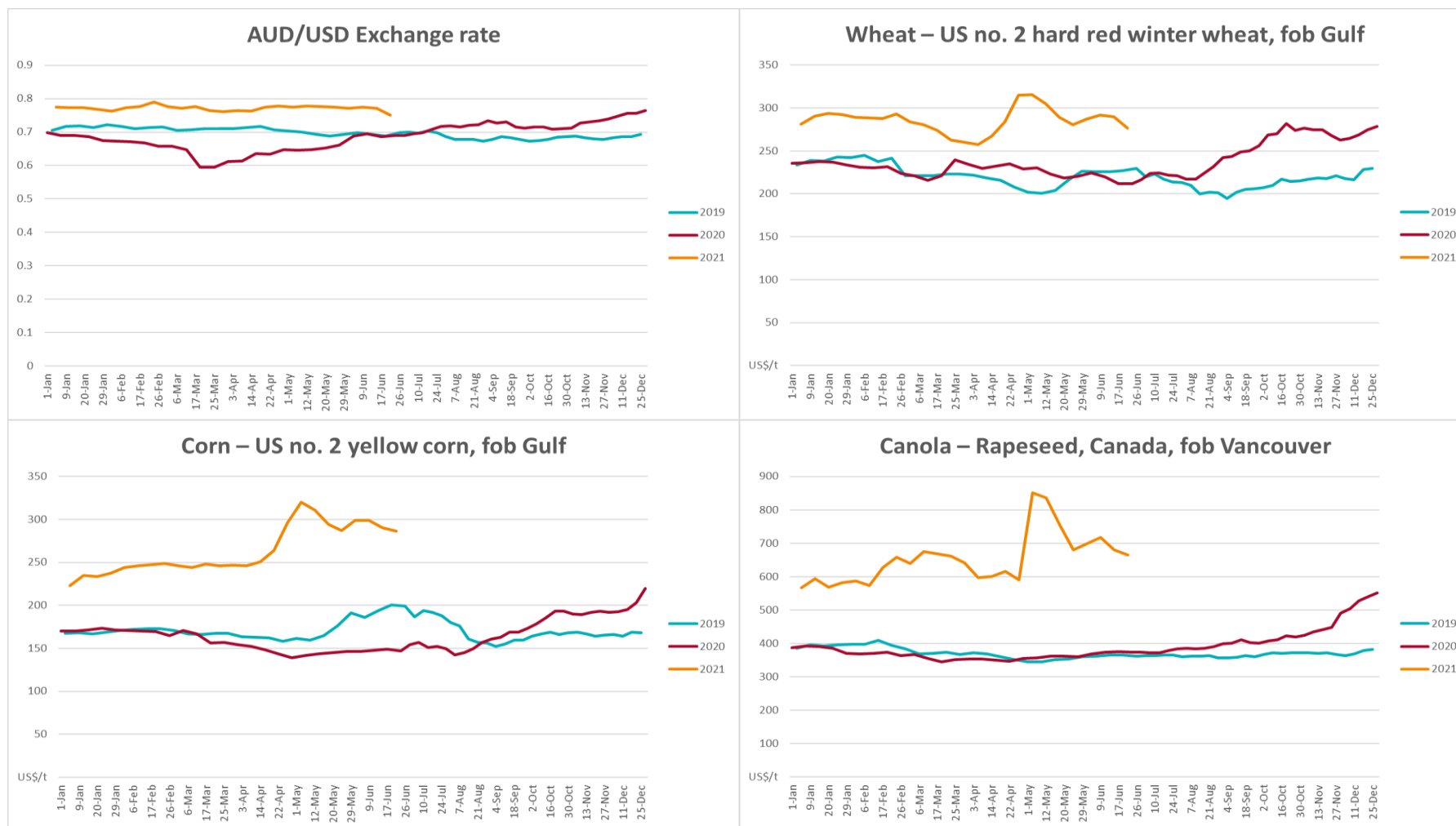
### 3. Commodities

Indicator	Week ended	Unit	Latest price	Previous week	Weekly change	Price 12 months ago	Annual change
<b>Selected world indicator prices</b>							
AUD/USD Exchange rate	23-Jun	A\$/US\$	0.75	0.77	-3%	0.69	9%
Wheat – US no. 2 hard red winter wheat, fob Gulf	23-Jun	US\$/t	277	290	-5%	216	28%
Corn – US no. 2 yellow corn, fob Gulf	23-Jun	US\$/t	286	290	-1%	154	85%
Canola – Rapeseed, Canada, fob Vancouver	23-Jun	US\$/t	665	681	-2%	374	78%
Cotton – Cotlook 'A' Index	23-Jun	USc/lb	94	96	-1%	69	37%
Sugar – Intercontinental Exchange, nearby futures, no.11 contract	23-Jun	USc/lb	16.8	17.3	-3%	12	37%
Wool – Eastern Market Indicator	23-Jun	Ac/kg clean	1,468	1,315	12%	1,179	25%
Wool – Western Market Indicator	16-Jun	Ac/kg clean	1,477	1,385	7%	1,512	-2%
<b>Selected Australian grain export prices</b>							
Milling Wheat – APW, Port Adelaide, SA	23-Jun	A\$/t	378	381	-1%	316	20%
Feed Wheat – ASW, Port Adelaide, SA	23-Jun	A\$/t	373	374	0%	302	24%
Feed Barley – Port Adelaide, SA	23-Jun	A\$/t	332	328	1%	271	23%
Canola – Kwinana, WA	23-Jun	A\$/t	744	787	-5%	631	18%
Grain Sorghum – Brisbane, QLD	23-Jun	A\$/t	379	380	0%	366	3%
<b>Selected domestic livestock indicator prices</b>							
Beef – Eastern Young Cattle Indicator	23-Jun	Ac/kg cwt	932	907	3%	745	25%
Mutton – Mutton indicator (18–24 kg fat score 2–3), Vic	23-Jun	Ac/kg cwt	662	653	1%	683	-3%
Lamb – Eastern States Trade Lamb Indicator	23-Jun	Ac/kg cwt	822	839	-2%	941	-13%
Pig – Eastern Seaboard (60.1–75 kg), average of buyers & sellers	09-Jun	Ac/kg cwt	318	318	0%	406	-22%
Goats – Eastern States (12.1–16 kg)	23-Jun	Ac/kg cwt	875	872	0%	748	17%
Live cattle – Light steers ex Darwin to Indonesia	17-Feb	Ac/kg lwt	355	355	0%	360	-1%
Live sheep – Live wethers (Muchea WA saleyard) to Middle East	19-May	\$/head	145	145	0%	N/A	N/A

