



Weekly Australian Climate, Water and Agricultural Update

No. 15/2021

22 April 2021

Summary of key issues

- During the week ending 21 April 2021, blocking high pressure systems resulted in little rainfall being recorded across much of Australia. However, low pressure troughs generated moderate rainfall across parts of north-eastern, south-eastern and north-western Australia ([see Section 1.1](#)).
- The rainfall across cropping regions in northern New South Wales and southern Queensland has likely been beneficial for early sown winter crops, however, it may have interrupted late summer crop harvesting and winter crop field preparation.
- Oceanic and atmospheric indicators show that the El Niño-Southern Oscillation (ENSO) remains neutral and its influence on Australia's weather patterns continues to weaken. The combination of a neutral ENSO, neutral Indian Ocean Dipole (IOD) and the eastward movement of the Madden-Julian Oscillation (MJO) outside of Australia's region is likely to result in below average rainfall for much of Australia during the remainder of autumn ([see Section 1.2](#)).
- There is a 50% chance of recording average or close to average May to July rainfall across most winter cropping regions. However, cropping regions in western New South Wales, northern Queensland and central Victoria have less than a 50% chance of recording average May to July rainfall. Despite this, average to above average soil moisture levels in New South Wales, Queensland and parts of Victoria are likely to still provide good conditions for planting of winter crops ([see Section 1.3](#)).
- Over the next eight days, troughs, cold fronts and onshore winds are likely to bring showers and storms to parts of northern and eastern Australia, while high pressure systems are expected to keep the majority of Australia dry.
- In Australia's cropping regions, rainfall totals of between 5 and 15 millimetres are expected across parts of far northern Queensland over the next eight days. Little to no rainfall is expected across remaining cropping regions. The low expected rainfall totals across most cropping regions will allow harvesting of late sown summer crops, as well as field preparation and sowing of winter crops where soil moisture allows to continue without delay ([see Section 1.4](#)).
- Water storage in the Murray-Darling Basin (MDB) decreased by 1 gigalitres (GL) between 14 April 2021 and 21 April 2021. The current volume of water held in storage is 14,105 GL, which represents 56% of total capacity. This is 64% or 5,526 GL more than at the same time last year.
- Allocation prices in the Victorian Murray below the Barmah Choke decreased from \$101 per ML on 15 April 2021 to \$80 per ML on 22 April 2021. Prices are lower in the Murrumbidgee due to binding of the Murrumbidgee export limit.

1. Climate

1.1. Rainfall this week

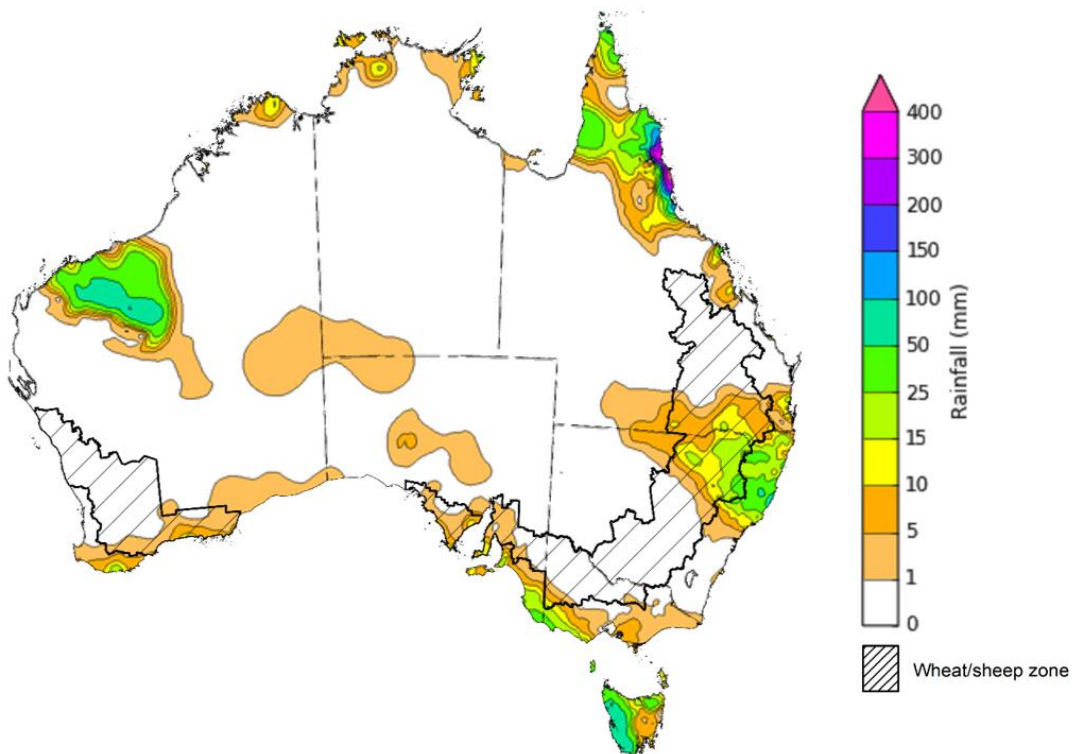
During the week ending 21 April 2021, blocking high pressure systems resulted in little rainfall being recorded across much of Australia. In contrast, low pressure troughs generated moderate rainfall across parts of north-eastern, south-eastern and north-western Australia.

Rainfall totals of between 10 and 50 millimetres were recorded across parts of north-eastern New South Wales, northern and eastern Queensland, north-western Western Australia and isolated parts of far northern and far southern Australia. Rainfall in excess of 50 millimetres was recorded across parts of north-eastern Queensland, the west of Western Australia and western Tasmania.

In cropping regions, rainfall of between 10 and 50 millimetres was recorded across parts of northern New South Wales and southern Queensland. Rainfall of between 1 and 10 millimetres was recorded across cropping regions in parts of south-western Victoria, South Australia, southern Western Australia and remaining cropping regions in northern New South Wales and southern Queensland.

The rainfall across cropping regions in northern New South Wales and southern Queensland has likely been beneficial for early sown winter crops, however, it may have interrupted late summer crop harvesting and winter crop field preparation.

Rainfall for the week ending 21 April 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

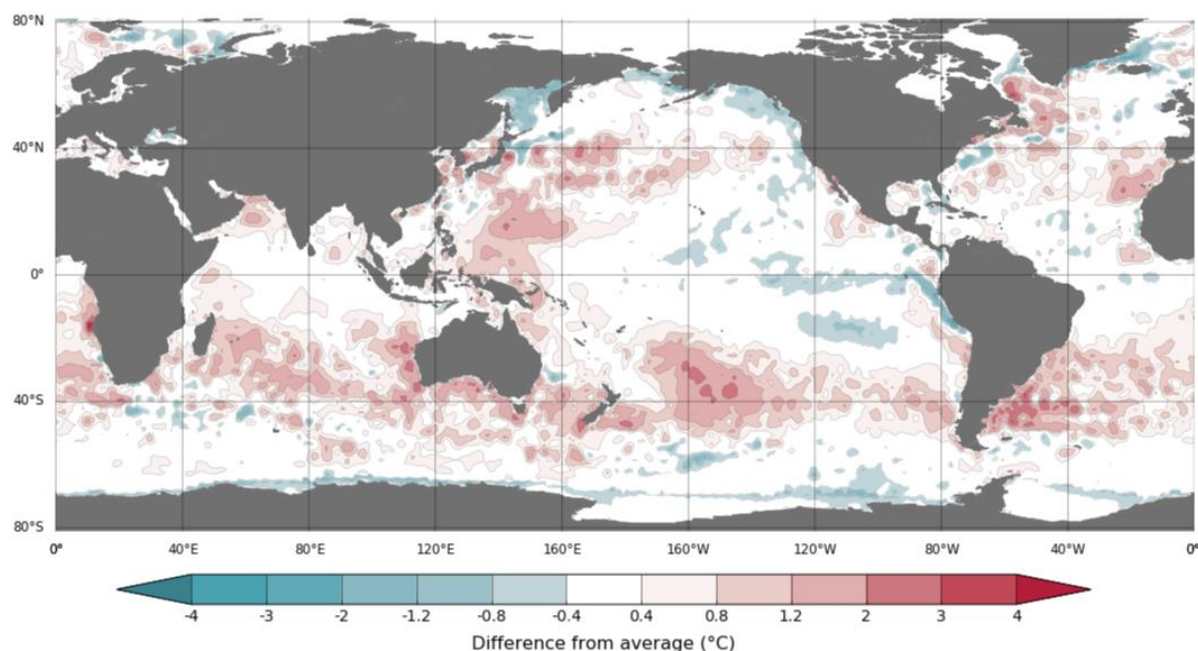
Throughout autumn and early winter the climate drivers with the largest potential impact on Australia's climate patterns are the El Niño–Southern Oscillation (ENSO), the Indian Ocean Dipole (IOD), the Madden–Julian Oscillation (MJO) and the Southern Annular Mode (SAM). These climate drivers will likely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

ENSO conditions have remained neutral, according to oceanic and atmospheric indicators, reducing its influence on Australia's climate patterns. The La Niña event of spring and summer 2020–21, which brought above average rainfall in northern and eastern Australia, has ended. The favourable growing conditions resulting from the La Niña event were central in developing ABARES summer crop and livestock production forecasts for 2020–21 embodied in the ABARES March 2021 edition of the *Agricultural commodities* and February 2021 edition of the *Australian crop report*.

The combination of a neutral ENSO, neutral IOD and the eastward movement of the MJO outside of Australia's region is likely to result in below average rainfall for much of Australia during the remainder of autumn. If neutral ENSO and neutral IOD conditions persist in winter, the SAM will likely be the main influence on winter rainfall, however the SAM is currently forecast to be neutral for the first half of May.

Over the past two weeks, sea surface temperature anomalies have continued to weaken across the tropical Pacific Ocean. Below average sea surface temperatures in the eastern Pacific Ocean are associated with La Niña conditions, but a return to long-term average sea surface temperatures is associated with the return to a neutral ENSO. As of 13 April 2021, all of the international climate models surveyed predict sea surface temperatures in the tropical Pacific to remain neutral until at least September. Sea surface temperatures near Western Australia, Indonesia and the Philippines remain above average. The warm temperature anomalies in the eastern Indian Ocean have weakened slightly over the past couple of weeks.

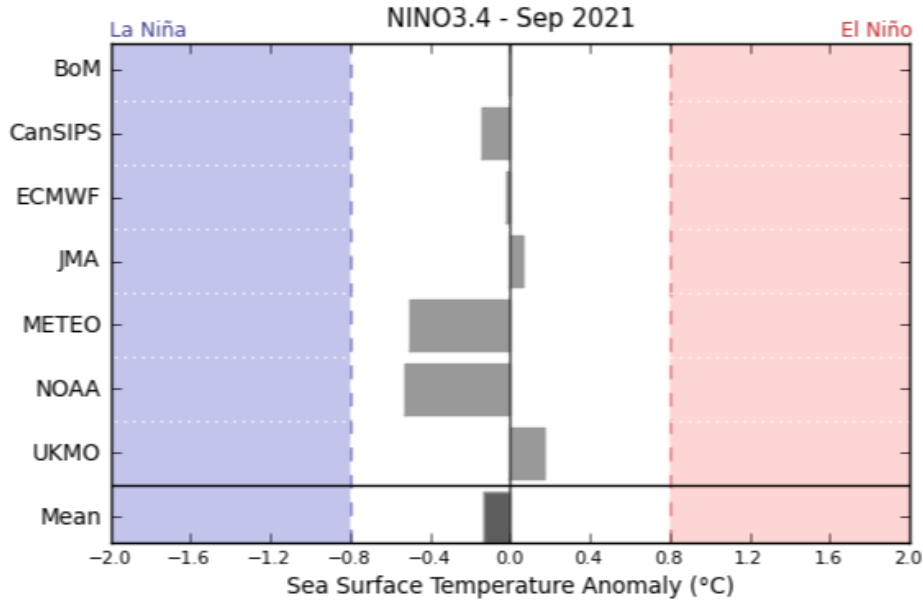
Difference from average sea surface temperature observations 5 April to 11 April 2021



Data: BOM SST
Climatology baseline: 1961 to 1990
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<http://www.bom.gov.au/climate> Weekly average: 11 April 2021
Created: 12/04/2021

