



# Weekly Australian Climate, Water and Agricultural Update

No. 14/2023

13 April 2023

## Summary of key issues

- For the week ending 12 April 2023, troughs were responsible for widespread showers and storms across much of southern Australia as well as localised parts of eastern Australia. Meanwhile an intense low-pressure system which developed into Tropical Cyclone Ilsa brought significant rainfall to the northwest and northern Australia towards the end of the week.
- In cropping regions, rainfall totals of between 15 and 50 millimetres were recorded across southern Western Australia, scattered parts of northern and south-eastern Queensland, localised areas in the northeast and southeast of New South Wales, much of Victoria and parts of eastern South Australia. Recent rainfalls across eastern and western cropping regions are providing ideal soil moisture conditions to start the winter cropping season (see Section 1.1).
- The El Niño–Southern Oscillation is in its neutral phase. The El Niño WATCH issued by the Bureau of Meteorology continues. The Indian Ocean Dipole (IOD) is currently neutral. A positive IOD event may develop in the coming months. A positive IOD can suppress winter and spring rainfall over much of Australia, potentially exacerbating the drying effect of El Niño (see Section 1.2).
- The outlook for May 2023 indicates drier than average conditions are expected across much of Australia. Given that many winter cropping regions have received enough rainfall to classify as an early autumn break, these forecast rainfall totals are likely to be sufficient to provide a favourable start to the winter season (see Section 1.3).
- The outlook for May to July 2023 suggests there is a 75% chance of rainfall totals over 25 millimetres across central and eastern New South Wales, the southeast and northeast of Queensland, southern parts of South Australia and Western Australia, and across Victoria and Tasmania. Across most winter cropping regions there is a 75% chance of receiving between 25 and 100 millimetres, except for central and northern Queensland where rainfall totals are expected to be below 25 millimetres (see Section 1.3).
- Over the 8-days to 20 April 2023, Tropical Cyclone Ilsa, troughs and lows are expected to bring rainfall to large areas of Australia. Across cropping regions, rainfall totals of up to 25 millimetres are expected for southern New South Wales, and much of Victoria and South Australia. This rainfall is likely to build soil moisture levels in the lead up to the winter cropping season and also benefit pasture growth rates and availability. Little to no rainfall is expected for the remaining cropping regions (see Section 1.4).
- Water storage levels in the Murray-Darling Basin (MDB) decreased between 6 April 2023 and 13 April 2023 by 47 gigalitres (GL). Current volume of water held in storage is 19 901 GL which represents 89 per cent of total capacity. This is 1 percent or 259 GL more than at the same time last year.
- Allocation prices in the Victorian Murray below the Barmah Choke decreased from \$16 on 6 April 2023 to \$13 on 13 April 2023. Prices are lower in the Murrumbidgee and regions above the Barmah choke due to the binding of the Murrumbidgee export limit and Barmah choke trade constraint.

# 1. Climate

## 1.1. Rainfall this week

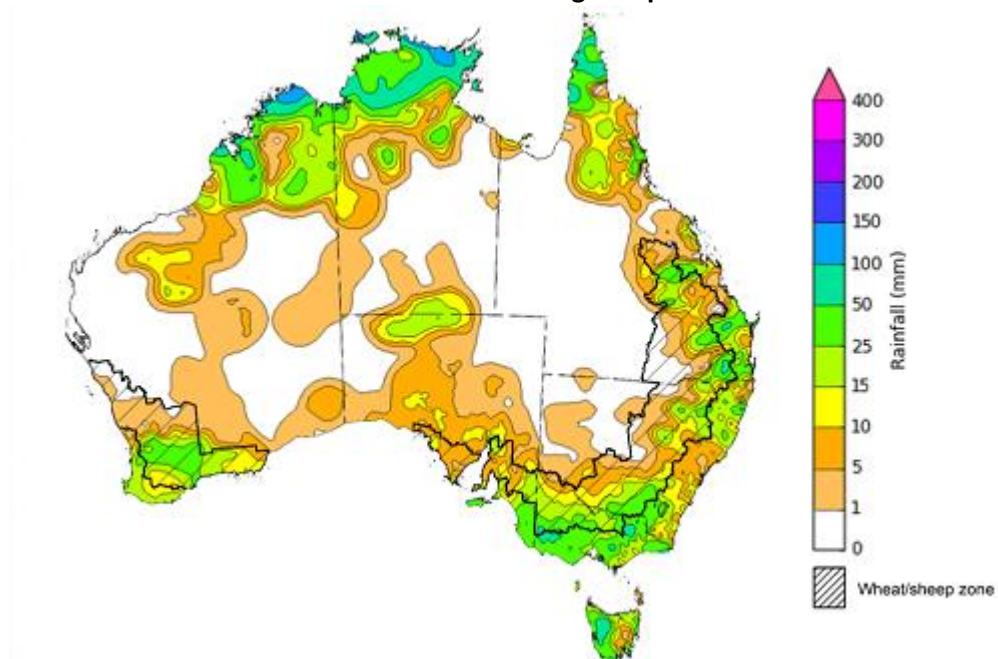
For the week ending 12 April 2023, troughs were responsible for widespread showers and storms across much of southern Australia as well as localised parts of eastern Australia. Meanwhile an intense low-pressure system which developed into Tropical Cyclone Ilsa brought significant rainfall to the northwest and northern Australia towards the end of the week.

Weekly rainfall totals greater than 25 millimetres were recorded across northern and south-western Western Australia, tropical Northern Territory, Cape York Peninsula and scattered parts of eastern Queensland, scattered areas of northeast and southeast New South Wales, much of Victoria, southern parts of South Australia, as well in the northeast and western Tasmania. Rainfall in excess of 100 millimetres were recorded in the coastal areas of northern Western Australia and Northern Territory. Dry conditions were recorded elsewhere.

In cropping regions, rainfall totals of between 15 and 50 millimetres were recorded across southern Western Australia, scattered parts of northern and south-eastern Queensland, localised areas in the northeast and southeast of New South Wales, much of Victoria and parts of eastern South Australia. Little to no rainfall was recorded across the remaining cropping regions over the past 7 days.

Harvesting of summer crops are likely to have been delayed due to rainfall across parts of northern New South Wales and southern Queensland. Meanwhile, cotton harvesting in Central Queensland is reported to have continued with the clear, dry conditions over the past week. In southern New South Wales, rice harvesting is well under way, with above average yields being recorded. Although there is plenty of summer crop yet to harvest, recent rainfalls across eastern and western cropping regions are providing ideal soil moisture conditions to start the winter cropping season. Many regions have received sufficient rainfall to classify as an autumn break, and planting activity is likely to increase over the coming weeks.

**Rainfall for the week ending 12 April 2023**



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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/>