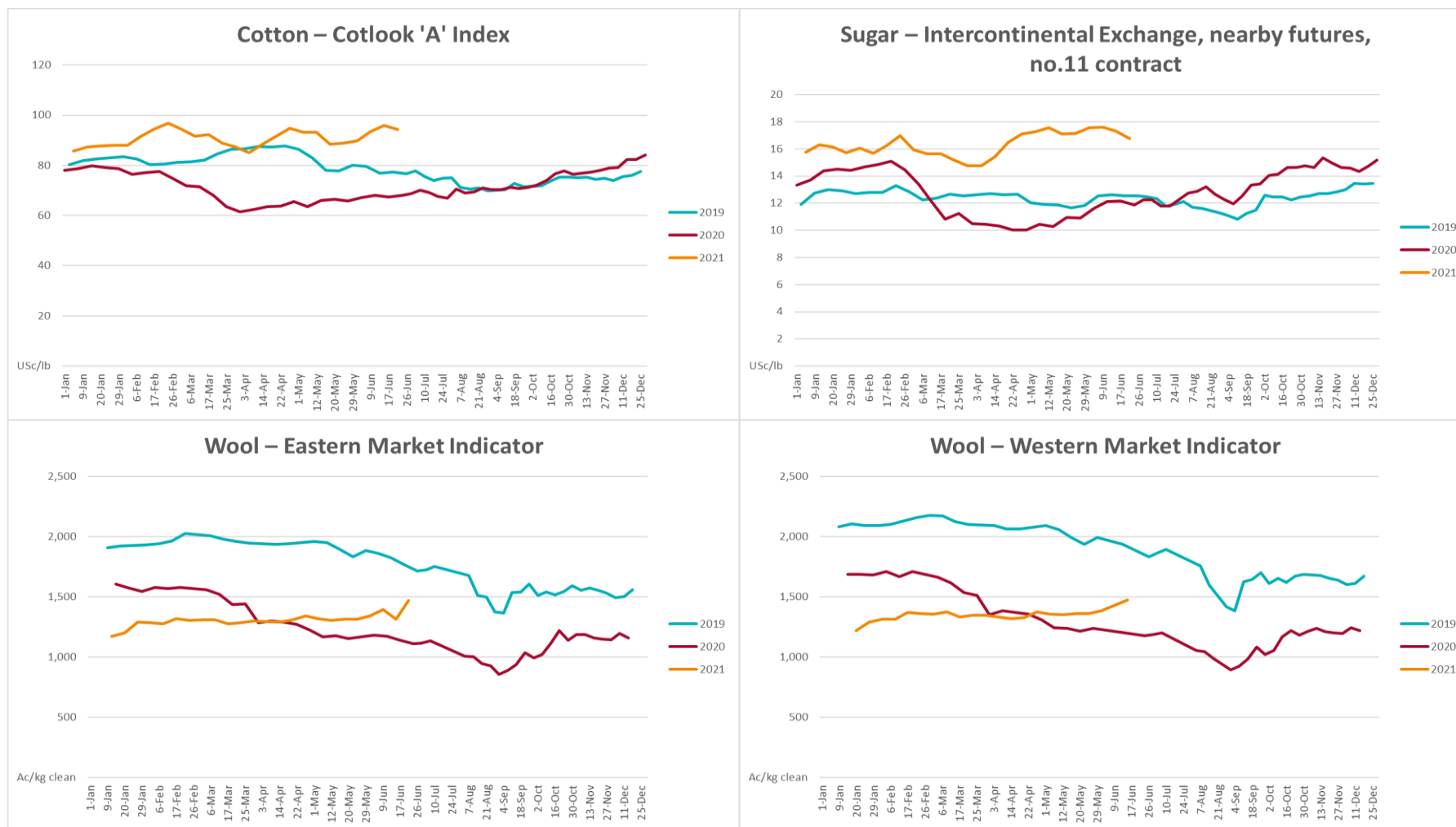
Indicator	Week ended	Unit	Latest price	Previous week	Weekly change	Price 12 months ago	Annual change
<b>Global Dairy Trade (GDT) weighted average prices <sup>a</sup></b>							
Dairy – Whole milk powder	16-Jun	US\$/t	3,997	4,062	-2%	3,249	23%
Dairy – Skim milk powder	16-Jun	US\$/t	3,356	3,415	-2%	2,521	33%
Dairy – Cheddar cheese	16-Jun	US\$/t	4,328	4,324	0%	4,851	-11%
Dairy – Anhydrous milk fat	16-Jun	US\$/t	5,687	5,654	1%	6,140	-7%