International climate model outlooks for the NINO 3.4 region in September 2021

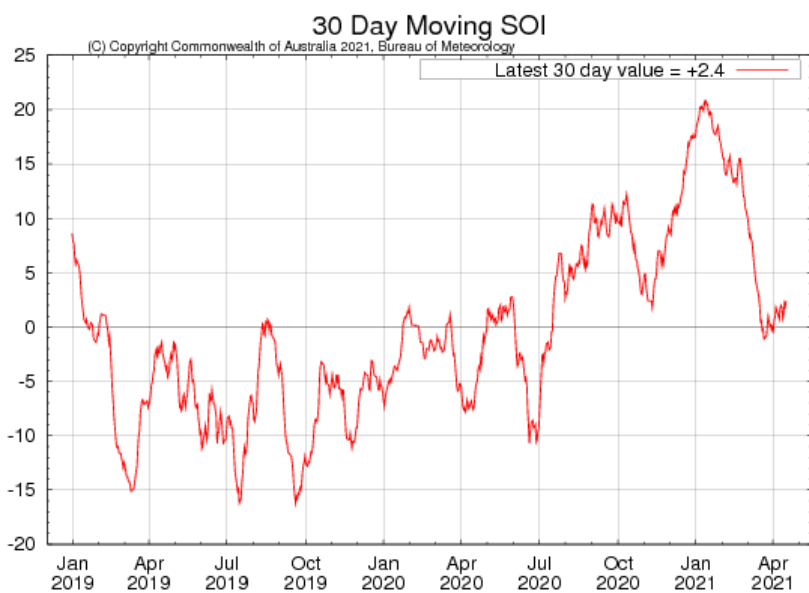


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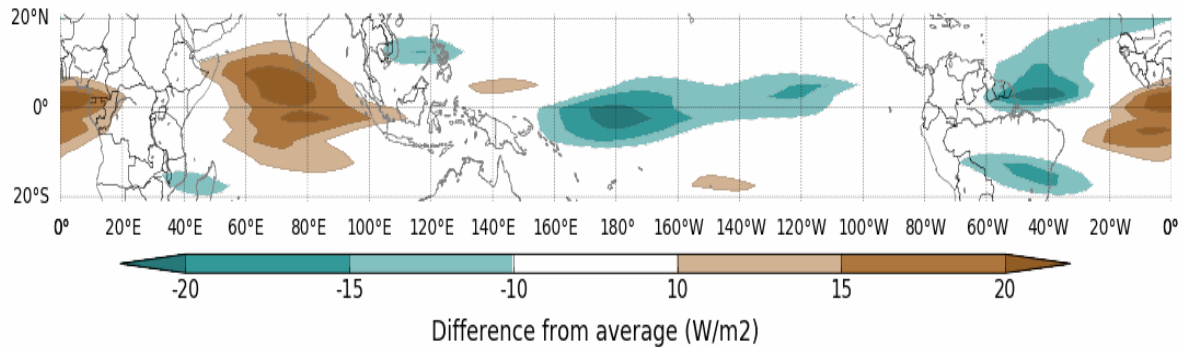
Trade wind strength across the tropical Pacific has returned to average over the past fortnight. Above average trade wind strength had been observed over spring and summer and are associated with La Niña events. Cloudiness near the Date Line has become above average over the past fortnight. The SOI provides an atmospheric measure of the development and intensity of the ENSO by assessing air pressure differences between Tahiti and Darwin. The 30-day SOI for the period ending 17 April was +2.4. For the period ending 11 April, the 90-day SOI value was +7.5. The 30-day SOI has stabilised below the La Niña threshold value of +7, while the 90-day SOI has continued to trend downwards but remains above the threshold. Overall, the SOI values suggest a likely return to neutral conditions.

30-day Southern Oscillation Index (SOI) values ending 17 April 2021



As at 16 April 2021 the MJO is of moderate strength and recently moved out of the Australian region and into the western Pacific. The MJO is a pulse of cloud and rainfall that moves eastward along the equator. The MJO had been the strongest climate driver impacting Australia over the past fortnight and brought above average rainfall to northern Australia. As the MJO moves eastwards over the Pacific, it will likely result in below average rainfall across northern Australia.

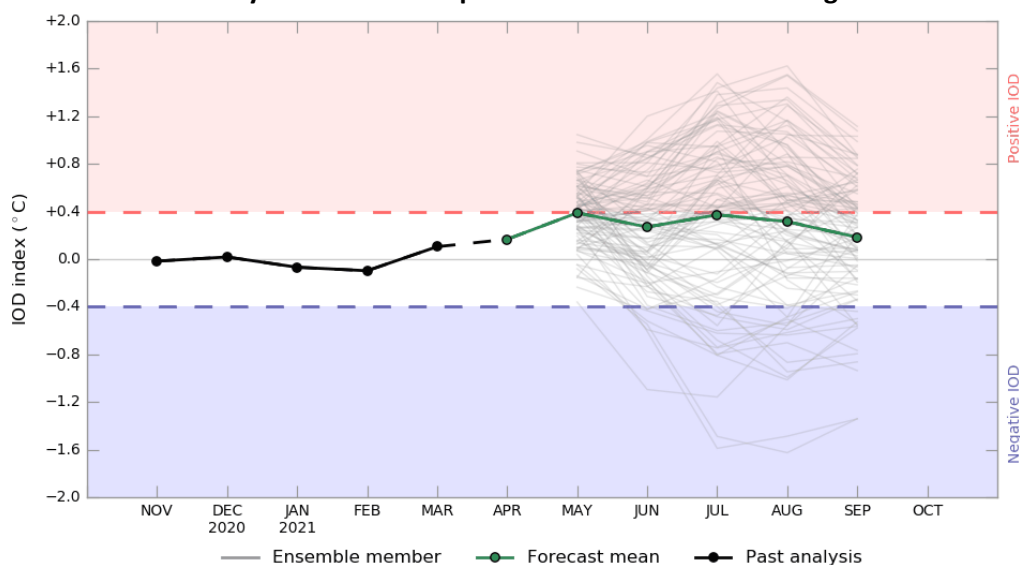
Madden-Julian Oscillation (MJO) daily index



www.bom.gov.au/climate
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 Model: ACCESS-S1 Forecast date: 16/04/2021
 Base period: 1990-2012 Model run date: 16/04/2021
 Note: This map displays the forecast outgoing longwave radiation (OLR) difference from expected cloudiness to identify convective rain clouds and the position of the Madden-Julian Oscillation (MJO). The blue shading indicates higher than normal, active or enhanced tropical weather and the brown shading indicates lower than normal clouds or suppressed conditions.

As at 11 April, the Indian Ocean Dipole (IOD) weekly value was $+0.12^{\circ}\text{C}$, which remains neutral. The international climate models surveyed by the Bureau of Meteorology have mixed expectations for the months ahead. Two of the five models predict a positive IOD in May (above $+0.4^{\circ}\text{C}$), while three anticipate the IOD remaining neutral. By September, two of the five models predict a negative IOD (below -0.4°C), while two expect neutral IOD conditions and one expects close to negative IOD conditions. A positive IOD is associated with lower rainfall and above average temperatures across southern Australia during winter and spring. A negative IOD is associated with above average winter and spring rainfall across southern Australia, as well as the far north. It is also associated with an early northern rainfall onset.

Monthly sea surface temperature anomalies for IOD region



www.bom.gov.au/climate
 Commonwealth of Australia 2021, Australian Bureau of Meteorology
 Model run: 10 Apr 2021
 Model: ACCESS-S1
 Base period 1990-2012

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/>

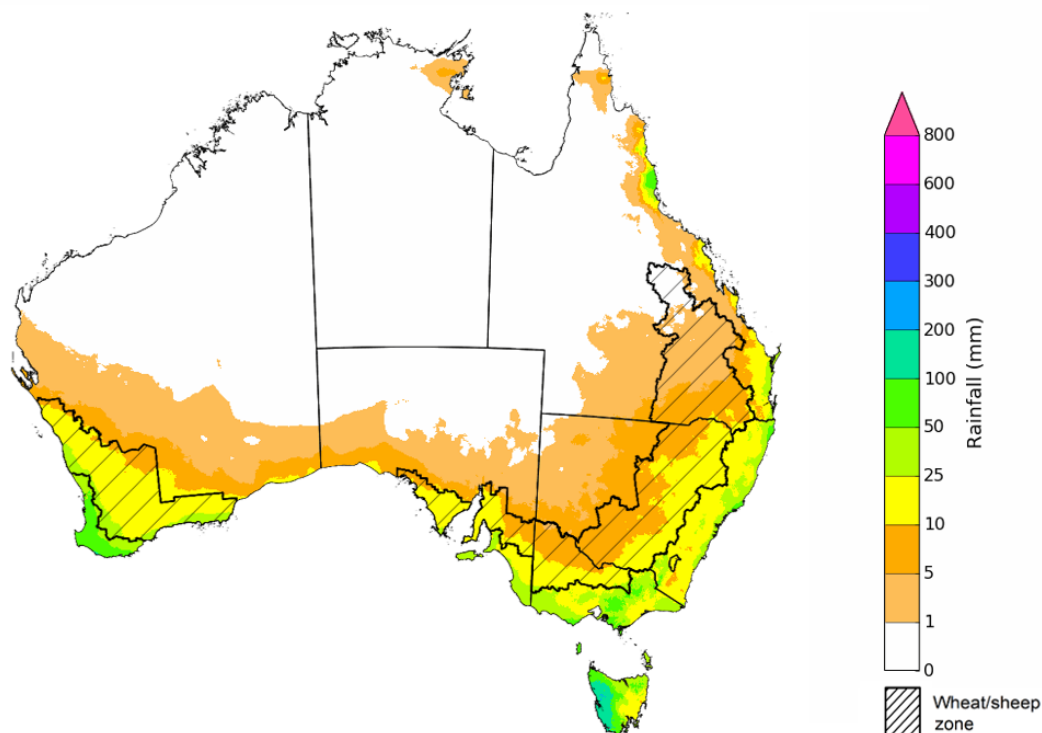
The Bureau of Meteorology's latest rainfall outlook indicated drier than average conditions are more likely for parts of western and northern Australia during May. While much of this area typically has little to no rainfall during May, the drier than average conditions expected in north-eastern Queensland and the north of the Northern Territory are likely due to the presence of a moderate strength MJO in the western Pacific suppressing rainfall in northern Australia.

The outlook for May 2021 indicates that there is a 75% chance of rainfall totals between 10 and 100 millimetres across parts of eastern and southern Australia. Rainfall totals in excess of 100 millimetres are expected across parts of western Tasmania.

Across cropping regions there is a 75% chance of rainfall totals of between 5 and 25 millimetres across much of New South Wales, southern Queensland, Victoria, South Australian and Western Australian cropping regions. There is a 75% chance of rainfall totals between 25 and 50 millimetres for isolated parts of western and southern Western Australian cropping regions.

The ACCESS-S climate model suggests there is a 50% chance of recording close to average May rainfall totals across much of Australia, including most cropping regions in New South Wales, central and southern Queensland, Victoria, South Australia and Western Australia. An early autumn break has occurred for much of the New South Wales, southern areas of Queensland, Western Australian and Tasmanian cropping regions. Cropping regions in parts of western Victoria and South Australia will likely rely on May rainfall to support the germination and establishment of winter crops. The rainfall outlook for May will provide ideal conditions for harvesting of late-sown summer crops in northern cropping regions and planting of winter crops in the southern cropping regions.