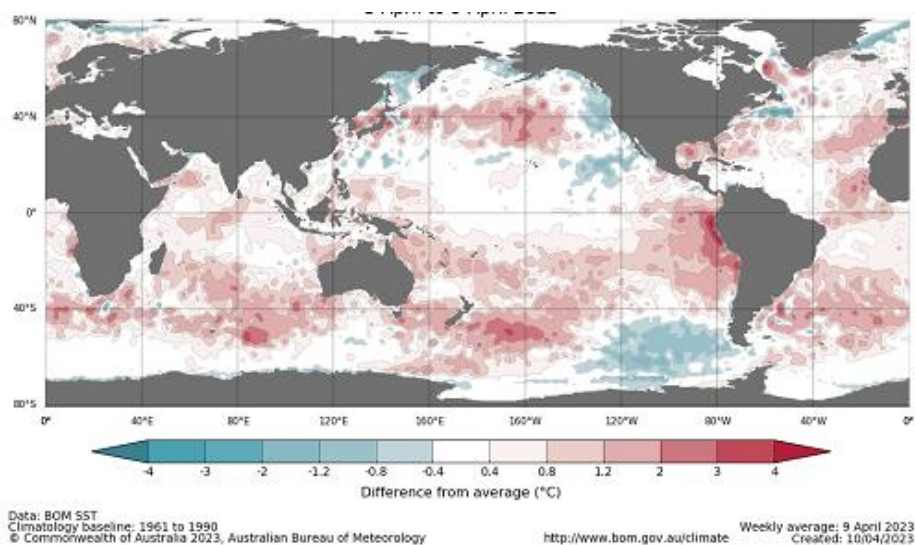
Issued: 12/04/2023

## 1.2. Climate Drivers

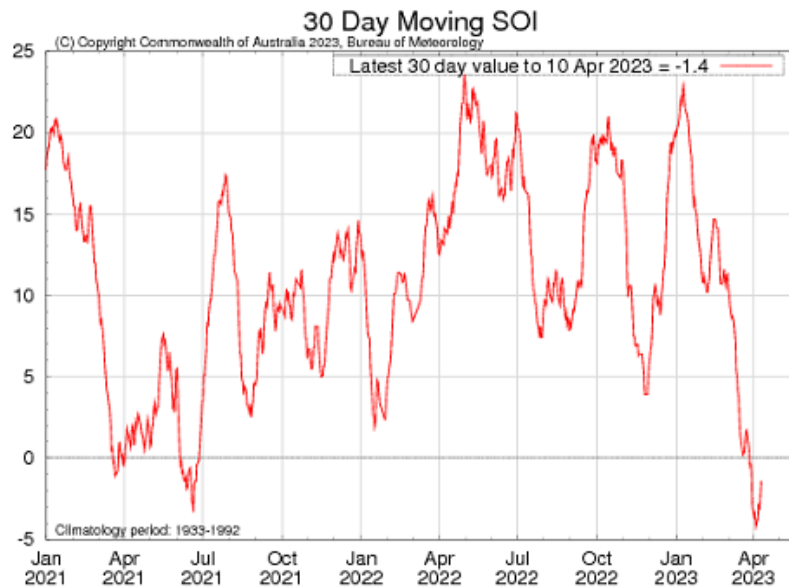
The climate drivers with the largest potential impact on Australia's climate patterns are the El Niño–Southern Oscillation (ENSO), Madden-Julian Oscillation (MJO), Indian Ocean Dipole (IOD) and Southern Annular Mode (SAM). These climate drivers are likely to influence the growth and development of later planted summer crops in northern growing regions, pasture growth across both northern and southern Australia and planting opportunities for winter crops.

The ENSO is in its neutral phase with both oceanic and atmospheric indicators having returned to neutral levels. Oceanic indicators are measured in terms of the sea surface temperature (SST) anomalies. The weekly difference from average SST between 3 to 9 April in the equatorial Pacific is in the neutral range ( $-0.4^{\circ}\text{C}$  to  $+0.4^{\circ}\text{C}$ ). The atmospheric indicators are measured in terms of the surface air pressure difference between Tahiti and Darwin, called Southern Oscillation Index (SOI). For the period ending 9 April 2023, the 30-day SOI was  $-2.3$  and the 90-day SOI was  $+6.2$ , both in ENSO neutral range. The 30-day SOI has continued to decrease over the past fortnight. It is now negative for the first time since June 2021 though it is still within neutral values. Trade winds were stronger than average in the western tropical Pacific, tending to average to weaker than average over the eastern tropical Pacific Ocean. The cloudiness near the Date Line is close to average after having been mostly below average since June 2021. These indications are consistent with the ENSO neutral state.

**Difference from average sea surface temperature observations 3 to 9 April 2023**

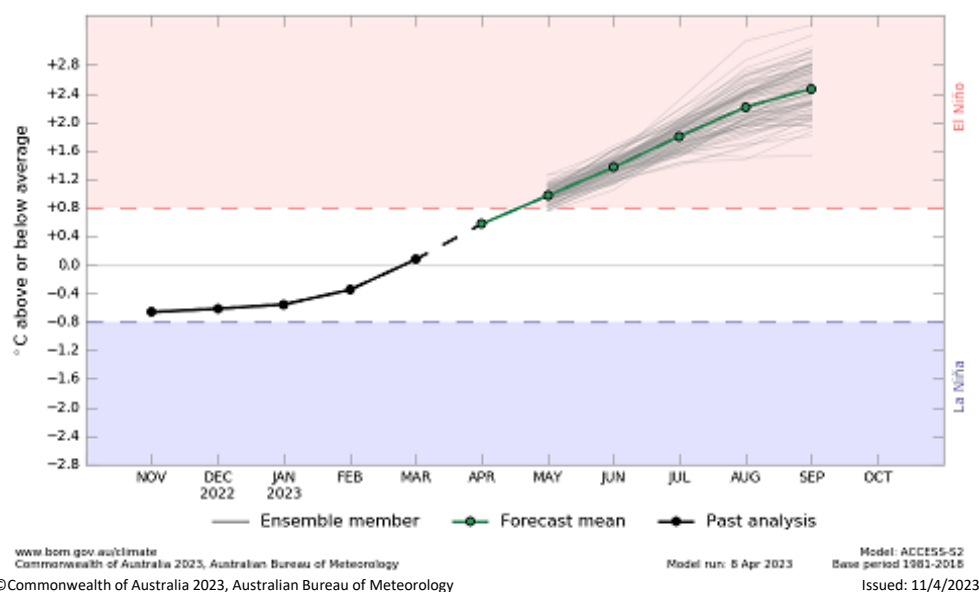


### 30-day Southern Oscillation Index (SOI) values ending 11 April 2023



The El Niño WATCH issued by the Bureau of Meteorology continues. This indicates that there is around a 50% chance that an El Niño may develop later in 2023. El Niño WATCH is not a guarantee that El Niño will occur, but it is an indication that some of the typical precursors are currently observed. A significant amount of warmer than average water temperature exists in the western and central tropical Pacific sub-surface, and warmer than average SSTs have emerged in parts of the eastern tropical Pacific in recent weeks. All but one international climate model surveyed by the Australian Bureau of Meteorology suggest sea-surface temperatures in the tropical Pacific will remain neutral through the southern hemisphere autumn, with one model exceeding El Niño thresholds in May.

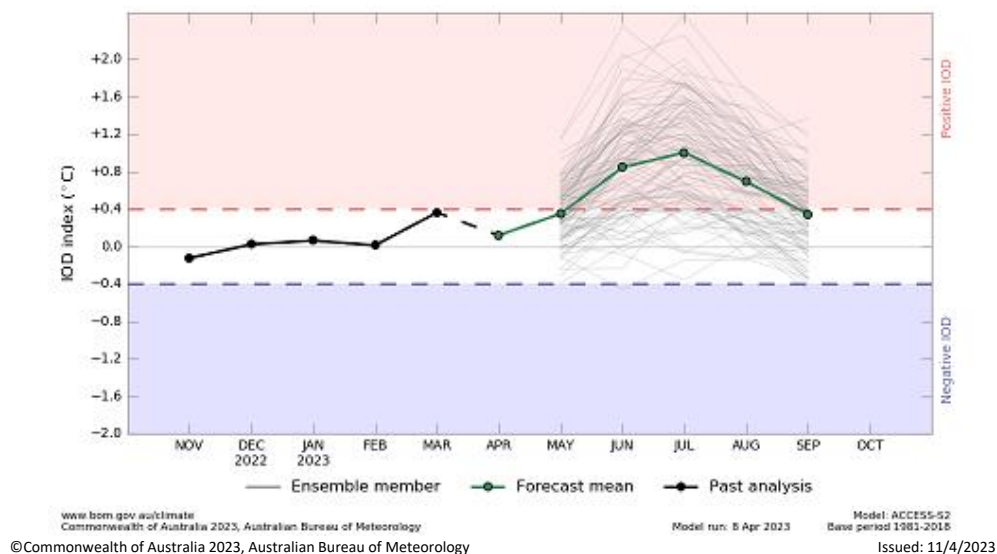
### International climate model outlooks for the ENSO in NINO 3.4 region



The Indian Ocean Dipole (IOD) is currently neutral. A negative phase typically sees above average winter-spring rainfall in Australia, while a positive phase brings drier than average seasons. The majority of international climate models surveyed by the Bureau of Meteorology suggest a positive IOD event may develop in the coming months. A positive IOD can suppress winter and spring rainfall over much of Australia, potentially exacerbating the drying effect of El Niño.

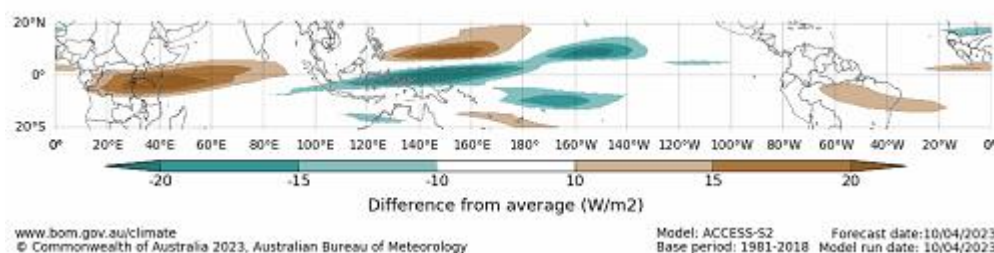
While models' predictions are tipping towards an El Niño developing in mid-to-late 2023 and a positive IOD may emerge during late autumn or winter, the ENSO and IOD forecasts made at this time of the year have very low accuracy when forecasting through the autumn and therefore ENSO and IOD outlooks that extend past autumn should be viewed with caution.