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

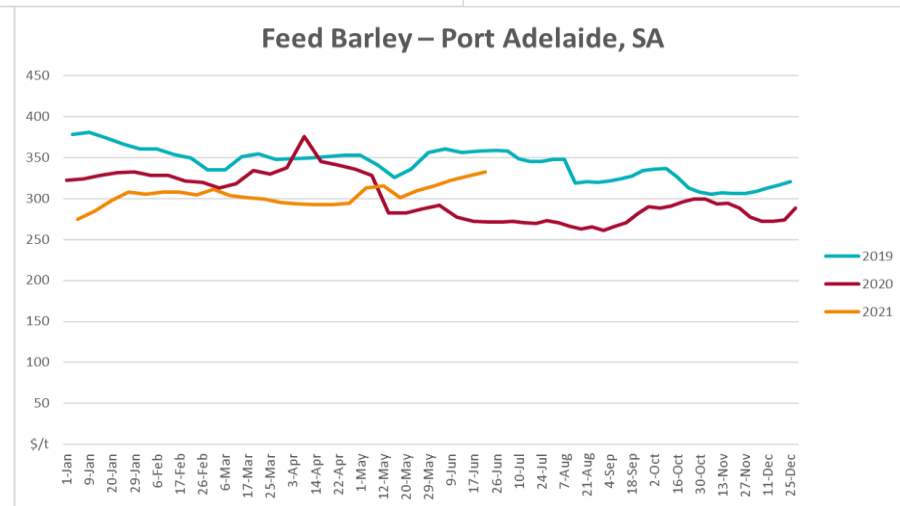
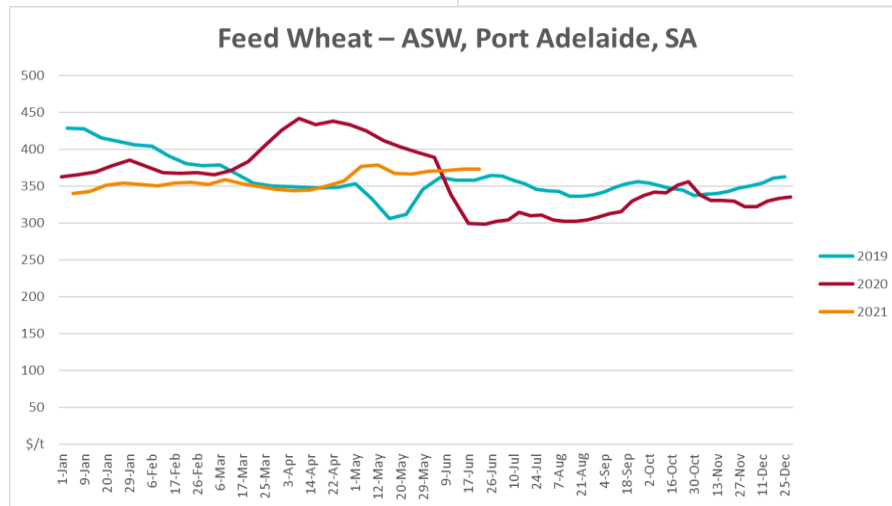
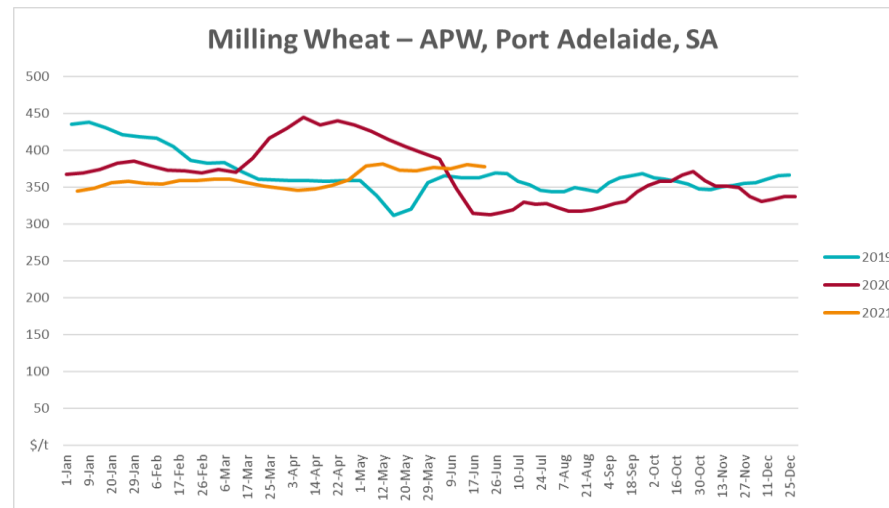
### 3.1. Selected world indicator prices