Rainfall totals that have a 75% chance of occurring May 2021



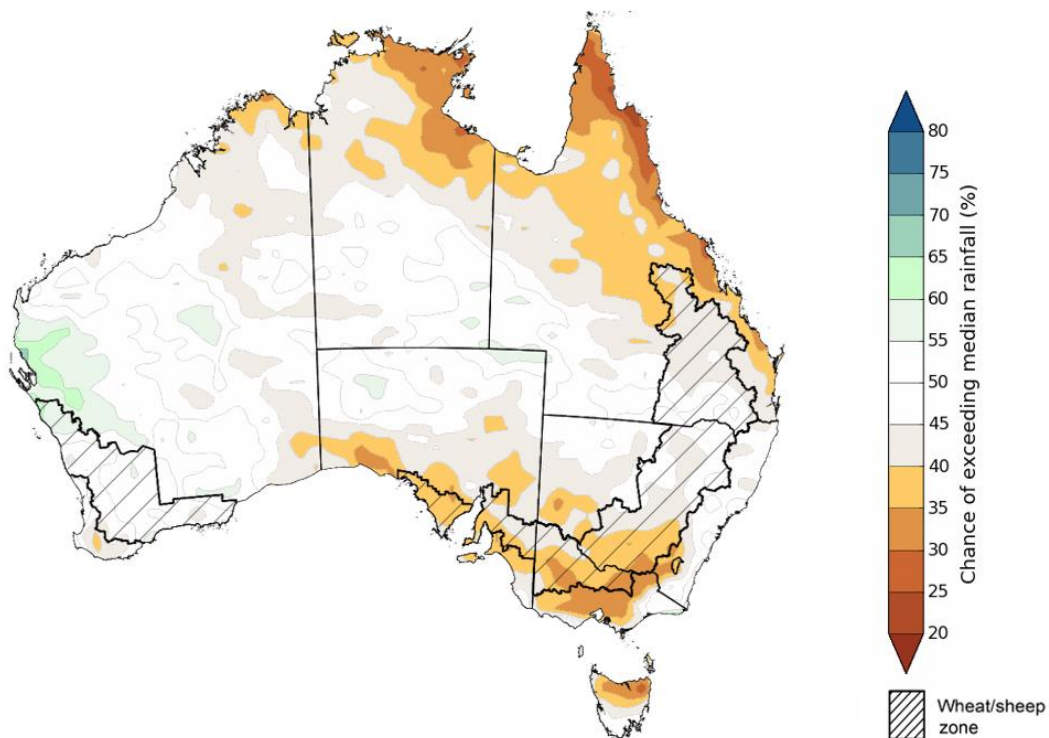
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The rainfall outlook for May to July 2021 suggests there is a greater than 60% chance of above average rainfall across isolated parts of Western Australia. There is a less than 40% chance of exceeding median rainfall across much of Victoria and parts of southern New South Wales, northern and eastern Queensland, southern South Australia, far northern Western Australia, the north of the Northern Territory and northern Tasmania (Bureau of Meteorology 'National Climate Outlook', 15 April 2021).

Bureau of Meteorology rainfall outlooks for May to July have greater than 55% past accuracy across most of Australia, excluding parts of southern New South Wales, Victoria, South Australia and northern Tasmania where for this time of the year the outlook model performs no better than random chance. In contrast, outlook accuracy is greater than 65% accuracy across large parts of New South Wales, Queensland, Western Australia and the Northern Territory, meaning more confidence can be placed in the rainfall outlook in these regions.

Chance of exceeding the median rainfall May to July 2021



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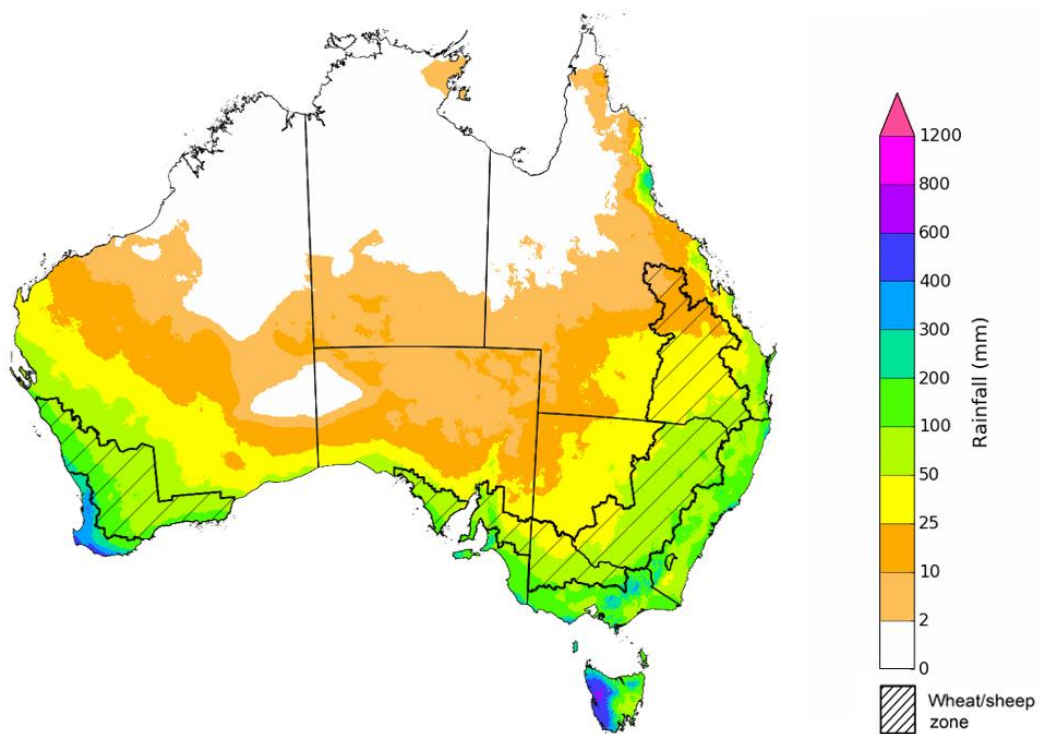
Issued: 15/04/2021

The outlook for May to July suggests there is a 75% chance of rainfall totals between 25 and 100 millimetres across much of New South Wales, south-eastern Queensland, northern Victoria, the south of Southern Australia, the southwest of Western Australia and eastern Tasmania. Rainfall totals in excess of 100 millimetres are likely across parts of the east of New South Wales, southern Victoria, south-eastern South Australia, south-western Western Australia, western and northern Tasmania and isolated parts of eastern Queensland.

Across cropping regions, there is a 75% chance of receiving between 25 and 100 millimetres in much of New South Wales, southern Queensland, Victoria, South Australia and Western Australia. Rainfall totals above 100 millimetres are expected in parts of the western and far southern cropping regions in Western Australia and isolated parts of cropping regions in eastern New South Wales, southern Victoria and southern South Australia. Totals of less than 25 millimetres are expected in some north Queensland cropping regions.

There is a 50% chance of recording average or close to average May to July rainfall totals across most winter cropping regions. However, cropping regions in western New South Wales, northern Queensland and central Victoria have less than a 50% chance of recording average May to July rainfall. Average to above average soil moisture levels in New South Wales, Queensland and parts of Victoria are likely to still provide good conditions for planting of winter crops despite the lower probabilities of receiving close to average rainfall totals in the coming months.

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

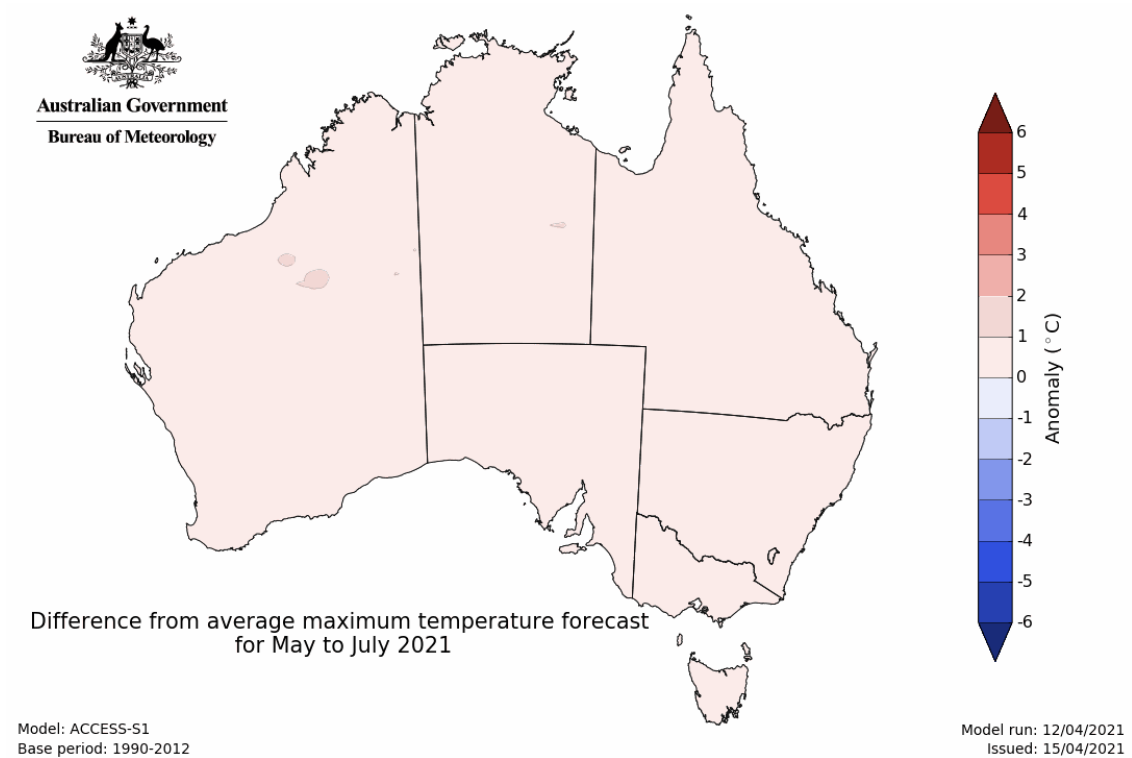


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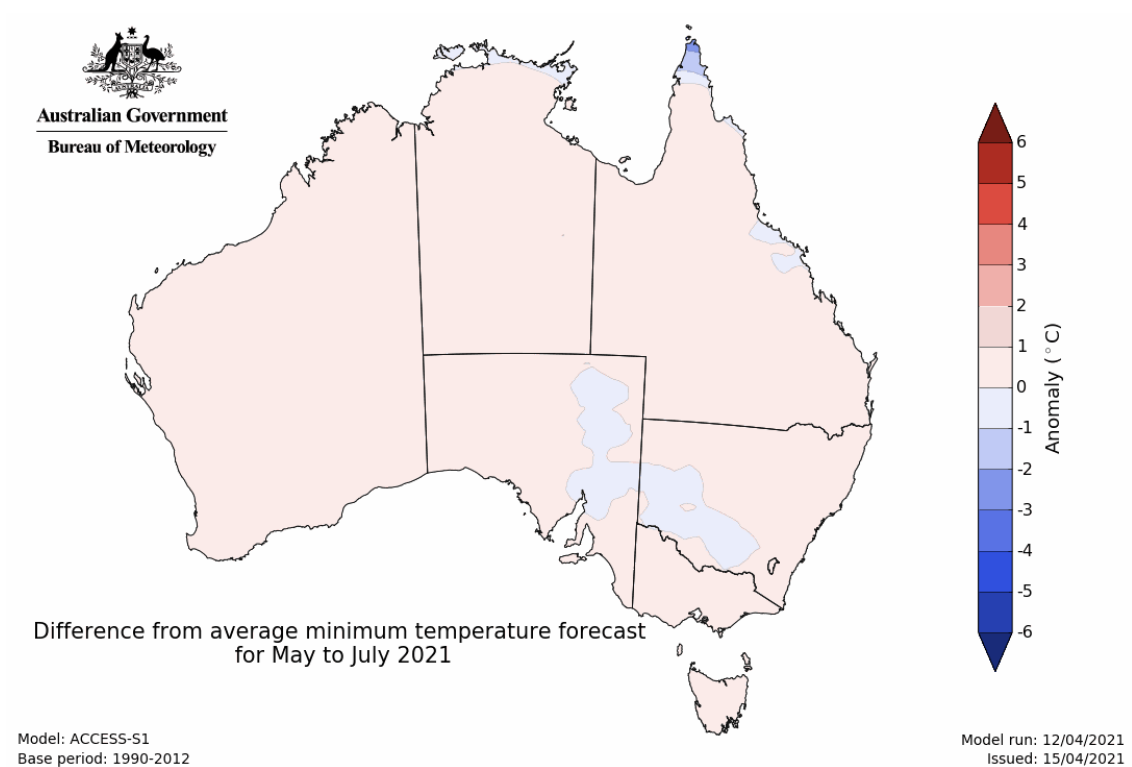
Issued: 15/04/2021

The temperature outlook for May to July 2021 indicates that day-time and night-time temperatures across most of Australia are likely to be close to the 1990-2012 average (- 1°C to 1°C) (Bureau of Meteorology 'National Climate Outlook', 15 April 2021).