### International climate model outlook for the Indian Ocean Dipole



The Madden–Julian Oscillation (MJO) pulse is currently in the Western Pacific region. This is resulting in rainfall over northern Australia owing to the enhanced convection over the Maritime continent. Most models are forecasting MJO pulse to move into the central and Eastern Pacific in the coming fortnight. While in the central or eastern Pacific, the MJO typically enhances the easterly flow across the Indian Ocean, which may lead to the IOD values being closer to the positive IOD thresholds. This would suppress the rainfall over northern Australia, possibly resulting in an earlier end to the northern wet season.

### Madden–Julian Oscillation (MJO) daily index



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.



### 1.3. National Climate Outlook

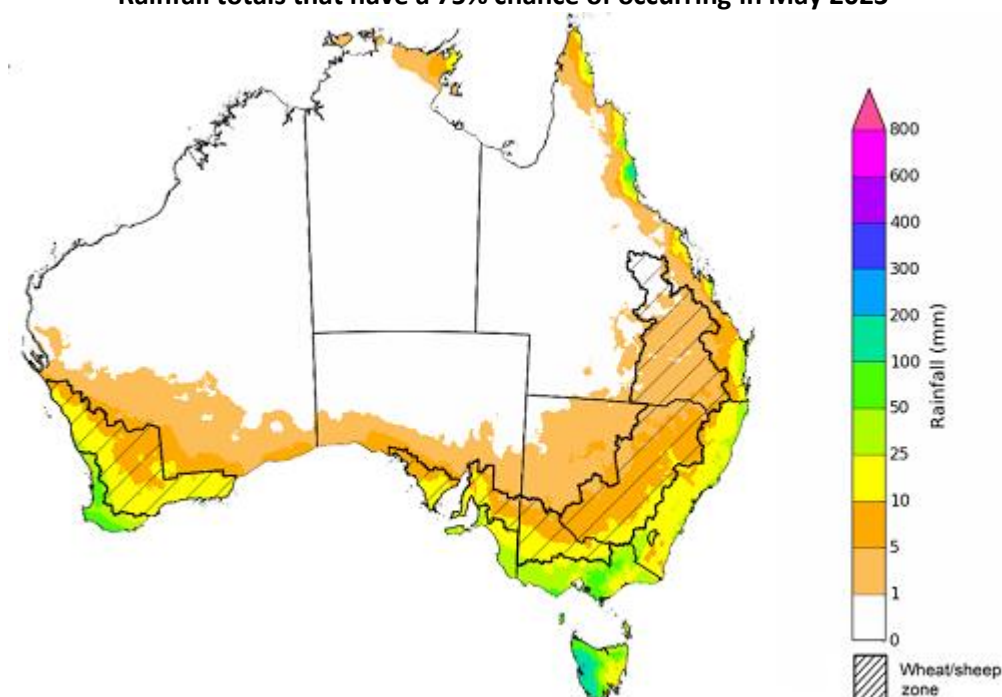
These climate outlooks are generated by ACCESS–S (Australian Community Climate Earth-System Simulator–Seasonal). ACCESS–S is the Bureau of Meteorology's dynamic (physics-based) weather and climate model used for monthly, seasonal, and longer-lead climate outlooks. For further information, go to <http://www.bom.gov.au/climate/ahead/about/>.

The Bureau of Meteorology's latest rainfall outlook for May 2023 indicates drier than average conditions are expected across much of Australia.

The ACCESS-S climate model suggests that there is a 75% chance of rainfall totals between 10 and 50 millimetres across eastern New South Wales, scattered areas of coastal Queensland, much of Victoria, southern South Australia, Tasmania and the far-southwest of Western Australia. Rainfall totals in excess of 100 millimetres are expected in parts of northeast Queensland and western Tasmania.

Across cropping regions there is a 75% chance of rainfall totals of between 10 and 25 millimetres across the far southeast of New South Wales, southern Victoria, central and western South Australia and the west and south of Western Australia. There is a 75% chance of rainfall less than 10 millimetres for Queensland, much of New South Wales, northern Victoria, and eastern South Australia and eastern Western Australia. Given that many winter cropping regions have received enough rainfall to classify as an early autumn break, these forecast rainfall totals are likely to be sufficient to provide a favourable start to the winter season. Meanwhile, lower rainfall totals during May will allow timely field access for the planting of winter crops and harvesting activity for late planted summer crops across Queensland and northern New South Wales.

**Rainfall totals that have a 75% chance of occurring in May 2023**



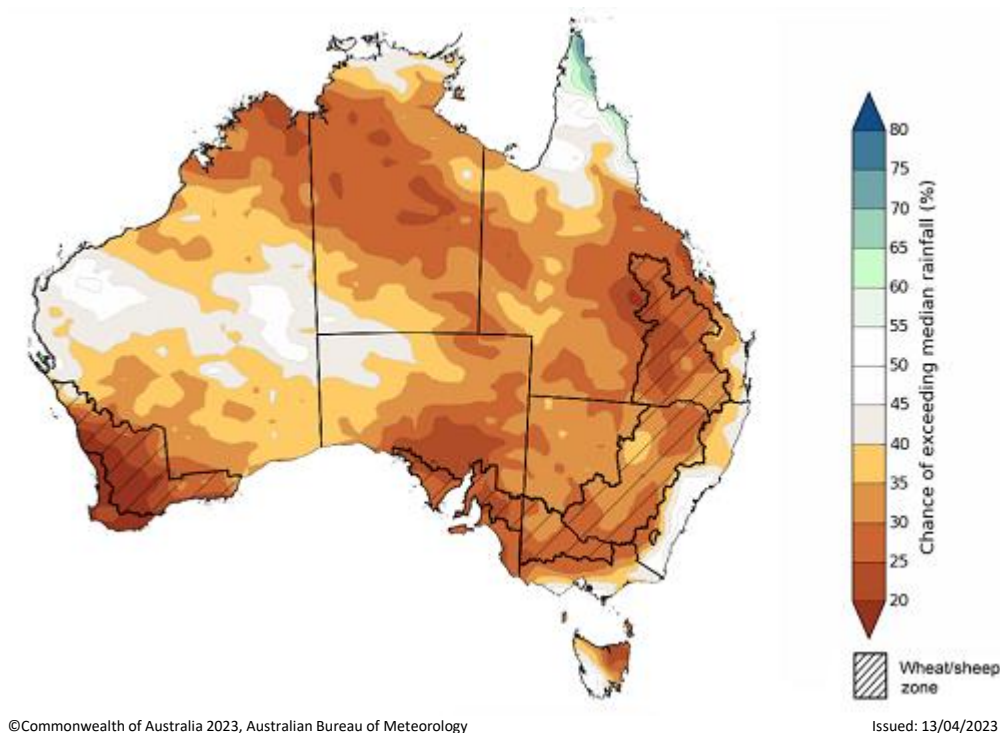
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The rainfall outlook for May to July 2023 suggests that below median rainfall is likely to very likely (60% to greater than 80% chance) for most of Australia. However, there is close to equal chances of above or below median rainfall for parts of tropical northern Queensland and Northern Territory, coastal New South Wales, southern Victoria, northeast South Australia, central Western Australia, as well as in the south-western Tasmania.

Bureau of Meteorology rainfall outlooks for May to July have greater than 55% past accuracy across most of Australia. Outlook accuracy is greater than 65% across large areas of western and eastern Australia. However, there is low past accuracy for scattered areas of northern Australia.