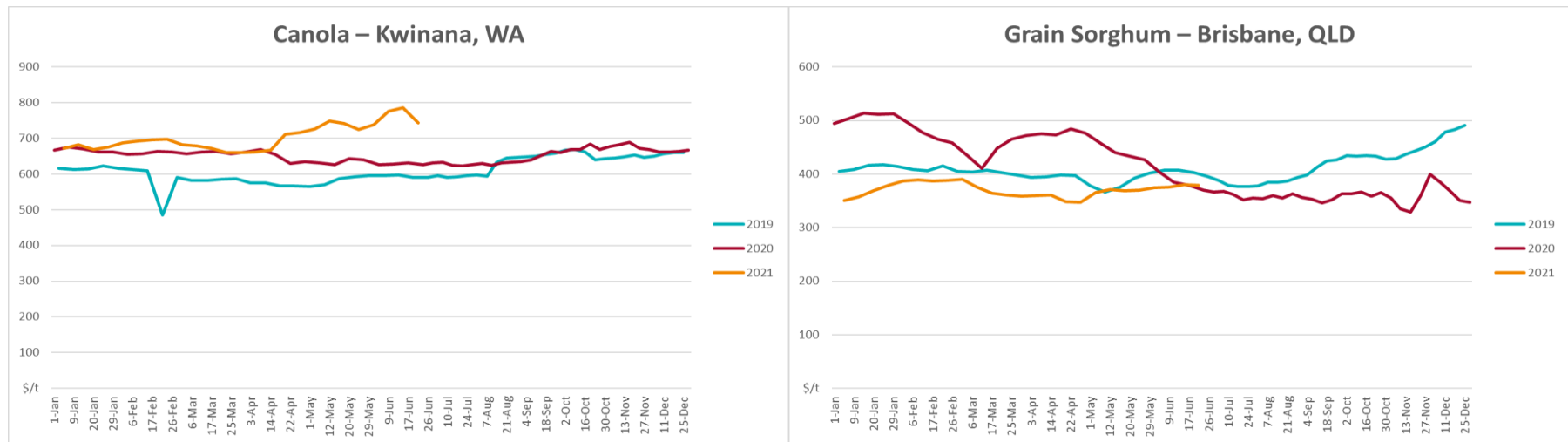




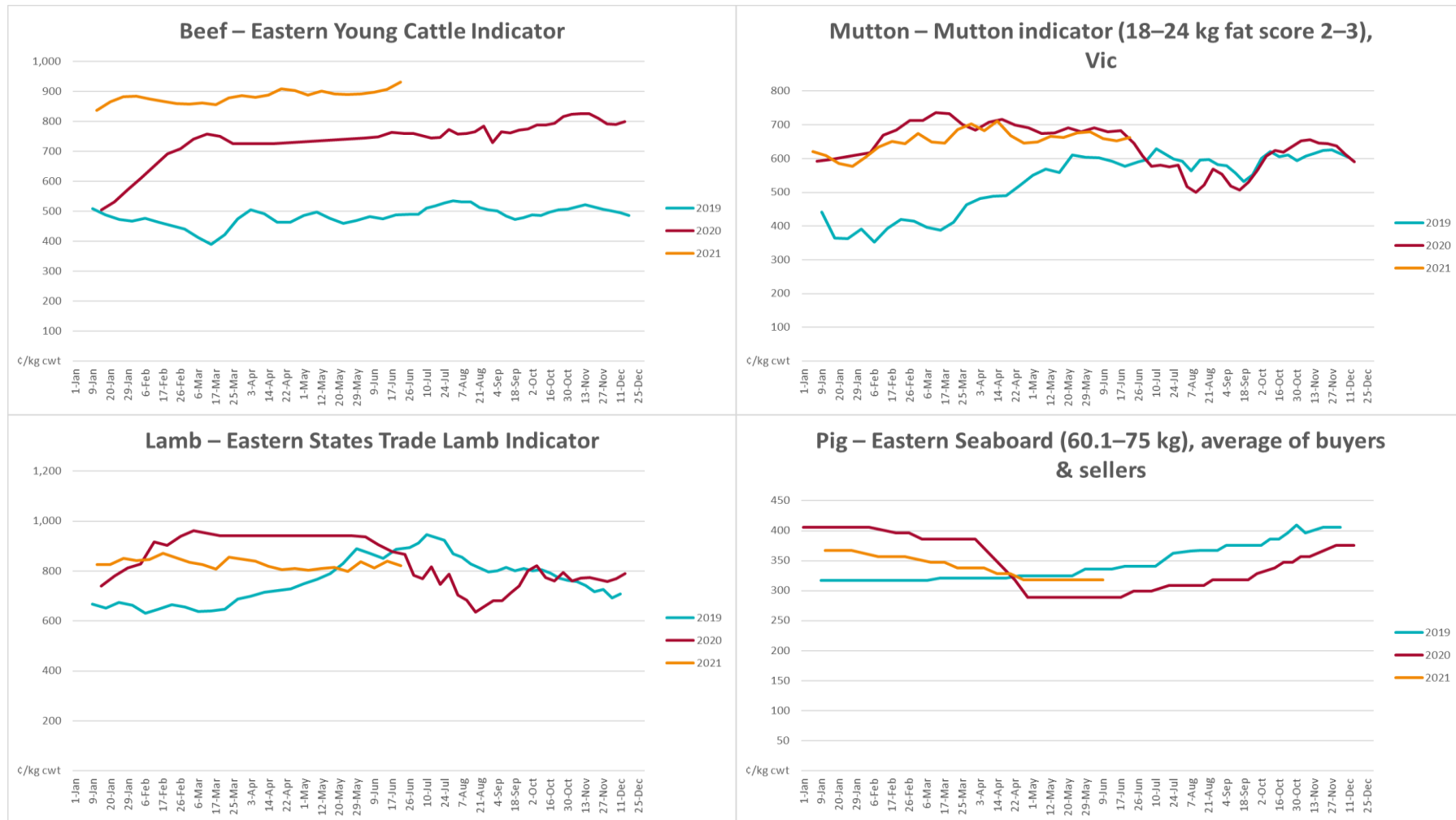


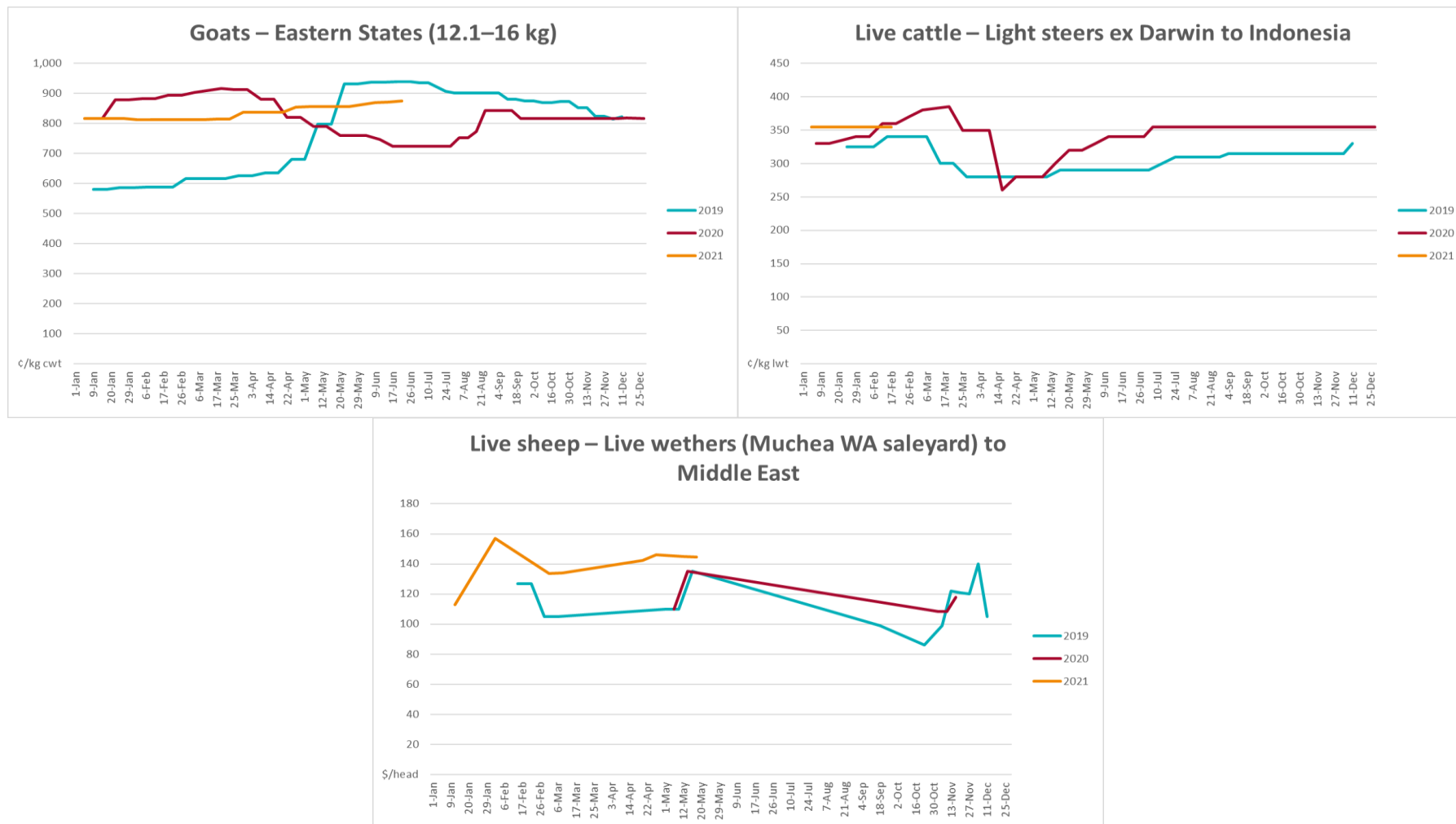
### 3.2. Selected domestic crop indicator prices