Predicted maximum temperature anomaly for May to July 2021



Predicted minimum temperature anomaly for May to July 2021



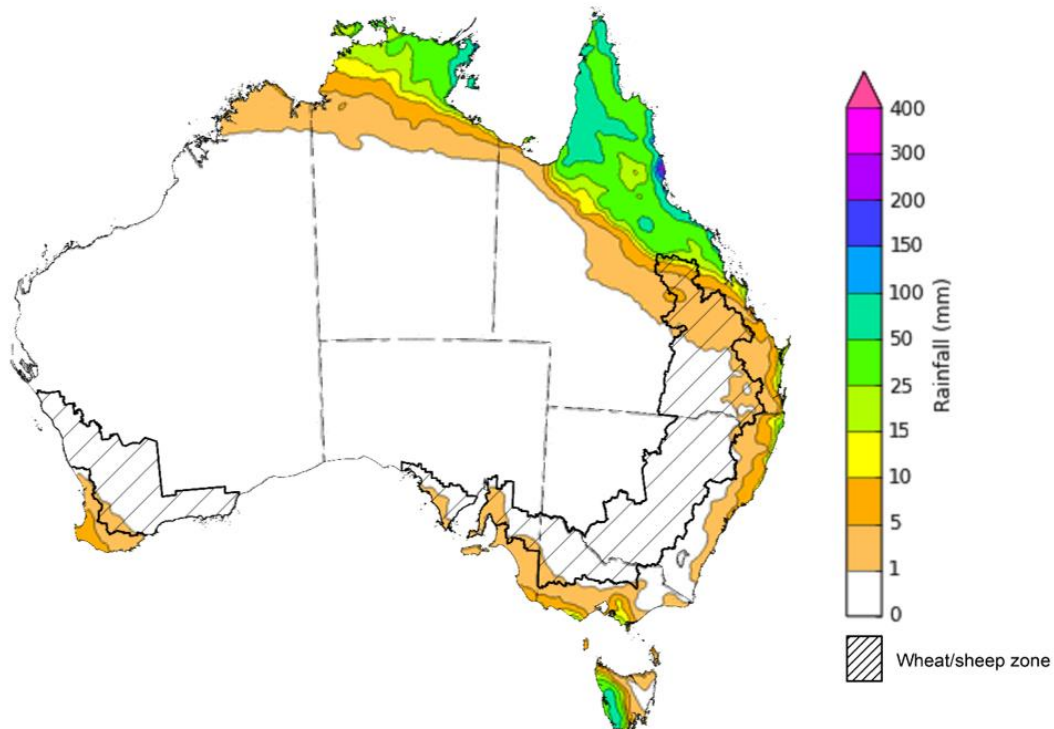
1.4. Rainfall forecast for the next eight days

Troughs, cold fronts and onshore winds are likely to bring showers and storms to parts of northern and eastern Australia during the 8 days to 29 April 2021, while high pressure systems are expected to keep the remainder of Australia dry.

Rainfall totals of between 10 and 100 millimetres are forecast for parts of north-eastern Queensland, north of the Northern Territory and western Tasmania. Rainfall totals of between 10 and 50 millimetres are forecast for isolated parts of north-eastern New South Wales, south-eastern Queensland and southern Victoria. Rainfall totals in excess of 100 millimetres are forecast for isolated parts of north-eastern Queensland.

In Australia's cropping regions, rainfall totals of between 5 and 15 millimetres are expected across parts of far northern Queensland. Little to no rainfall is expected across remaining cropping regions. The low expected rainfall totals across most cropping regions will allow harvesting of late sown summer crops, as well as field preparation and sowing of winter crops where soil moisture allows to continue without delay.

Total forecast rainfall (mm) for the period 22 April to 29 April 2021



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Issued: 22/04/2021

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 1 gigalitres (GL) between 14 April 2021 and 21 April 2021. The current volume of water held in storage is 14,105 GL, which represents 56% of total capacity. This is 64% or 5,526 GL more than at the same time last year.

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

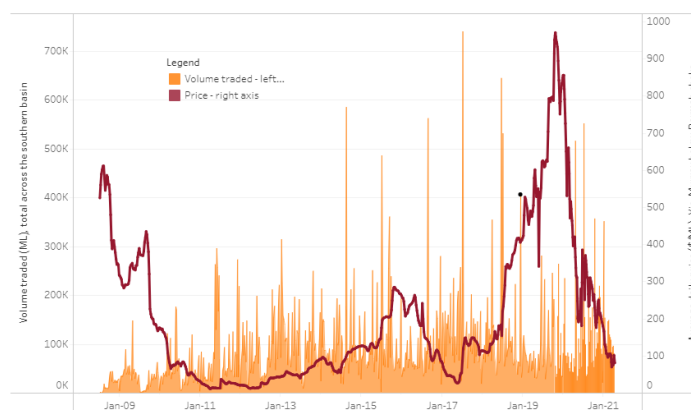


Water storage data is sourced from the Bureau of Meteorology.

Allocation prices in the Victorian Murray below the Barmah Choke decreased from \$101 per ML on 15 April 2021 to \$80 per ML on 22 April 2021. Prices are lower in the Murrumbidgee due to binding of the Murrumbidgee export limit.

Region	\$/ML
NSW Murray Above	75
NSW Murrumbidgee	60
VIC Goulburn-Broken	80
VIC Murray Below	80

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 22 April 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-220421