#### Chance of exceeding the median rainfall May to July 2023

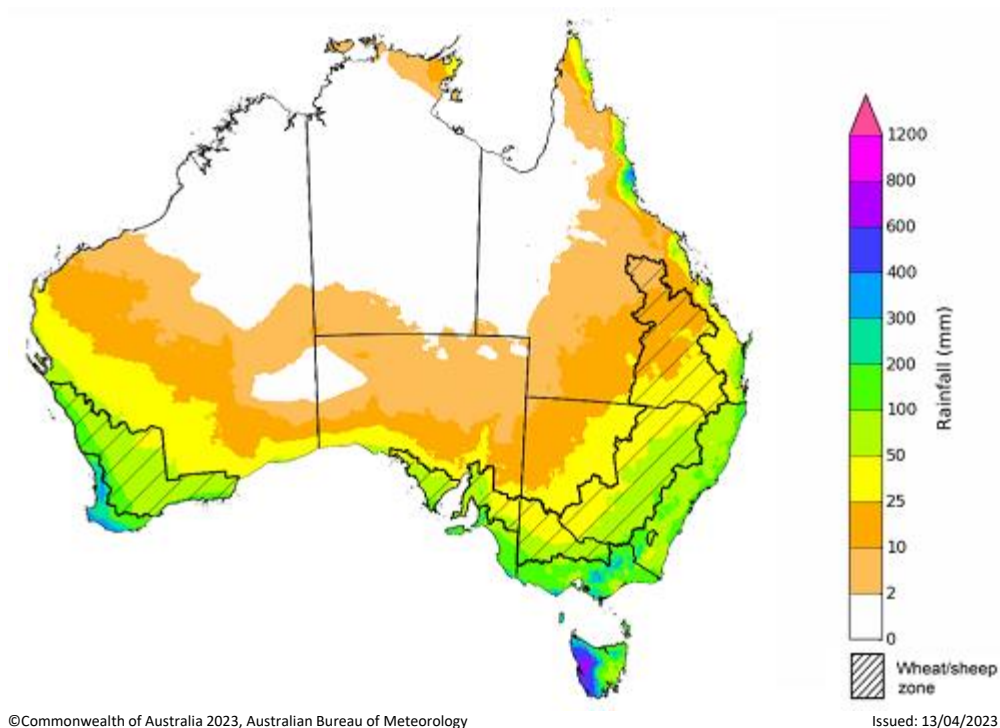


The outlook for May to July 2023 suggests there is a 75% chance of rainfall totals between 25 and 200 millimetres across central and eastern New South Wales, the southeast and northeast of Queensland, southern parts of South Australia and Western Australia, Victoria and Tasmania. Rainfall totals in excess of 200 millimetres are forecast for alpine regions of Victoria, part of northeast Queensland, far southwest of Western Australia and western Tasmania.

Across most winter cropping regions there is a 75% chance of receiving between 25 and 100 millimetres, except for central and northern Queensland where rainfall totals are expected to be below 25 millimetres.

Root zone soil moisture levels are average to above average across much of the Wheat/sheep zone but below average to average across northern Queensland and parts of southern Western Australia. A lack of rainfall during summer and declining soil moisture levels led to reductions in yield potentials for later sown summer crops across northern cropping regions. In remaining cropping regions, given the current average to above average levels of root zone soil moisture levels the expectation of below average rainfall over the next three months is still likely to provide a good start to the winter cropping season.

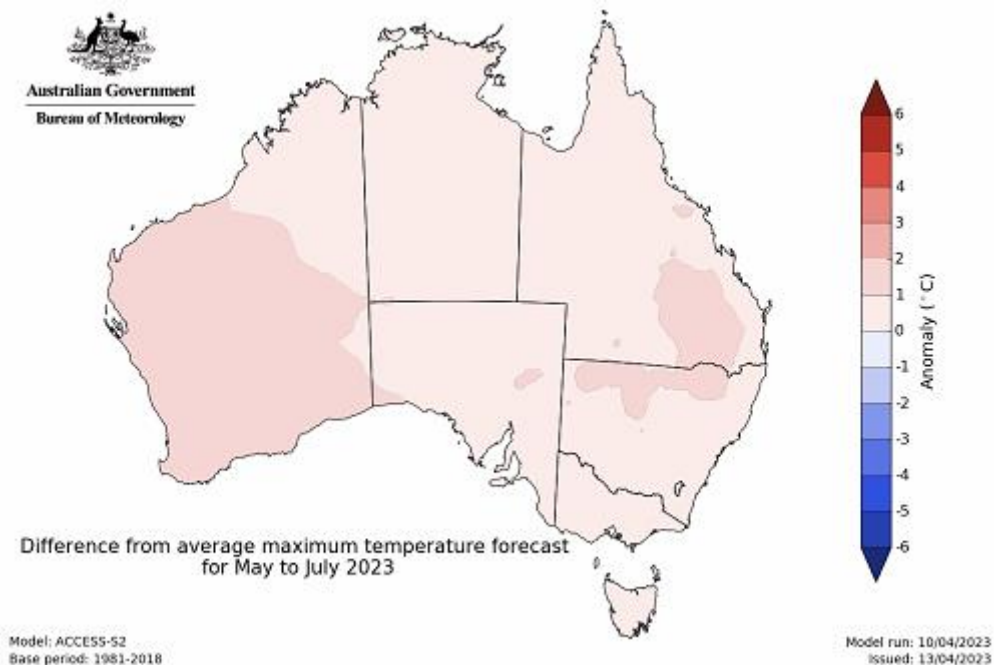
## Rainfall totals that have a 75% chance of occurring May to July 2023



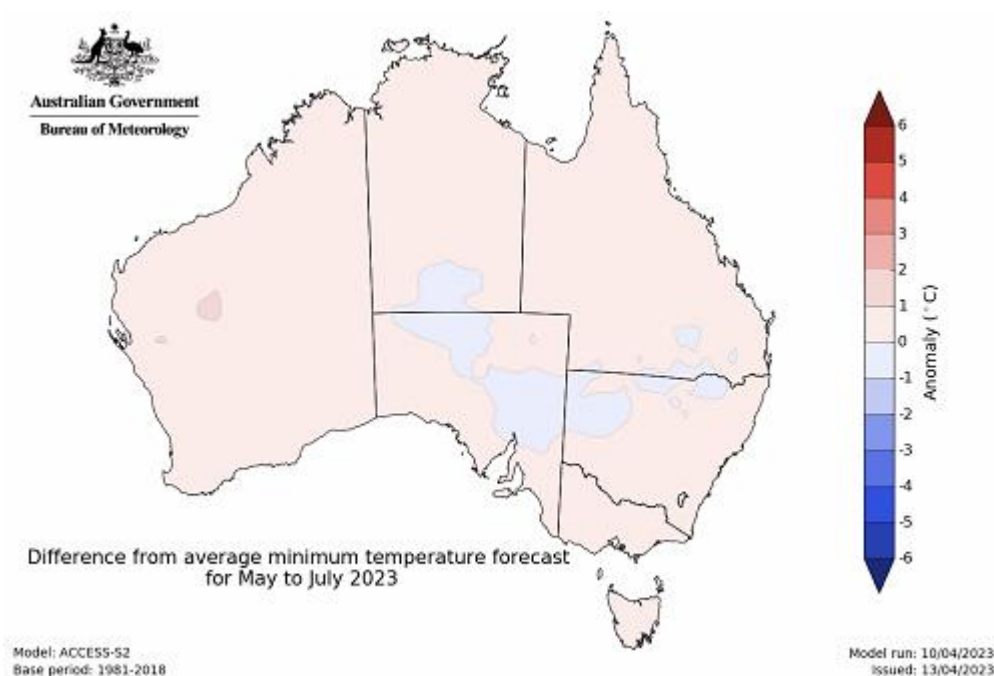


The temperature outlook for May to July 2023 indicates that maximum temperatures across most of Australia are likely to be close to the 1990-2012 average ( $-1^{\circ}\text{C}$  to  $+1^{\circ}\text{C}$ ) while slightly warmer (up to  $+2^{\circ}\text{C}$ ) across much of Western Australia and in parts of South Australia, southern Queensland and northern New South Wales. The minimum temperatures across most of Australia are expected to be close to the 1990-2012 average ( $-1^{\circ}\text{C}$  to  $+1^{\circ}\text{C}$ ).

#### Predicted maximum temperature anomaly for May to July 2023



#### Predicted minimum temperature anomaly for May to July 2023

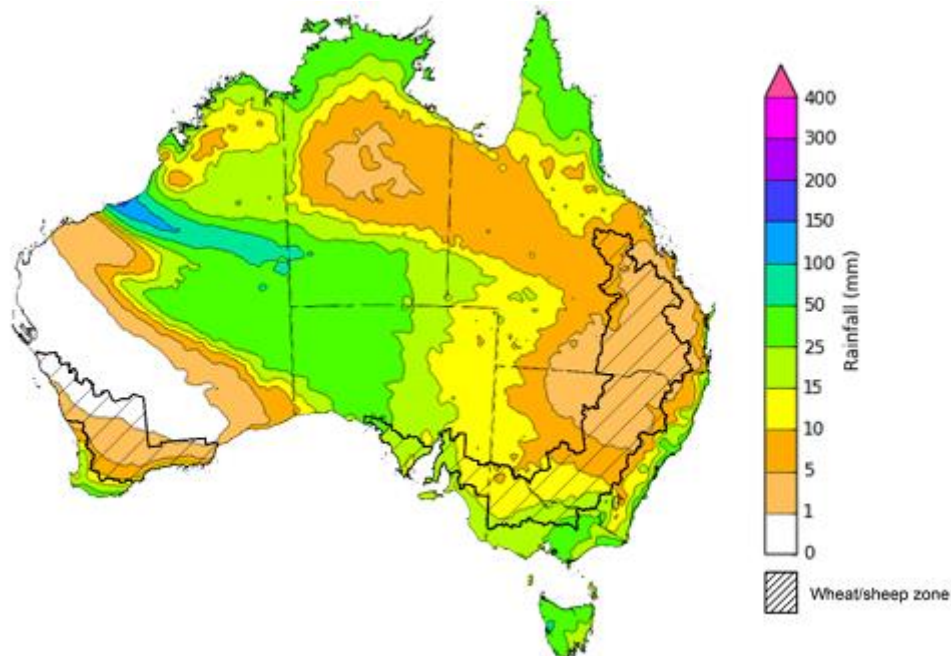


## 1.4. Rainfall forecast for the next eight days

Over the 8-days to 20 April 2023, Tropical Cyclone Ilsa, troughs and lows are expected to bring rainfall to large areas of Australia. Tropical cyclone Ilsa is forecast to bring intense wind, storms and rainfall totals of between 10 and 100 millimetres to northern and eastern Western Australia, South Australia and southwestern Northern Territory. A trough in the north will trigger storms across the Top End of the Northern Territory and northern Queensland. A front will bring rain to the southwest Western Australia. A low in the east will bring showers in the eastern New South Wales. Another front will bring cold winds and showers to southern New South Wales, Victoria and Tasmania. The high-pressure systems will bring more settled and dry condition to much of Queensland, central Northern Territory and southwest Western Australia.