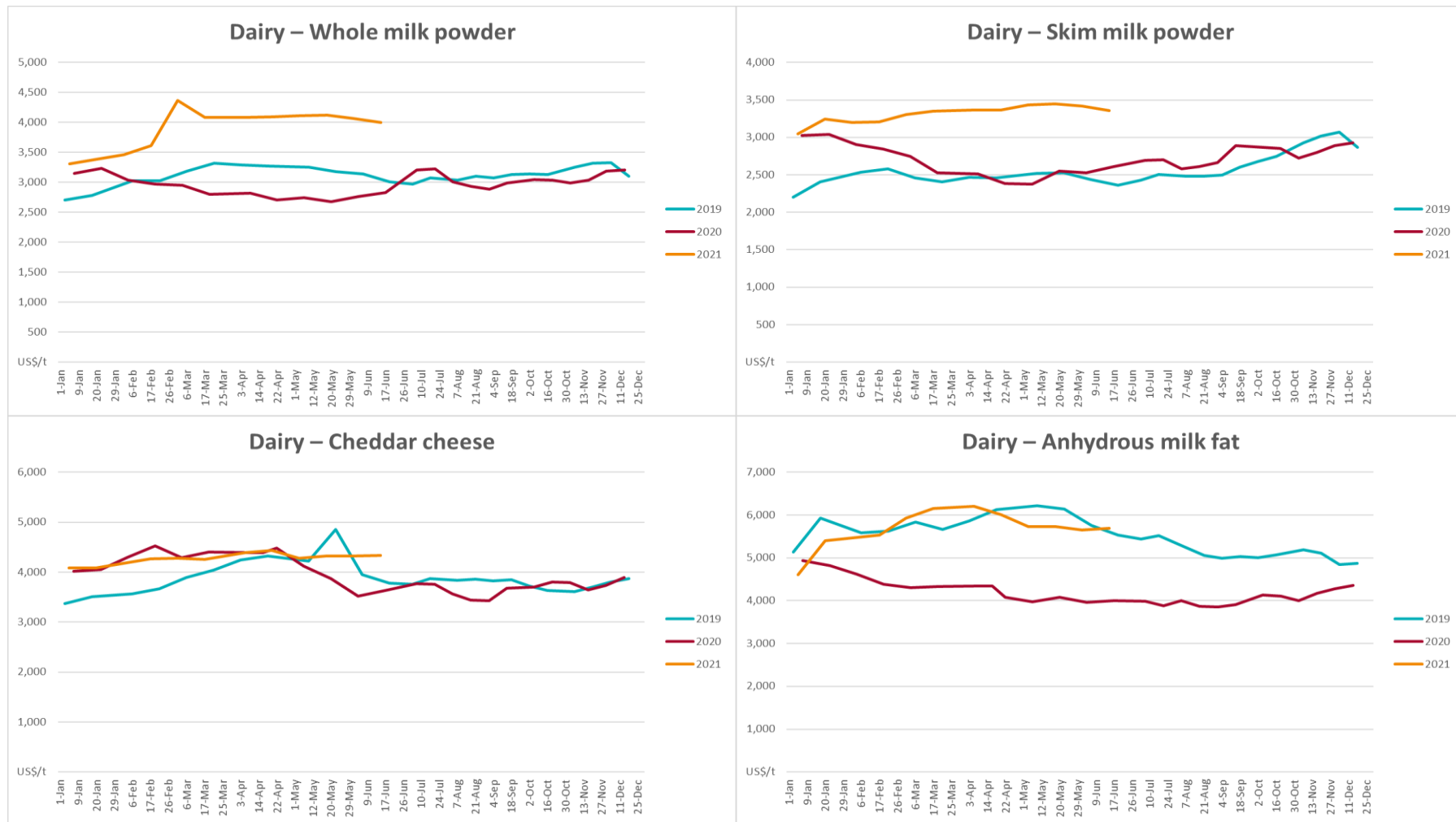
### 3.3. Selected domestic livestock indicator prices