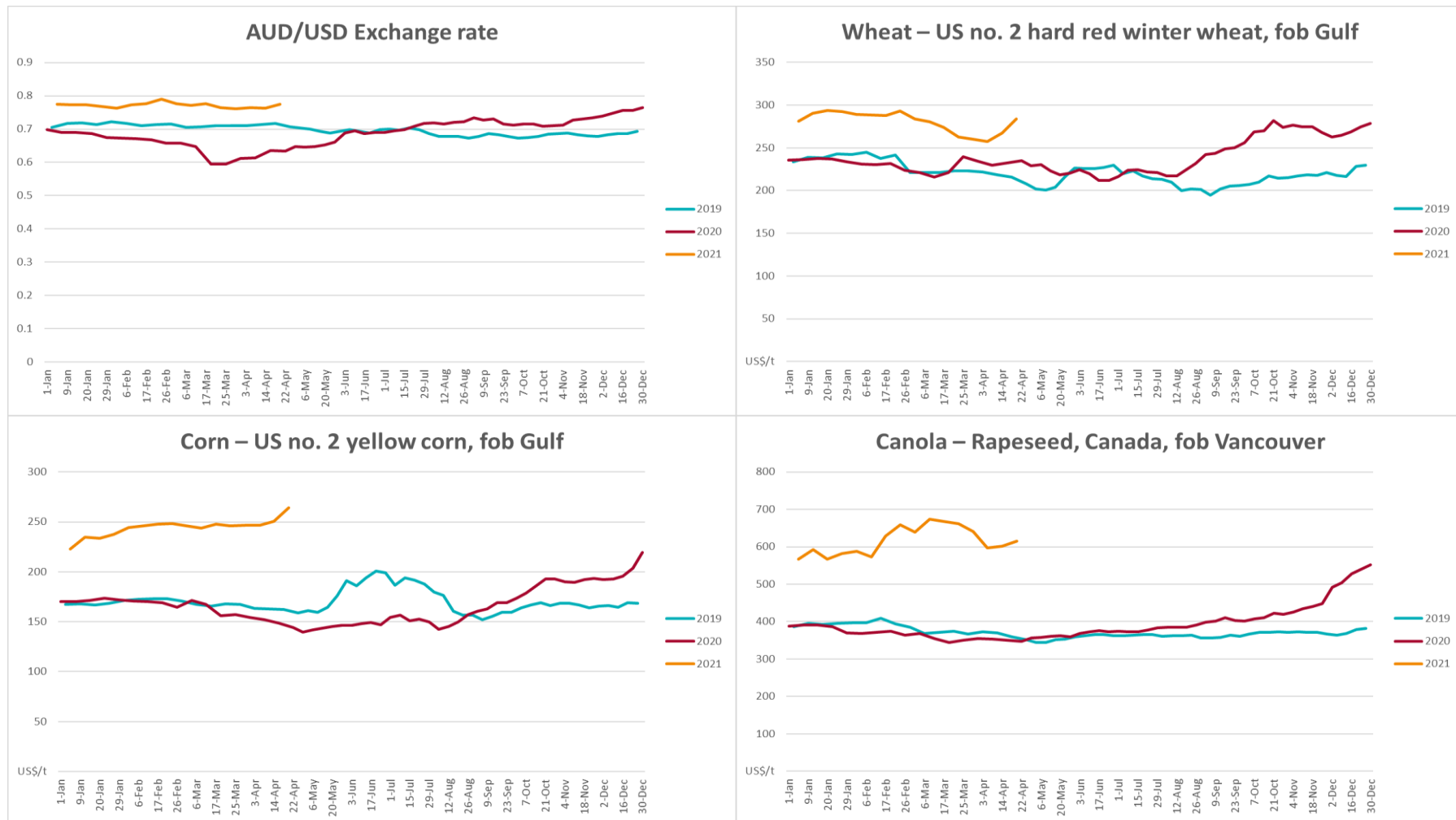
3. Commodities

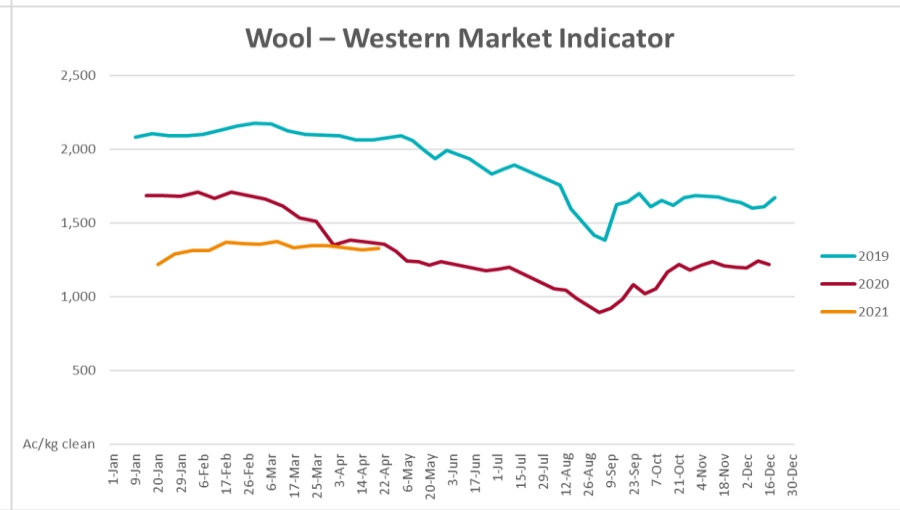
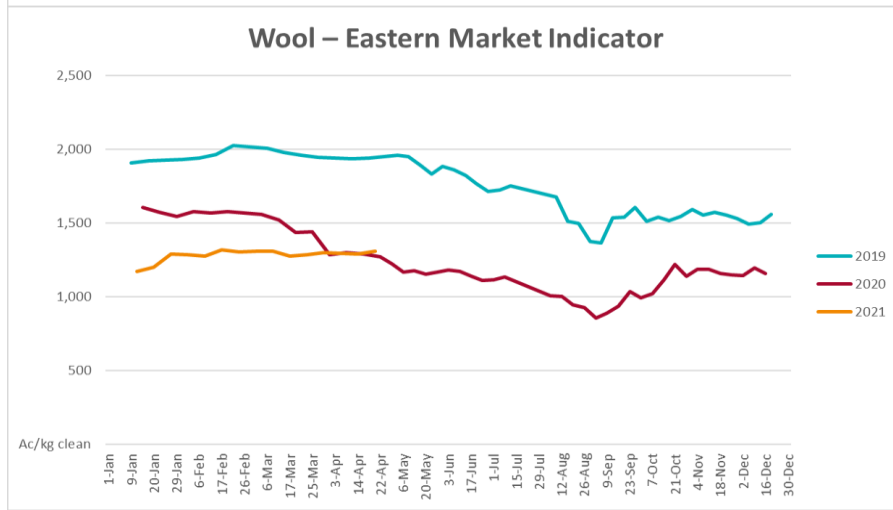
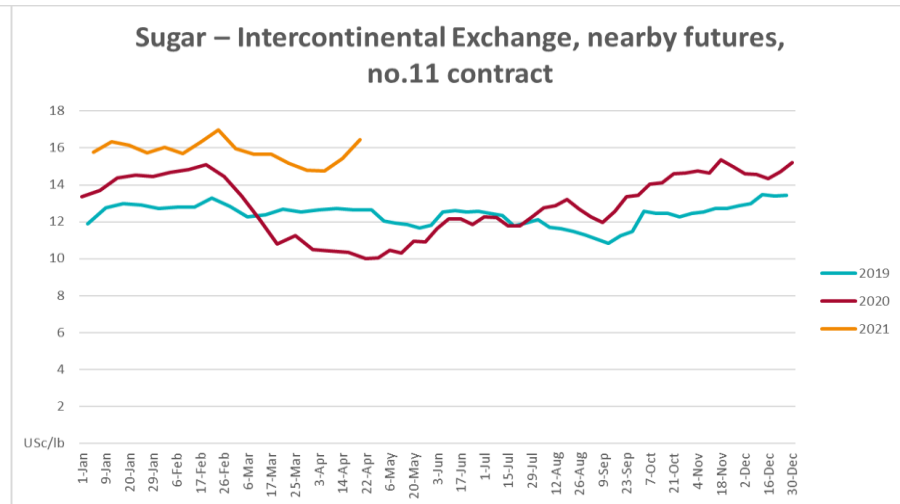
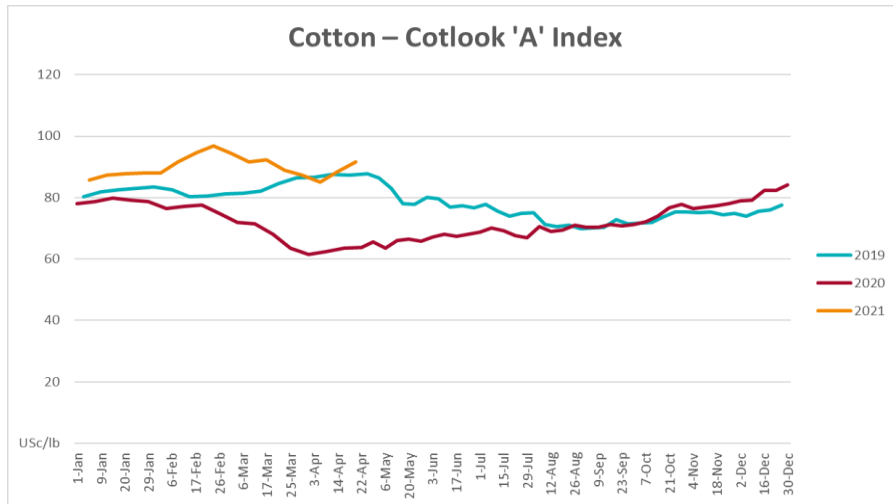
Indicator	Week ended	Unit	Latest price	Previous week	Weekly change	Price 12 months ago	Annual change
Selected world indicator prices							
AUD/USD Exchange rate	21-Apr	A\$/US\$	0.78	0.76	2%	0.65	20%
Wheat – US no. 2 hard red winter wheat, fob Gulf	21-Apr	US\$/t	284	267	6%	229	24%
Corn – US no. 2 yellow corn, fob Gulf	21-Apr	US\$/t	264	251	5%	139	90%
Canola – Rapeseed, Canada, fob Vancouver	21-Apr	US\$/t	616	601	2%	356	73%
Cotton – Cotlook 'A' Index	21-Apr	USc/lb	92	88	3%	66	40%
Sugar – Intercontinental Exchange, nearby futures, no.11 contract	21-Apr	USc/lb	16	15	7%	10	64%
Wool – Eastern Market Indicator	21-Apr	Ac/kg clean	1,312	1,291	2%	1,521	-14%
Wool – Western Market Indicator	21-Apr	Ac/kg clean	1,329	1,318	1%	1,683	-21%
Selected Australian grain export prices							
Milling Wheat – APW, Port Adelaide, SA	21-Apr	A\$/t	353	347	2%	435	-19%
Feed Wheat – ASW, Port Adelaide, SA	21-Apr	A\$/t	351	345	2%	434	-19%
Feed Barley – Port Adelaide, SA	21-Apr	A\$/t	293	293	0%	336	-13%
Canola – Kwinana, WA	21-Apr	A\$/t	711	666	7%	634	12%
Grain Sorghum – Brisbane, QLD	21-Apr	A\$/t	348	361	-3%	477	-27%
Selected domestic livestock indicator prices							
Beef – Eastern Young Cattle Indicator	21-Apr	Ac/kg cwt	909	888	2%	610	49%
Mutton – Mutton indicator (18–24 kg fat score 2–3), Vic	21-Apr	Ac/kg cwt	668	710	-6%	717	-7%
Lamb – Eastern States Trade Lamb Indicator	21-Apr	Ac/kg cwt	805	818	-2%	961	-16%
Pig – Eastern Seaboard (60.1–75 kg), average of buyers & sellers	14-Apr	Ac/kg cwt	359	338	6%	396	-9%
Goats – Eastern States (12.1–16 kg)	10-Mar	Ac/kg cwt	815	813	0%	893	-9%
Live cattle – Light steers ex Darwin to Indonesia	03-Feb	Ac/kg lwt	355	355	0%	335	6%
Live sheep – Live wethers (Muchea WA saleyard) to Middle East	13-May	\$/head	135	110	23%	N/A	N/A

Indicator	Week ended	Unit	Latest price	Previous week	Weekly change	Price 12 months ago	Annual change
Global Dairy Trade (GDT) weighted average prices ^a							
Dairy – Whole milk powder	21-Apr	US\$/t	4,097	4,085	0%	3,186	29%
Dairy – Skim milk powder	21-Apr	US\$/t	3,365	3,367	0%	2,462	37%
Dairy – Cheddar cheese	21-Apr	US\$/t	4,436	4,393	1%	4,036	10%
Dairy – Anhydrous milk fat	21-Apr	US\$/t	6,003	6,209	-3%	5,662	6%

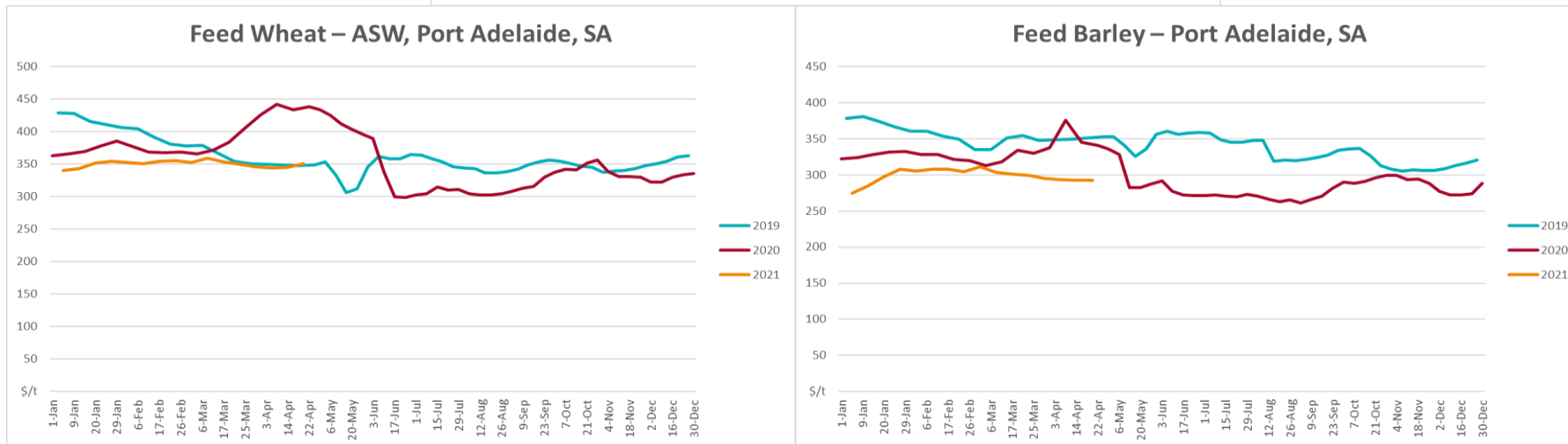
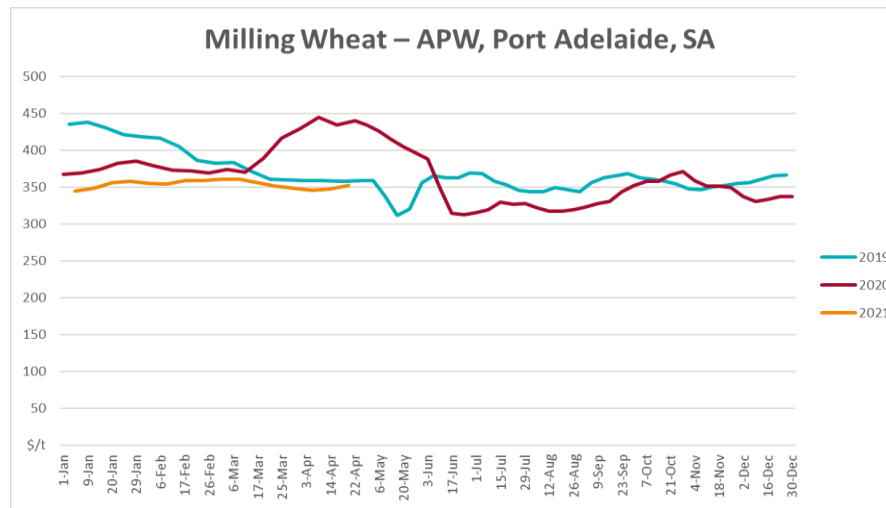
^a Global Dairy Trade prices are updated twice monthly on the first and third Tuesday of each month.