Across Australian cropping regions, rainfall totals of up to 25 millimetres are expected for southern New South Wales, and much of Victoria and South Australia. Little to no rainfall is expected for the remaining cropping regions in the next eight days. For those area of the Australian wheatbelt where rainfall is forecast over the coming 8-days it is likely to build soil moisture levels in the led up to the winter cropping season and also benefit pasture growth rates and availability.

**Total forecast rainfall for the period 13 April to 20 April 2023**



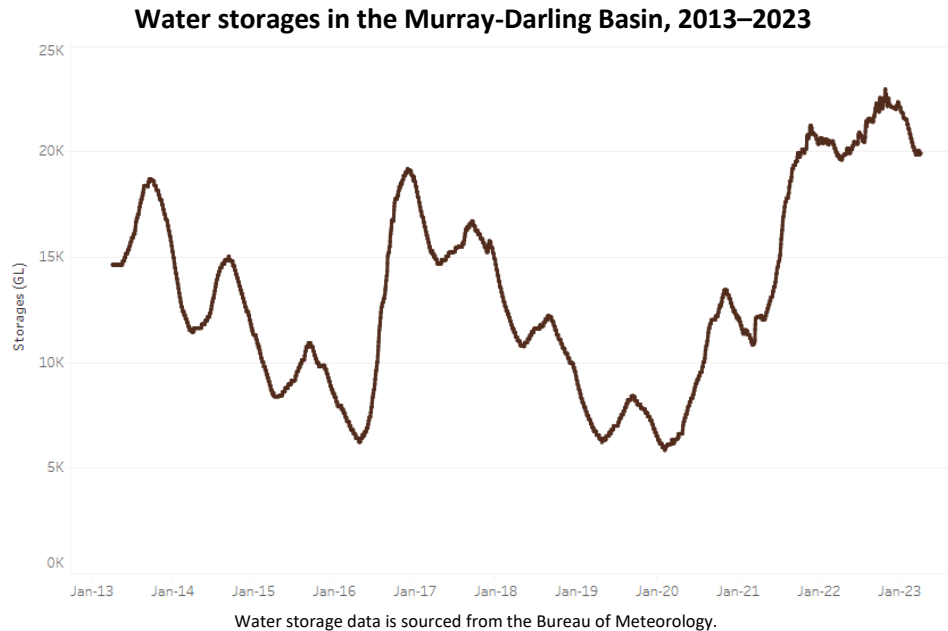
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Note: This rainfall forecast is produced from computer models. As the model outputs are not altered by weather forecasters, it is important to check local forecasts and warnings issued by the Bureau of Meteorology.

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## 2. Water

### 2.1. Water markets – current week

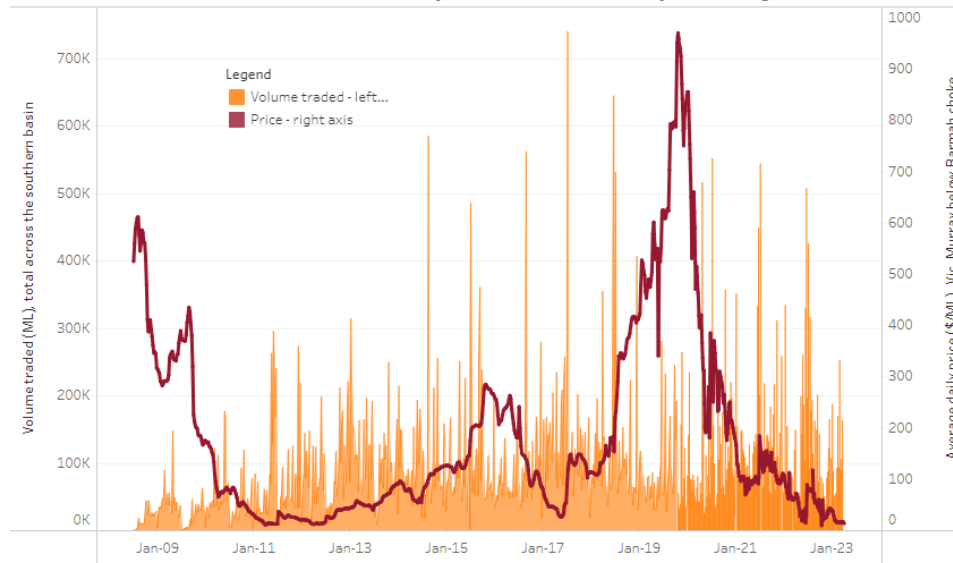
Water storage levels in the Murray-Darling Basin (MDB) decreased between 6 April 2023 and 13 April 2023 by 47 gigalitres (GL). Current volume of water held in storage is 19 901 GL which represents 89 per cent of total capacity. This is 1 percent or 259 GL more than at the same time last year.



Allocation prices in the Victorian Murray below the Barmah Choke decreased from \$16 on 6 April 2023 to \$13 on 13 April 2023. Prices are lower in the Murrumbidgee and regions above the Barmah choke due to the binding of the Murrumbidgee export limit and Barmah choke trade constraint.

Region	\$/ML
NSW Murray Above	9
NSW Murrumbidgee	7
VIC Goulburn-Broken	15
VIC Murray Below	13

### 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. Only the price data shown is current on 13 April 2023.

To access the full, interactive, weekly water dashboard, which contains the latest and historical water storage, water market and water allocation information, please visit

[https://www.agriculture.gov.au/abares/products/weekly\\_update/weeakly-update-13423](https://www.agriculture.gov.au/abares/products/weekly_update/weeakly-update-13423)