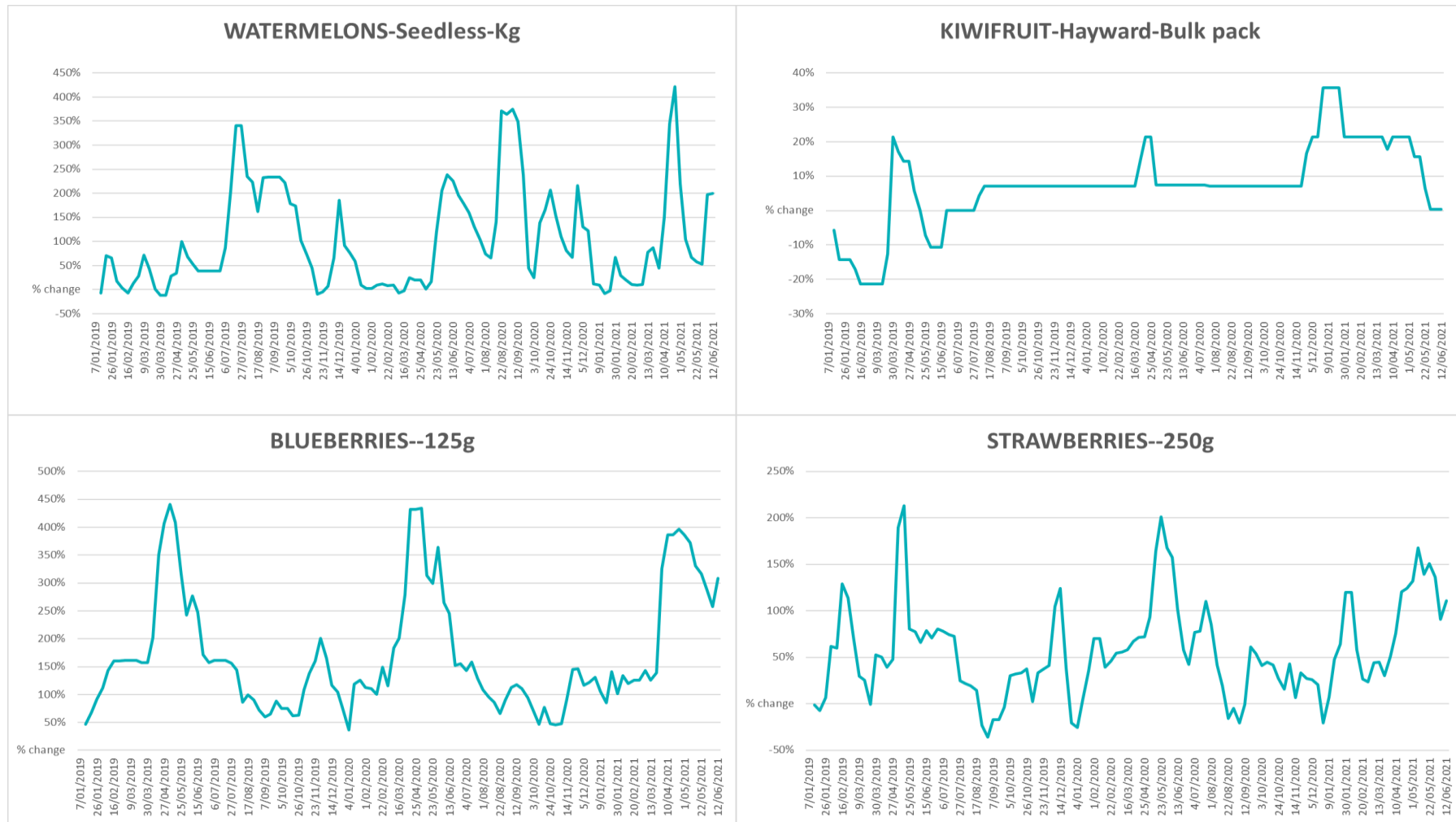


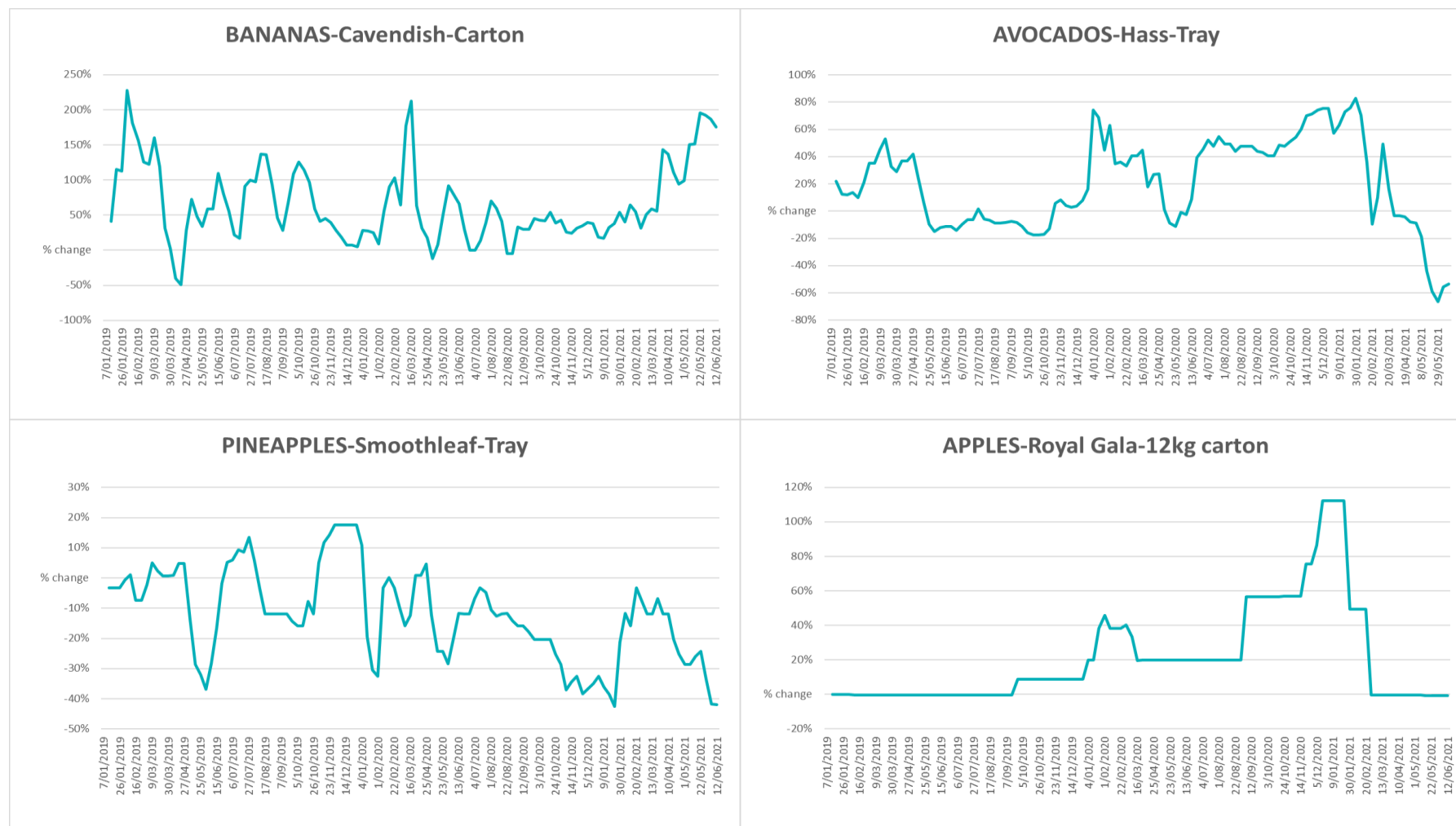