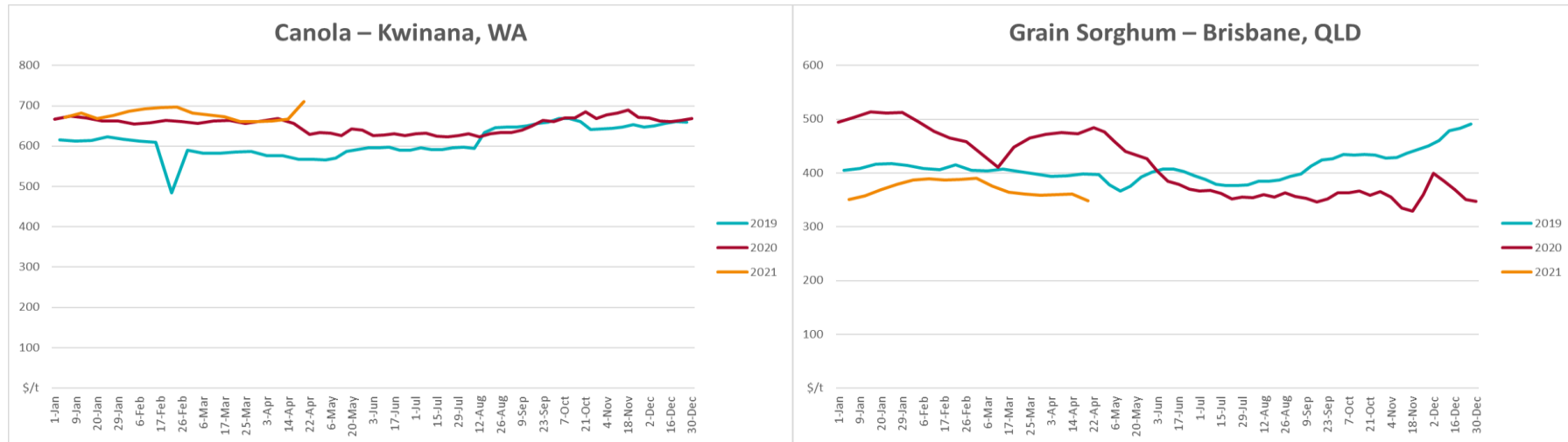
3.1. Selected world indicator prices



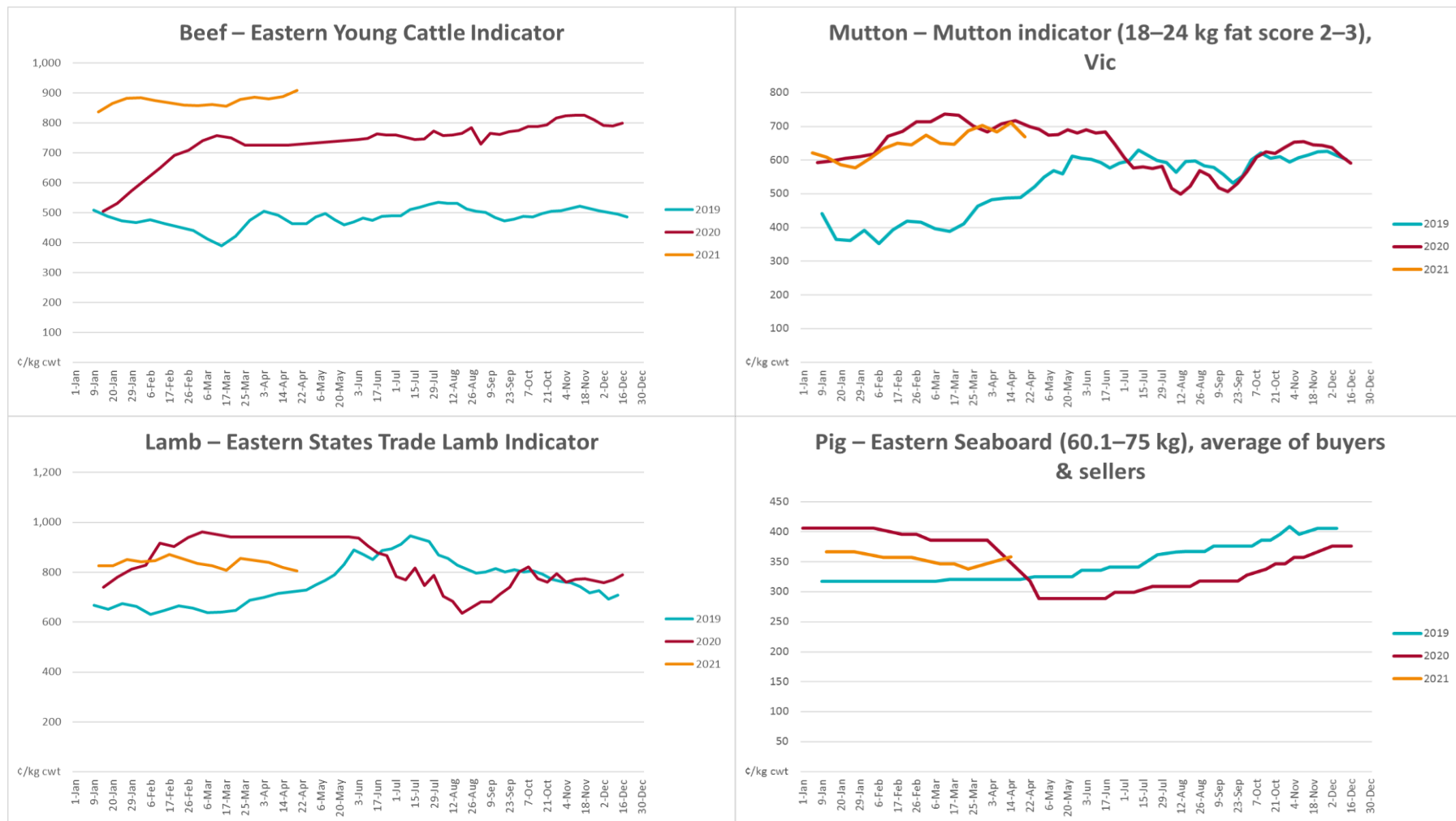


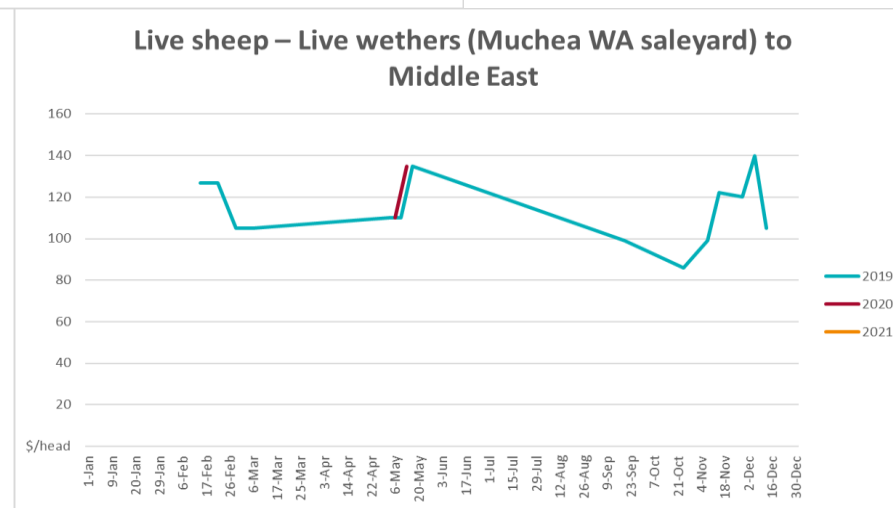
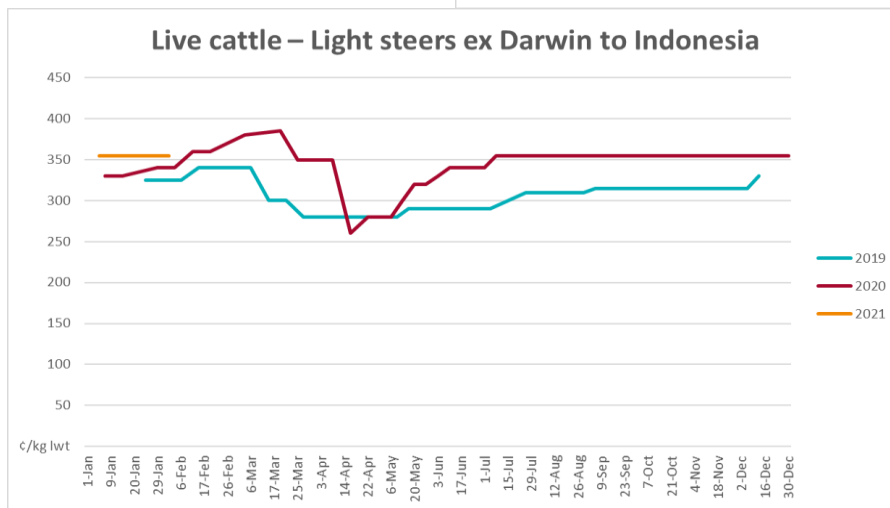
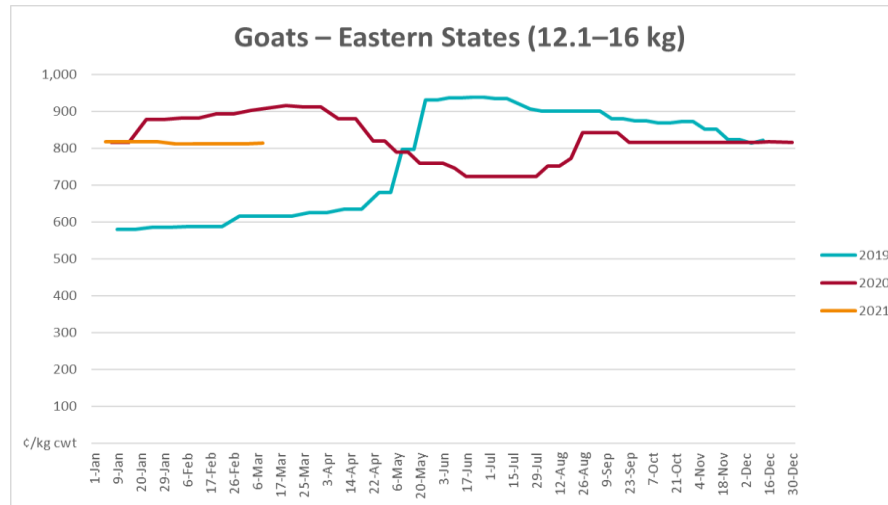
3.2. Selected domestic crop indicator prices