### 3. Commodities

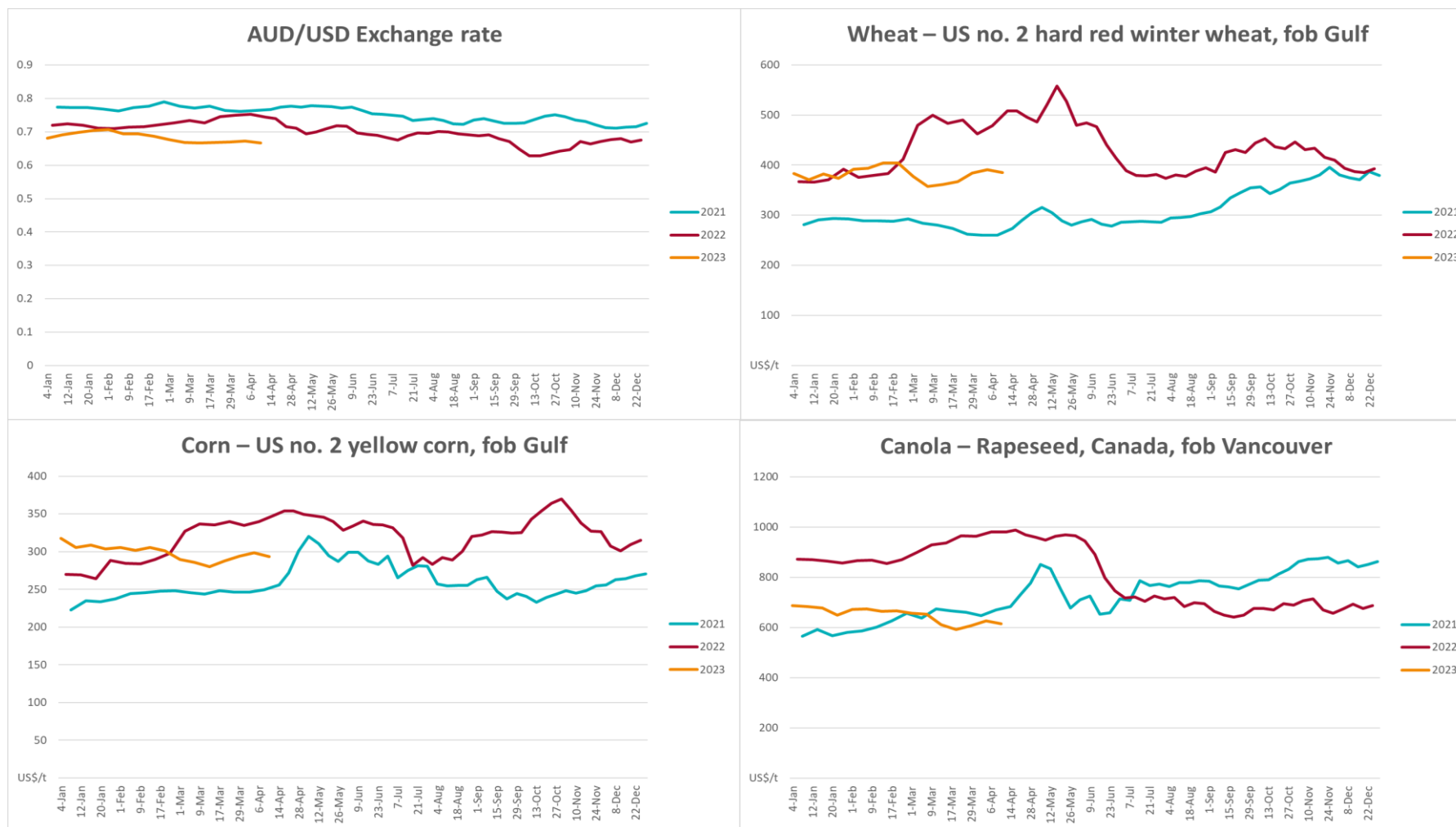
Indicator	Week ended	Unit	Latest Price	Previous Week	Weekly change	Price 12 months ago	Annual change
<b>Selected world indicator prices</b>							
AUD/USD Exchange rate	12-Apr	A\$/US\$	0.67	0.67	-1%	0.74	-10%
Wheat – US no. 2 hard red winter wheat, fob Gulf	12-Apr	US\$/t	385	391	-2%	508	-24%
Corn – US no. 2 yellow corn, fob Gulf	12-Apr	US\$/t	294	299	-2%	354	-17%
Canola – Rapeseed, Canada, fob Vancouver	12-Apr	US\$/t	616	627	-2%	989	-38%
Cotton – Cotlook 'A' Index	12-Apr	USc/lb	96	97	-1%	158	-40%
Sugar – Intercontinental Exchange, nearby futures, no.11 contract	12-Apr	USc/lb	23.4	22.0	6%	20	19%
Wool – Eastern Market Indicator	29-Mar	Ac/kg clean	1,300	1,318	-1%	1,511	-14%
Wool – Western Market Indicator	29-Mar	Ac/kg clean	1,439	1,480	-3%	1,408	2%
<b>Selected Australian grain export prices</b>							
Milling Wheat – APW, Port Adelaide, SA	12-Apr	A\$/t	469	478	-2%	565	-17%
Feed Wheat – ASW, Port Adelaide, SA	12-Apr	A\$/t	442	448	-1%	530	-17%
Feed Barley – Port Adelaide, SA	12-Apr	A\$/t	412	415	-1%	465	-12%
Canola – Kwinana, WA	12-Apr	A\$/t	910	933	-2%	1,245	-27%
Grain Sorghum – Brisbane, QLD	12-Apr	A\$/t	509	511	0%	427	19%
<b>Selected domestic livestock indicator prices</b>							
Beef – Eastern Young Cattle Indicator	12-Apr	Ac/kg cwt	682	694	-2%	1,092	-38%
Mutton – Mutton indicator (18–24 kg fat score 2–3), Vic	12-Apr	Ac/kg cwt	383	332	15%	570	-33%
Lamb – Eastern States Trade Lamb Indicator	12-Apr	Ac/kg cwt	686	680	1%	798	-14%
Pig – Eastern Seaboard (60.1–75 kg), average of buyers & sellers	29-Mar	Ac/kg cwt	357	357	0%	357	0%
Goats – Eastern States (12.1–16 kg)	05-Apr	Ac/kg cwt	280	280	0%	815	-66%

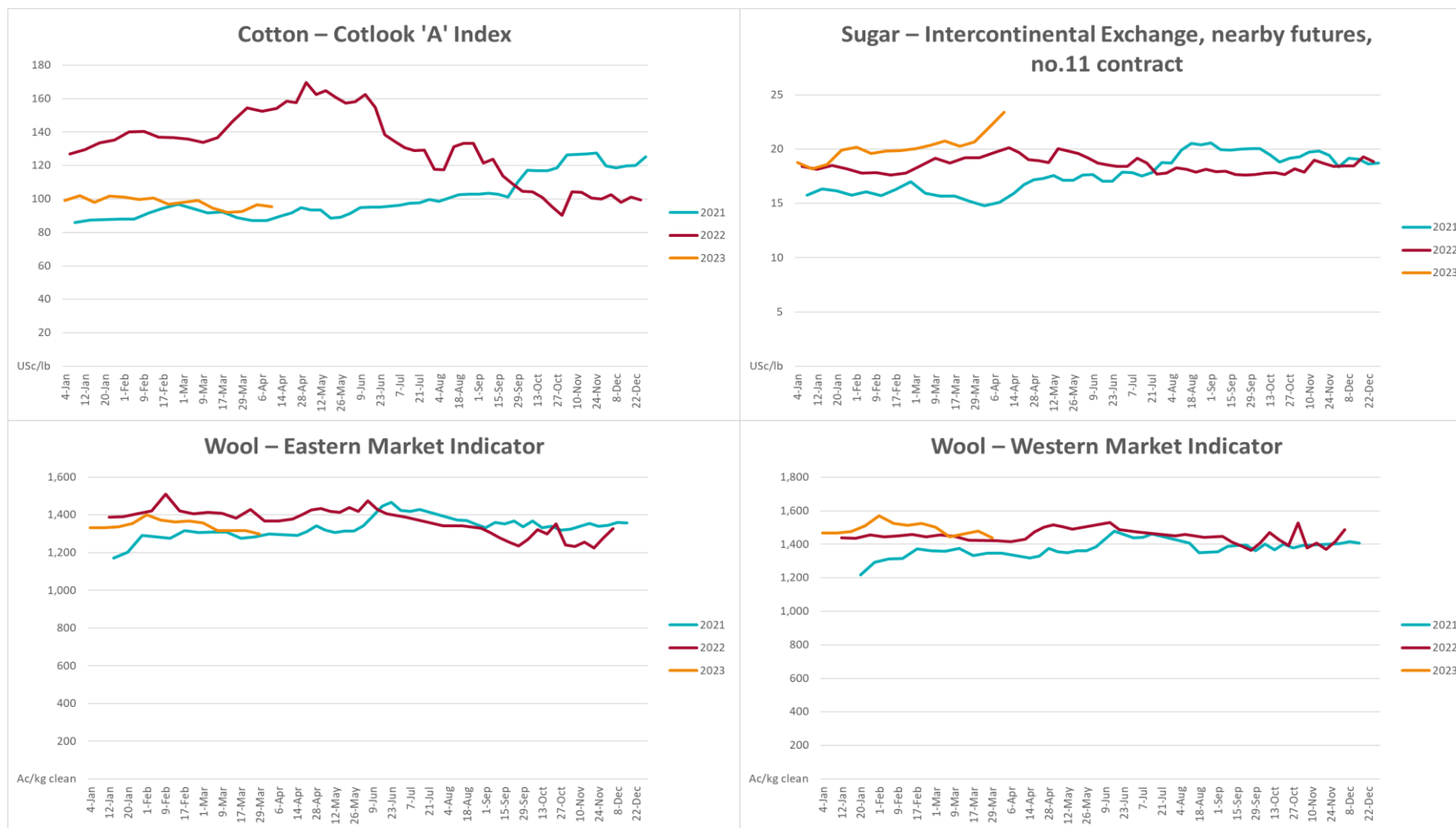


Live cattle – Light steers ex Darwin to Indonesia	17-Aug	Ac/kg lwt	420	480	-13%	320	31%
Live sheep – Live wethers (Muchea WA saleyard) to Middle East	14-Sep	\$/head	93	113	-18%	114	-18%
<b>Global Dairy Trade (GDT) weighted average prices <sup>a</sup></b>							
Dairy – Whole milk powder	05-Apr	US\$/t	3,053	3,228	-5%	4,083	-25%
Dairy – Skim milk powder	05-Apr	US\$/t	2,579	2,648	-3%	3,350	-23%
Dairy – Cheddar cheese	05-Apr	US\$/t	4,167	4,052	3%	4,250	-2%
Dairy – Anhydrous milk fat	05-Apr	US\$/t	4,736	5,150	-8%	6,155	-23%