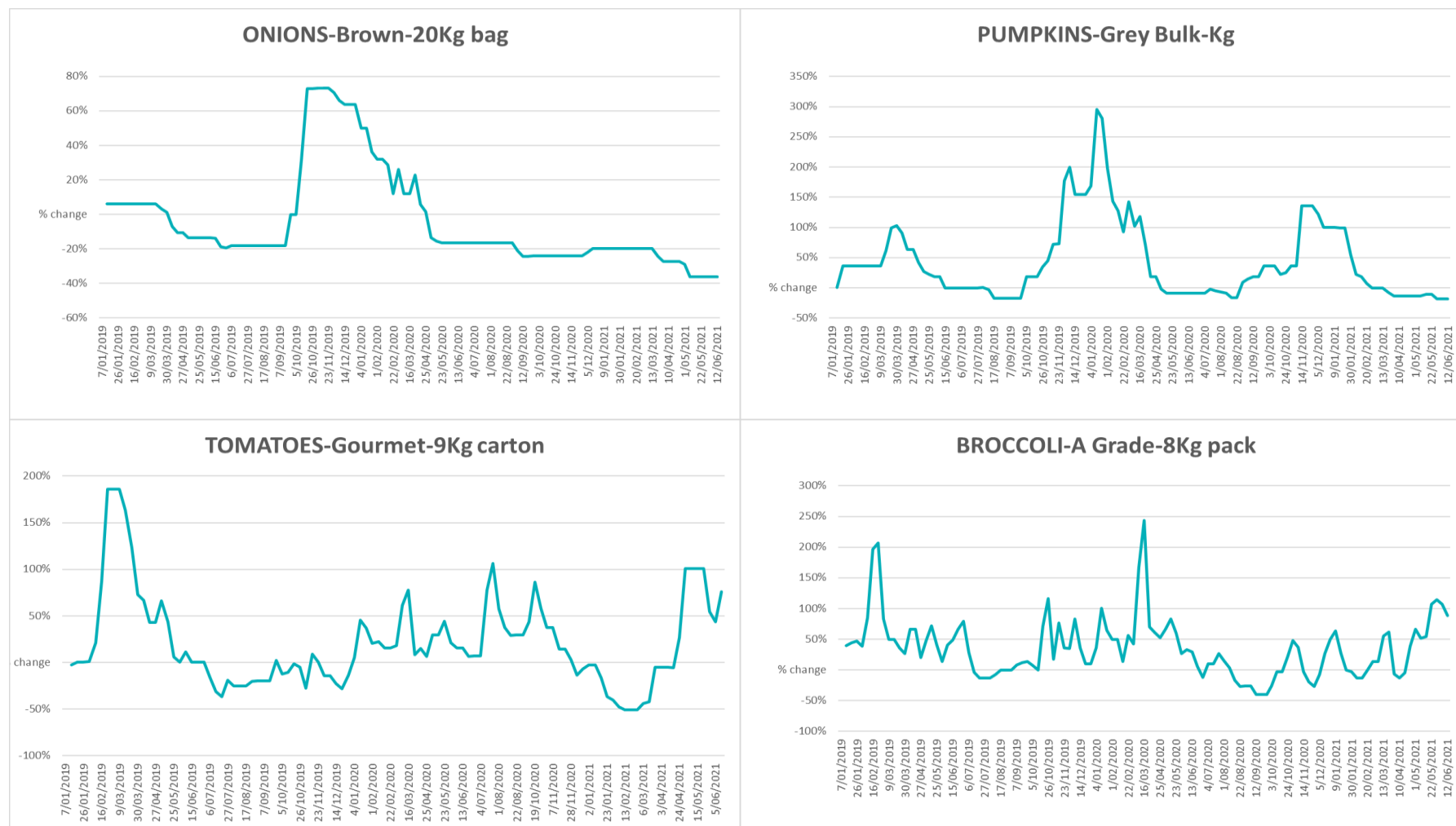
### 3.4. Global Dairy Trade (GDT) weighted average prices