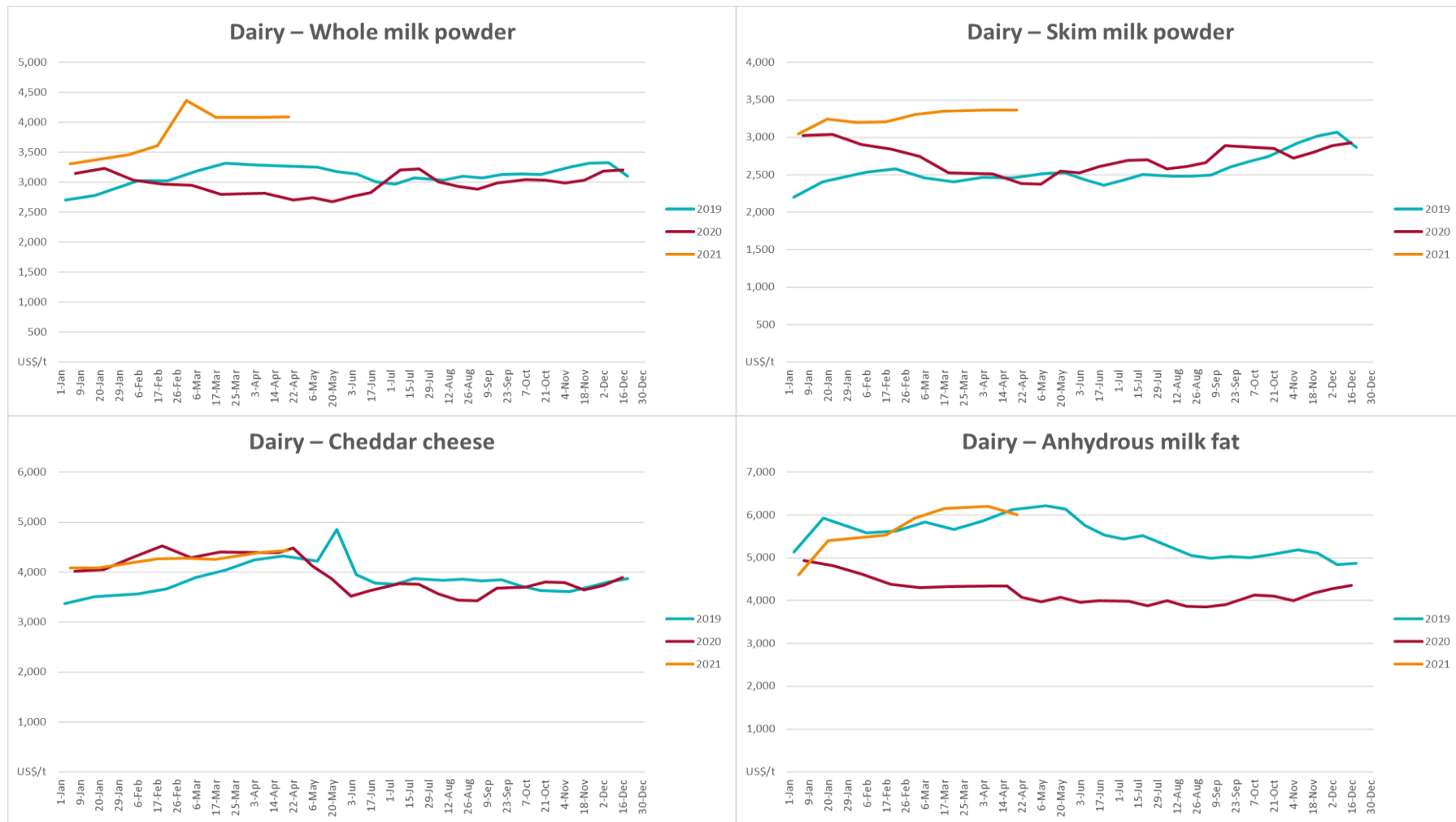


3.3. Selected domestic livestock indicator prices

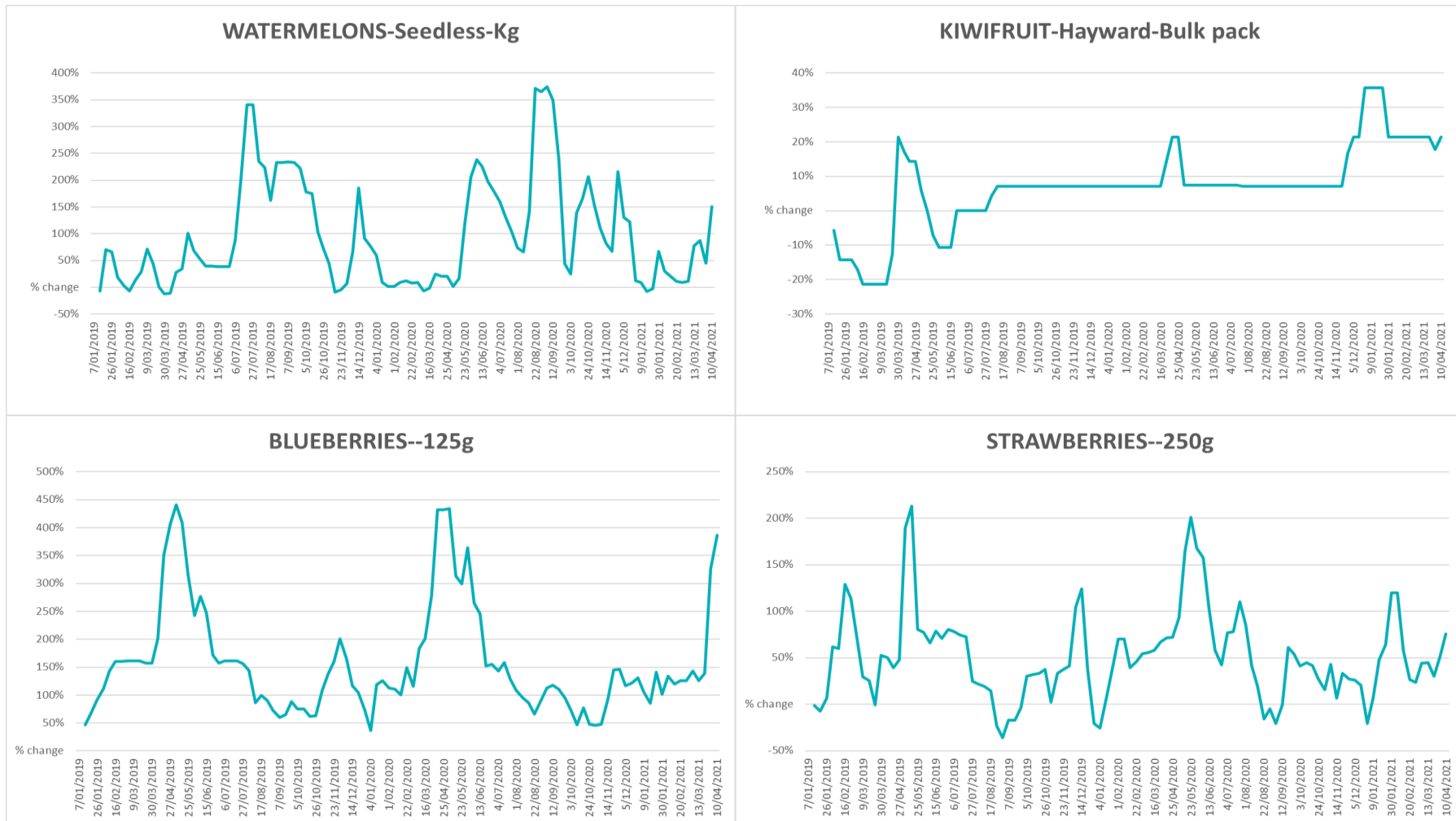




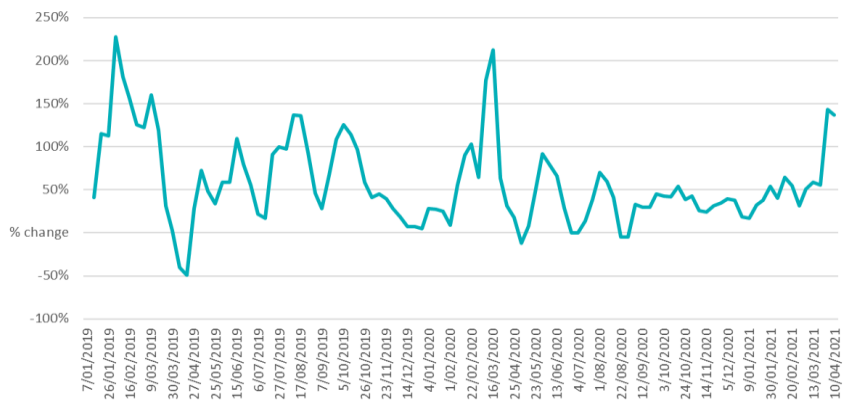
3.4. Global Dairy Trade (GDT) weighted average prices



3.5. Selected fruit and vegetable prices



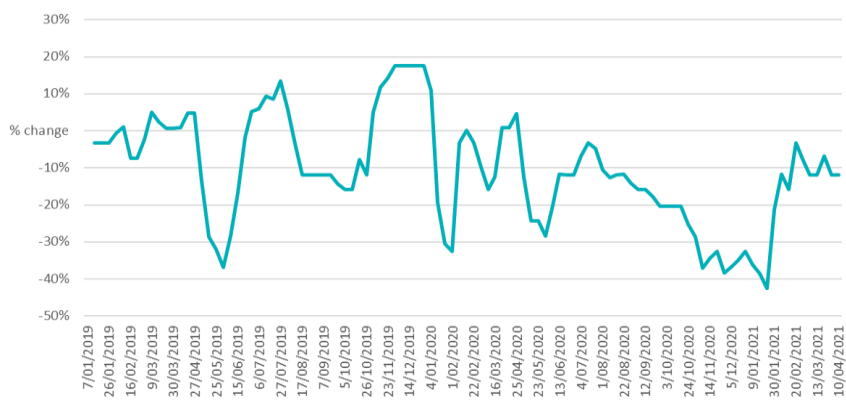
BANANAS-Cavendish-Carton



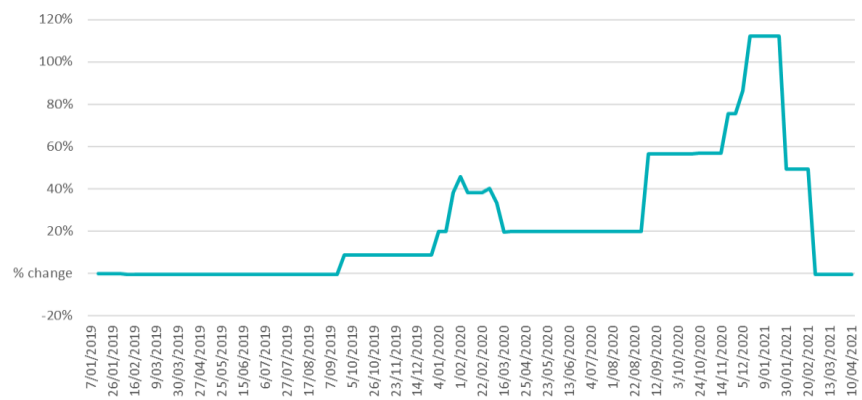
AVOCADOS-Hass-Tray

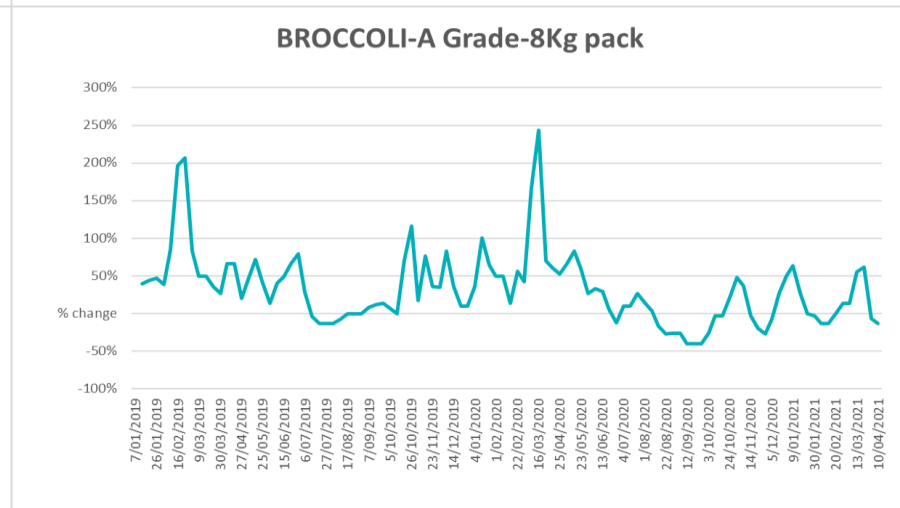
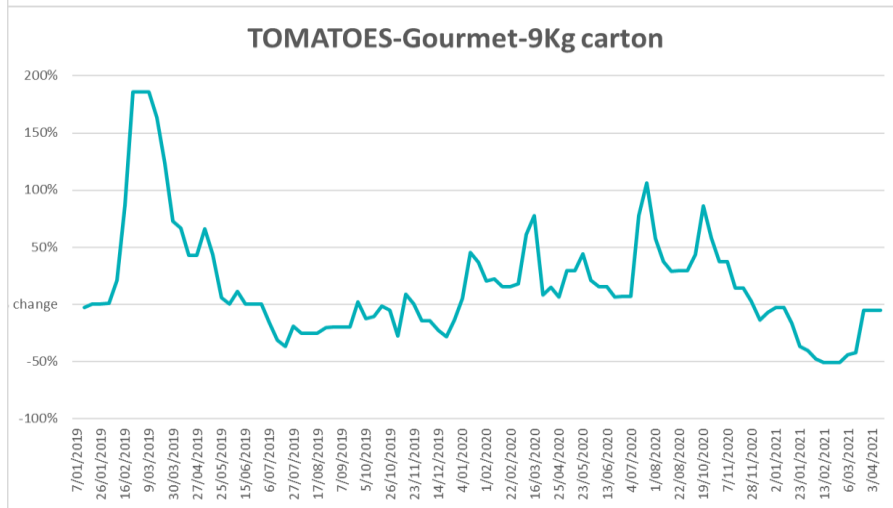
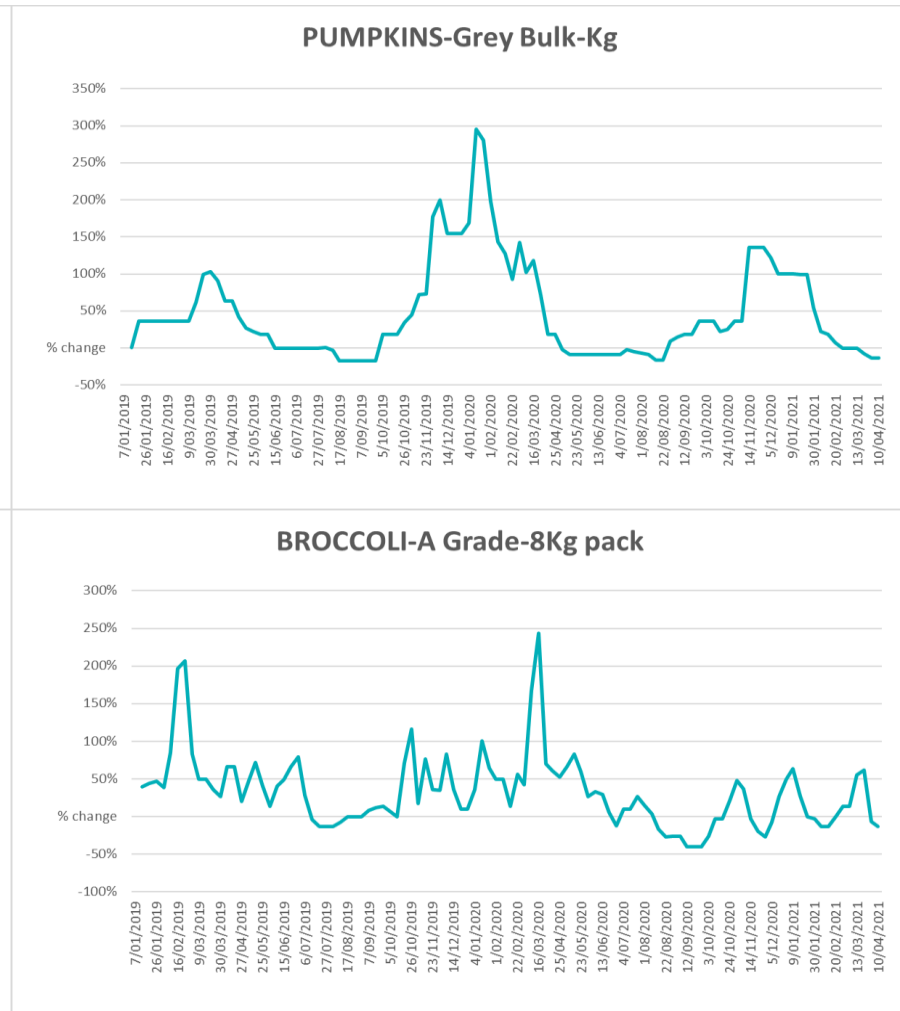
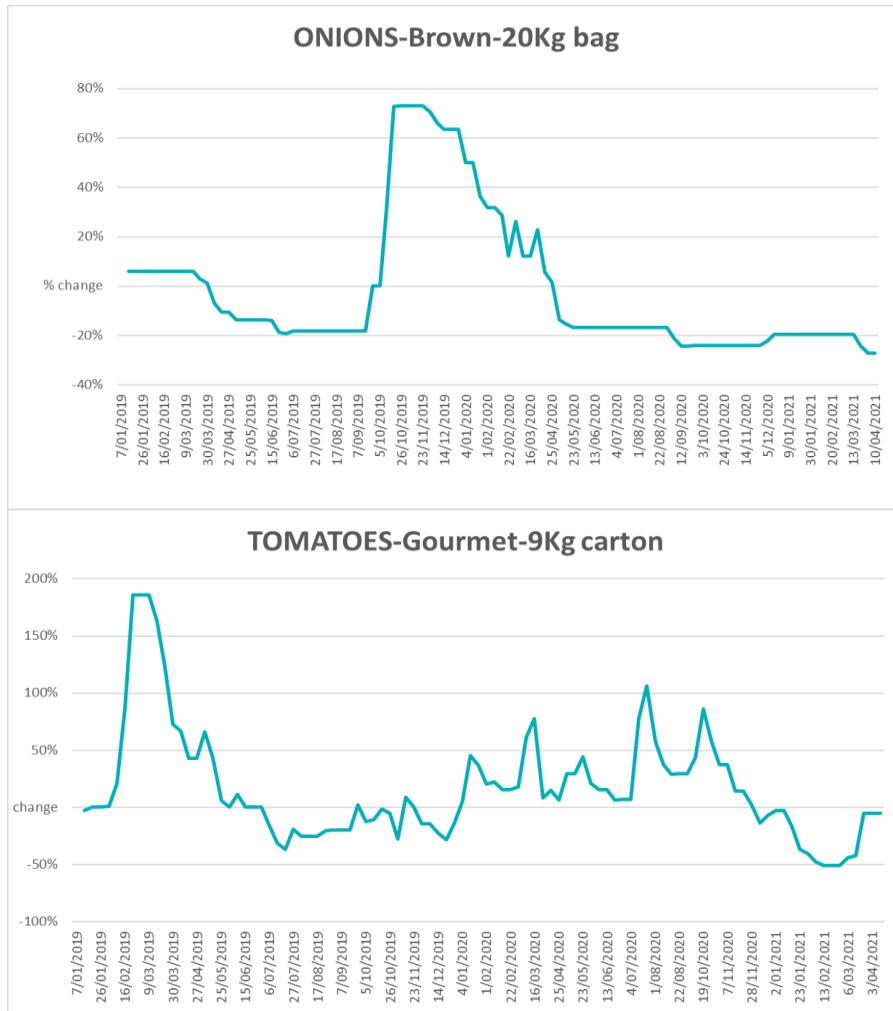