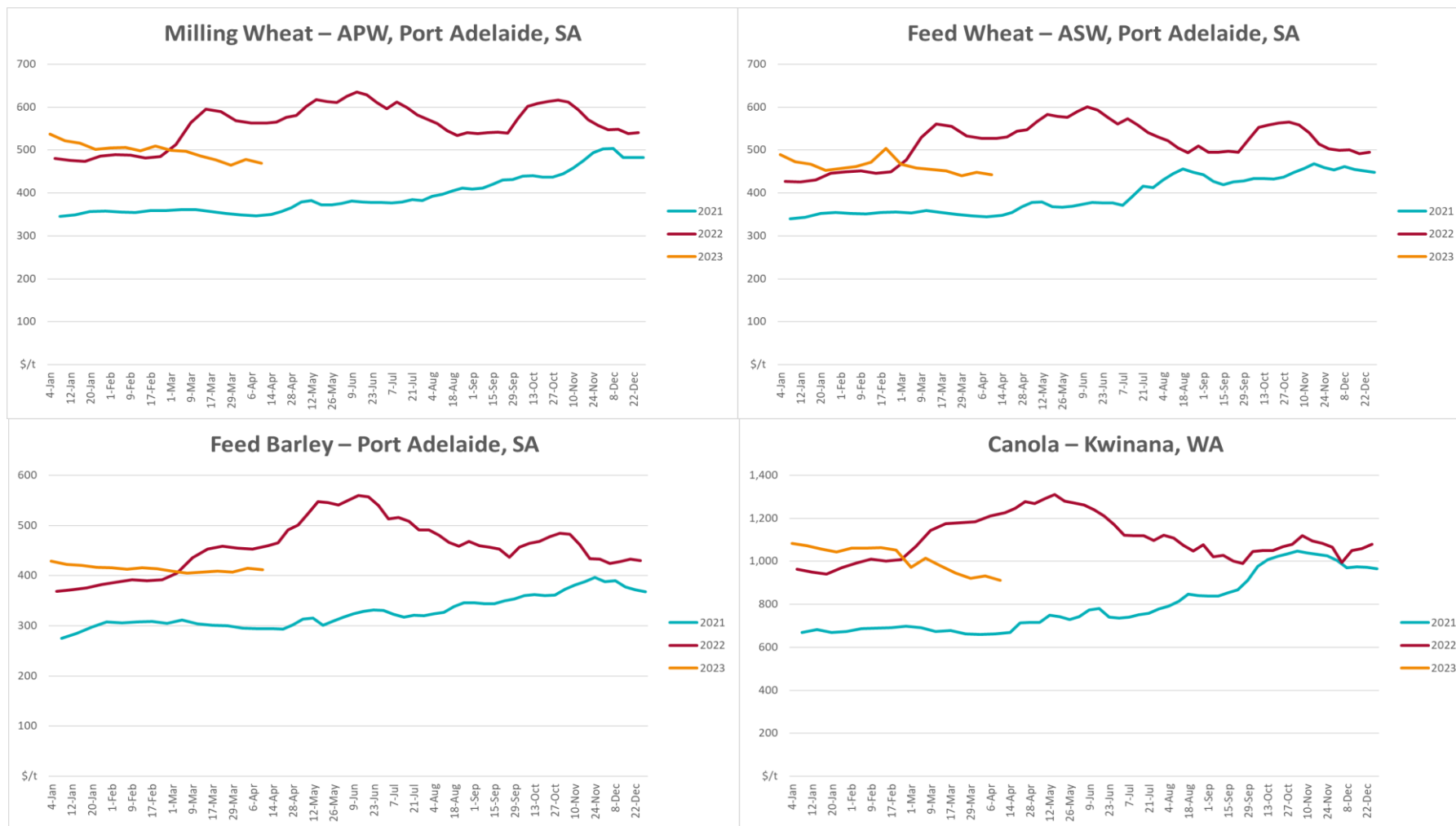
<sup>a</sup> Global Dairy Trade prices are updated twice monthly on the first and third Tuesday of each month.

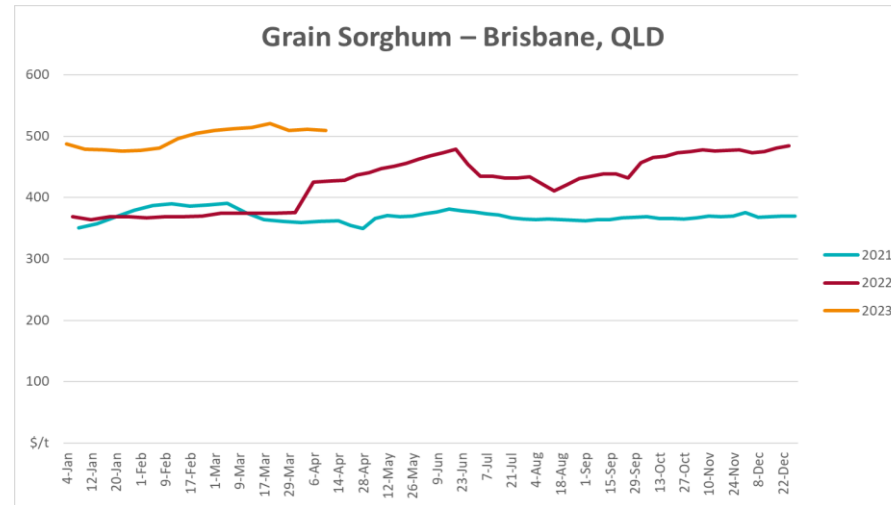
### 3.1. Selected world indicator prices





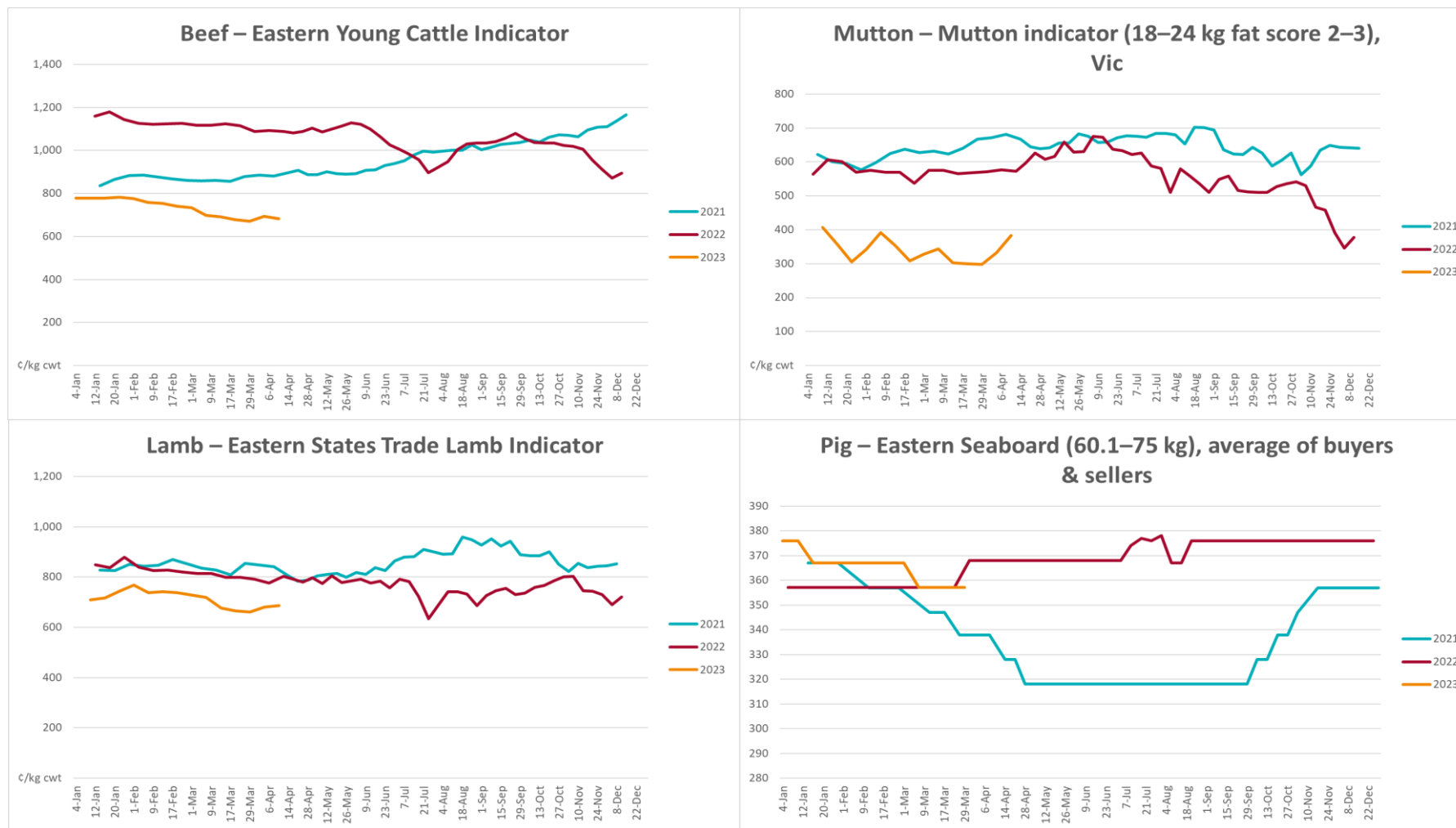
### 3.2. Selected domestic crop indicator prices