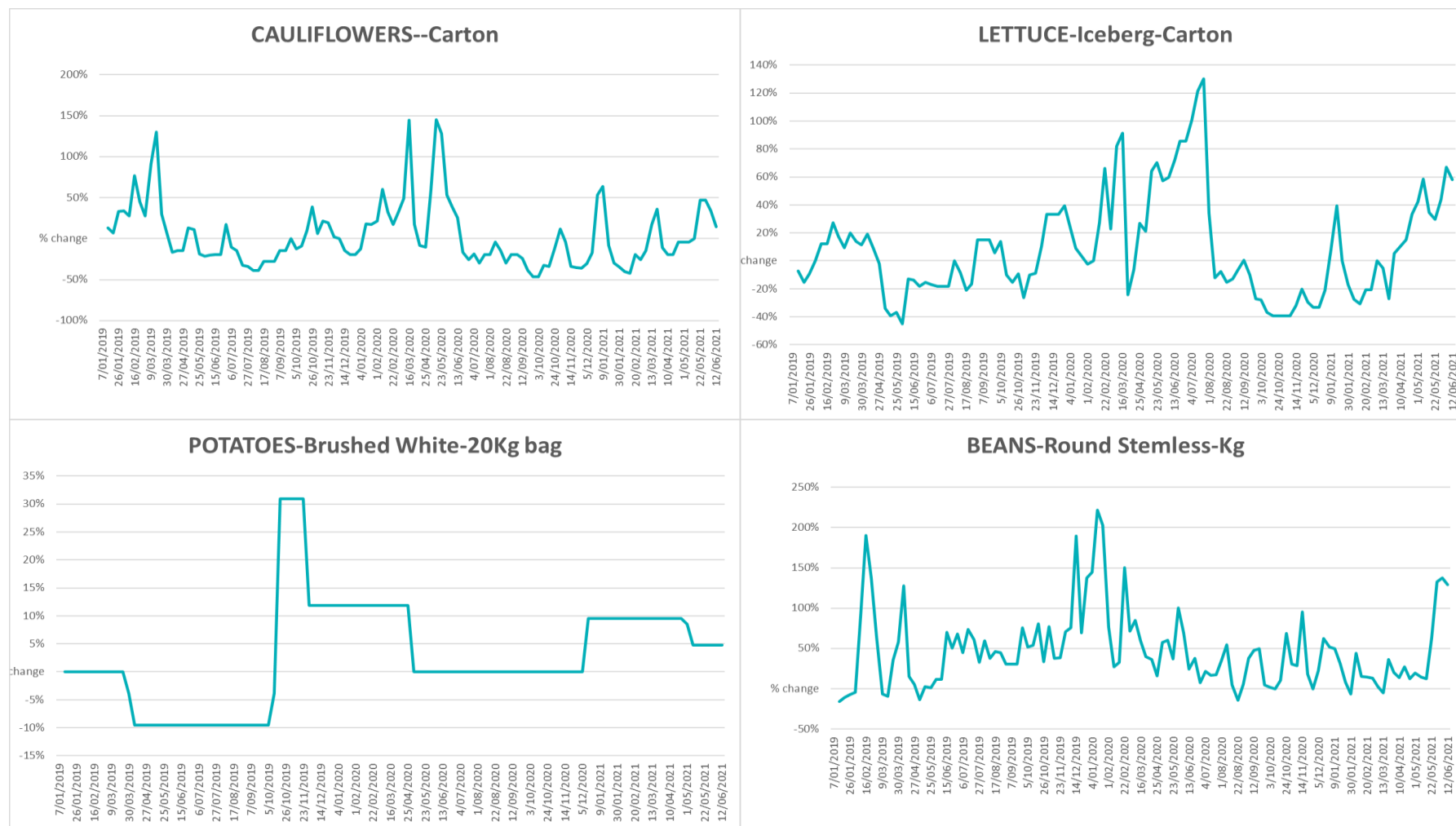


### 3.5. Selected fruit and vegetable prices











## 4. Data attribution

### Climate

#### Bureau of Meteorology

- Weekly rainfall totals: [www.bom.gov.au/climate/maps/rainfall/](http://www.bom.gov.au/climate/maps/rainfall/)
- Monthly and last 3-month rainfall percentiles: [www.bom.gov.au/water/landscape/](http://www.bom.gov.au/water/landscape/)
- Temperature anomalies: [www.bom.gov.au/jsp/awap/temp/index.jsp](http://www.bom.gov.au/jsp/awap/temp/index.jsp)
- Rainfall forecast: [www.bom.gov.au/jsp/watl/rainfall/pme.jsp](http://www.bom.gov.au/jsp/watl/rainfall/pme.jsp)
- Seasonal outlook: [www.bom.gov.au/climate/outlooks/#/overview/summary/](http://www.bom.gov.au/climate/outlooks/#/overview/summary/)
- Climate drivers: <http://www.bom.gov.au/climate/enso/>
- Soil moisture: [www.bom.gov.au/water/landscape/](http://www.bom.gov.au/water/landscape/)

#### Other

- Pasture growth: [www.longpaddock.qld.gov.au/aussiegrass/](http://www.longpaddock.qld.gov.au/aussiegrass/)
- 3-month global outlooks: [Environment and Climate Change Canada](#), [NOAA Climate Prediction Center](#), [EUROBRISA CPTEC/INPE](#), [European Centre for Medium-Range Weather Forecasts](#), [Hydrometcenter of Russia](#), [National Climate Center Climate System Diagnosis and Prediction Room \(NCC\)](#), [International Research Institute for Climate and Society](#)
- Global production: <https://ipad.fas.usda.gov/ogamaps/cropmapsandcalendars.aspx>
- Autumn break: Pook et al., 2009, <https://rmets-onlinelibrary-wiley-com.virtual.anu.edu.au/doi/epdf/10.1002/joc.1833>

### Water

#### Prices

- Waterflow: <https://www.waterflow.io/>
- Ruralco: <https://www.ruralcowater.com.au/>

#### Bureau of Meteorology:

- Allocation trade: <http://www.bom.gov.au/water/dashboards/#/water-markets/mdb/at>
- Storage volumes: <http://www.bom.gov.au/water/dashboards/#/water-storages/summary/drainage>

#### Trade constraints:

- Water NSW: <https://www.watarnsw.com.au/customer-service/ordering-trading-and-pricing/trading/murrumbidgee>
- Victorian Water Register: <https://www.waterregister.vic.gov.au/TradingRules2019/>

### Commodities

#### Fruit and vegetables

- Datafresh: [www.freshstate.com.au](http://www.freshstate.com.au)

#### Pigs

- Australian Pork Limited: [www.australianpork.com.au](http://www.australianpork.com.au)

#### Dairy

- Global Dairy Trade: [www.globaldairytrade.info/en/product-results/](http://www.globaldairytrade.info/en/product-results/)

#### World wheat, canola

- International Grains Council

#### World coarse grains

- United States Department of Agriculture

#### World cotton

- Cotlook: [www.cotlook.com/](http://www.cotlook.com/)

#### World sugar

- New York Stock Exchange - Intercontinental Exchange

#### Wool

- Australian Wool Exchange: [www.awex.com.au/](http://www.awex.com.au/)
- Domestic wheat, barley, sorghum and canola
  - Jumbuk Consulting Pty Ltd: <http://www.jumbukag.com.au/>

#### Cattle, beef, mutton, lamb, goat and live export

- Meat and Livestock Australia: [www.mla.com.au/Prices-and-market](http://www.mla.com.au/Prices-and-market)

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