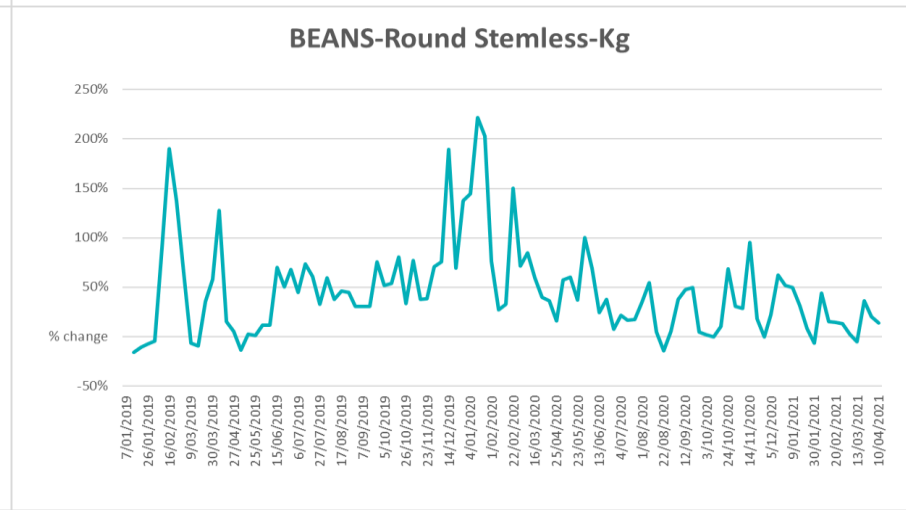
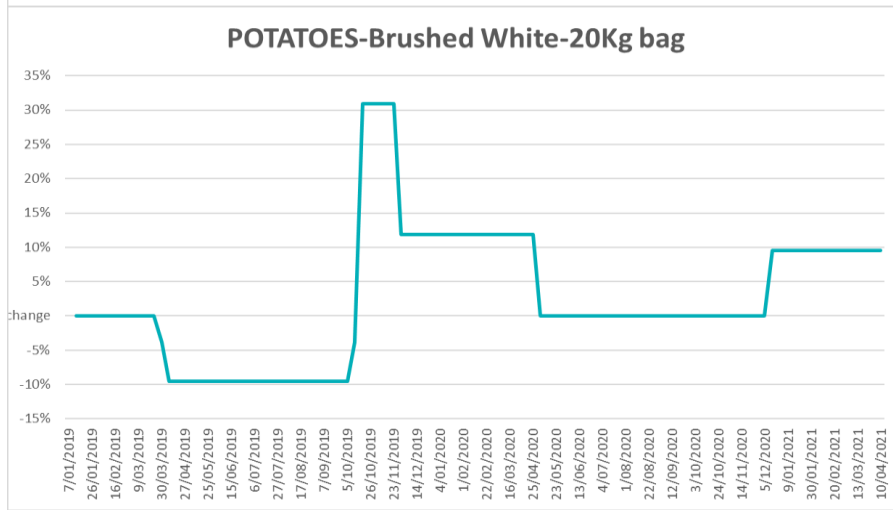
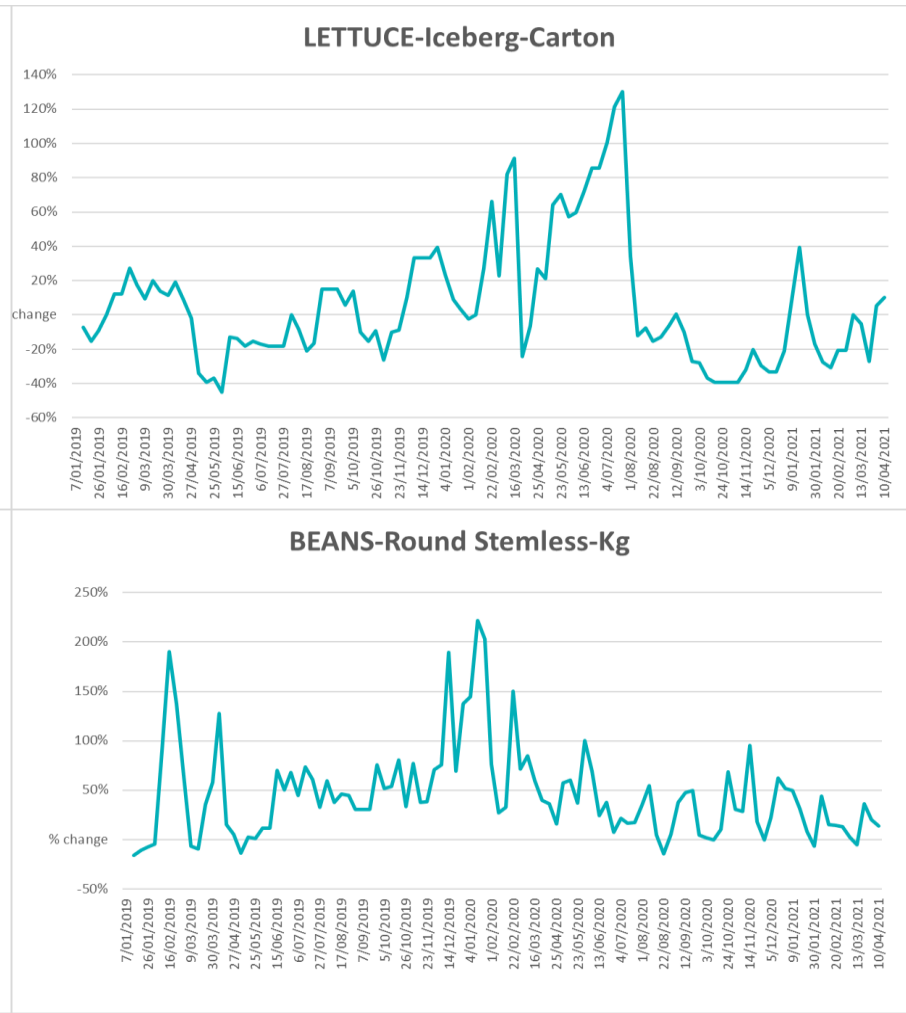
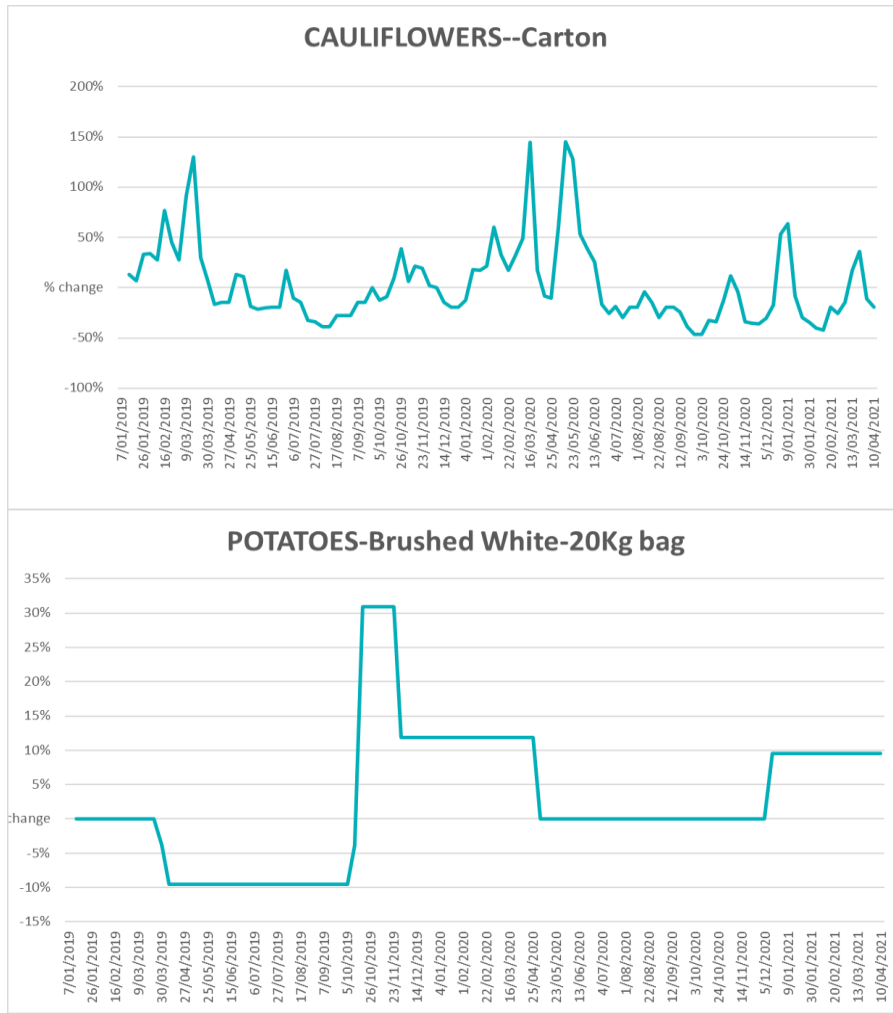
PINEAPPLES-Smoothleaf-Tray



APPLES-Royal Gala-12kg carton







4. Data attribution

Climate

Bureau of Meteorology

- Weekly rainfall totals: www.bom.gov.au/jsp/awap/rain/index.jsp
- Monthly and last 3-month rainfall percentiles: www.bom.gov.au/jsp/awap/rain/index.jsp
- Temperature anomalies: www.bom.gov.au/jsp/awap/temp/index.jsp
- Rainfall forecast: www.bom.gov.au/jsp/watl/rainfall/pme.jsp
- Seasonal outlook: www.bom.gov.au/climate/outlooks/#/overview/summary/
- Drought statement: www.bom.gov.au/climate/drought/drought.shtml
- Soil moisture: www.bom.gov.au/water/landscape/

Other

- Pasture growth: <https://www.longpaddock.qld.gov.au/aussiegrass/>
- 3-month global outlooks: [Environment and Climate Change Canada](#), [NOAA Climate Prediction Center](#), [EUROBRISA CPTC/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

New South Wales

- New South Wales Water Information: <http://waterinfo.nsw.gov.au/>
- New South Wales Office of Water, Department of Primary Industries: www.water.nsw.gov.au/Home/default.aspx
- Available water determinations register: www.water.nsw.gov.au/water-licensing/registers

Queensland

- Sunwater: www.sunwater.com.au
- Seqwater: <http://seqwater.com.au>

South Australia

- SA Water: www.sawater.com.au/community-and-environment/the-river-murray/river-reports/daily-flow-report
- 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

- Global Dairy Trade: 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/

World sugar

- New York Stock Exchange - Intercontinental Exchange

Wool

- Australian Wool Exchange: 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

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