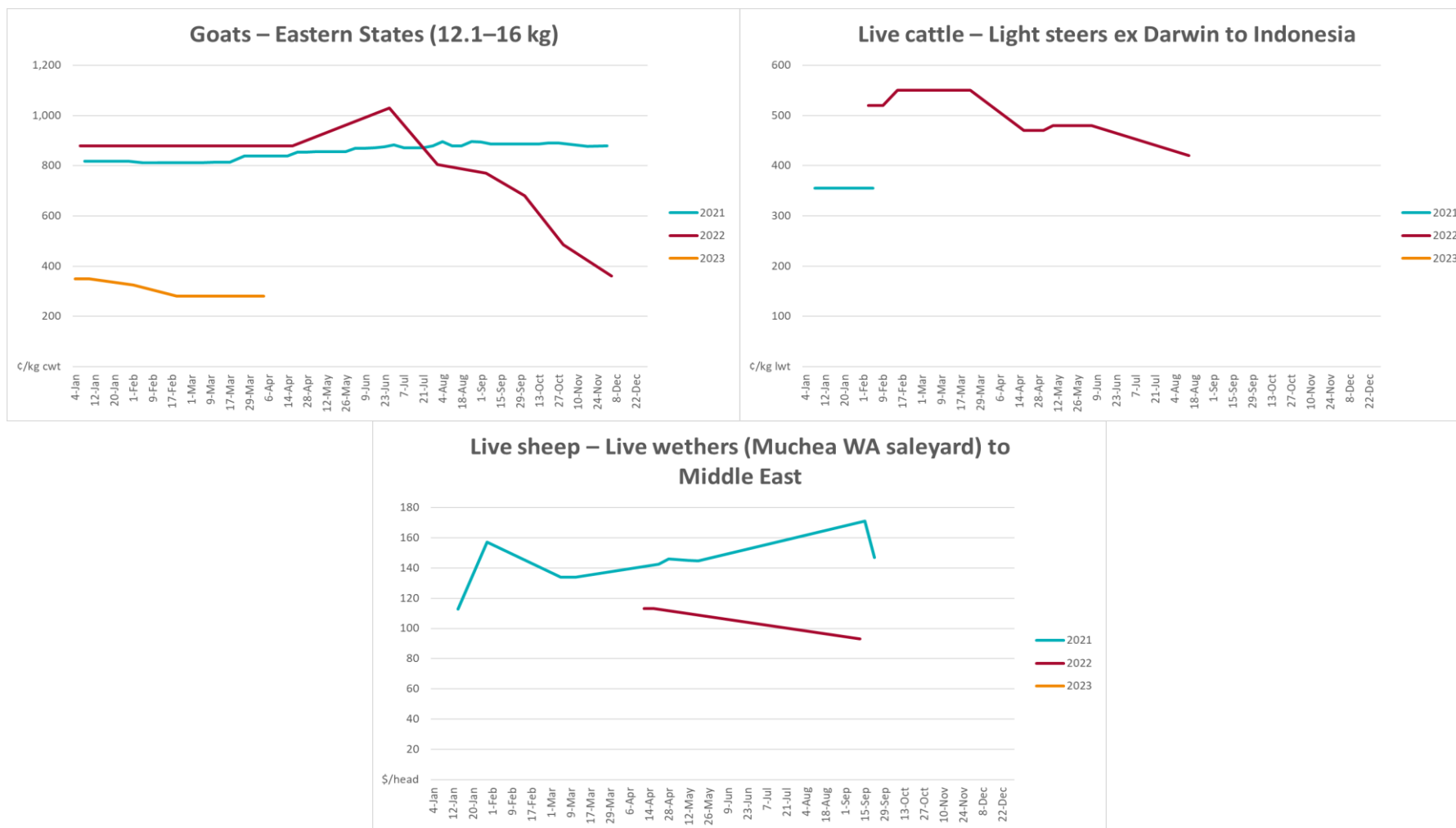




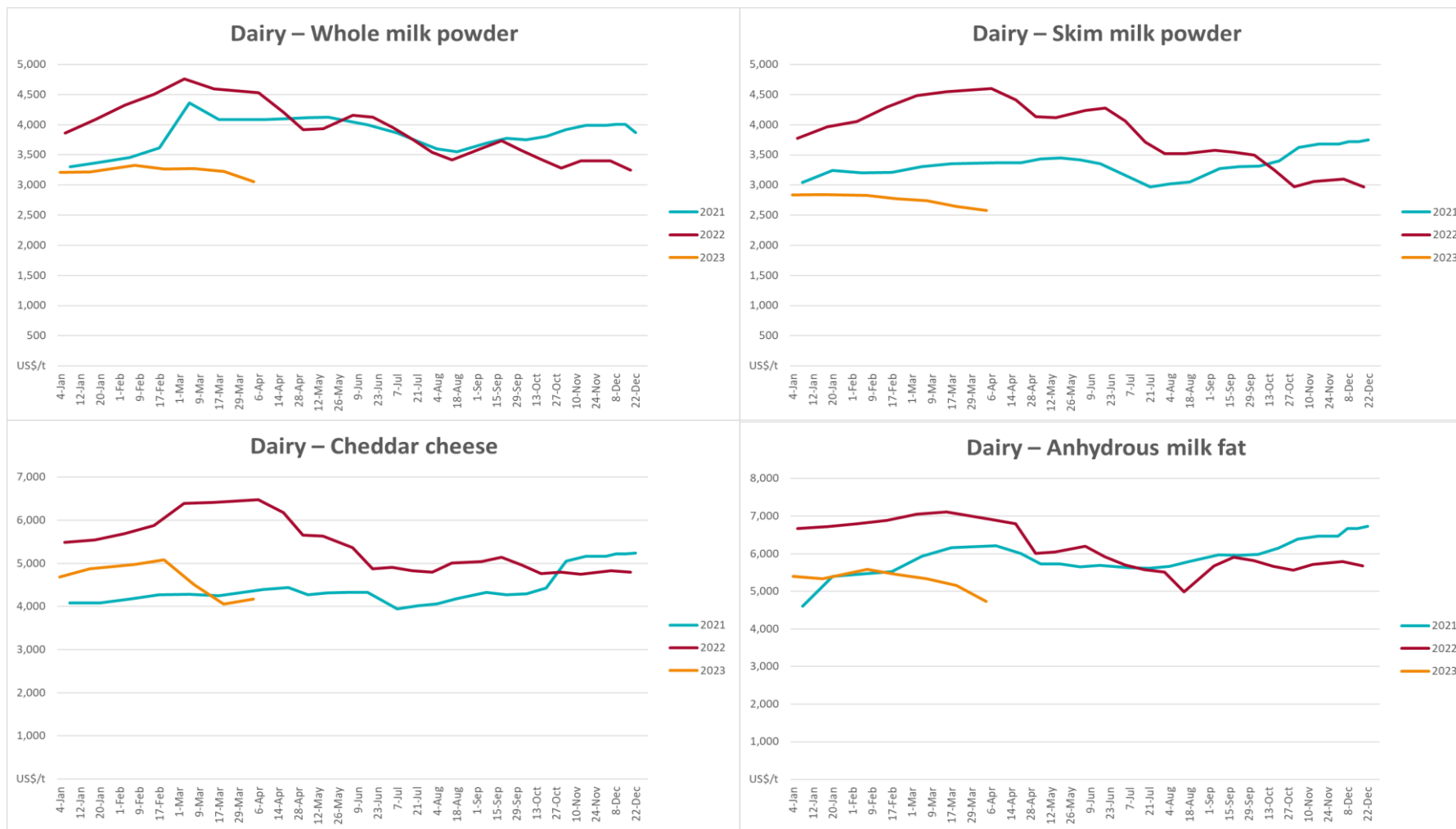


### 3.3. Selected domestic livestock indicator prices

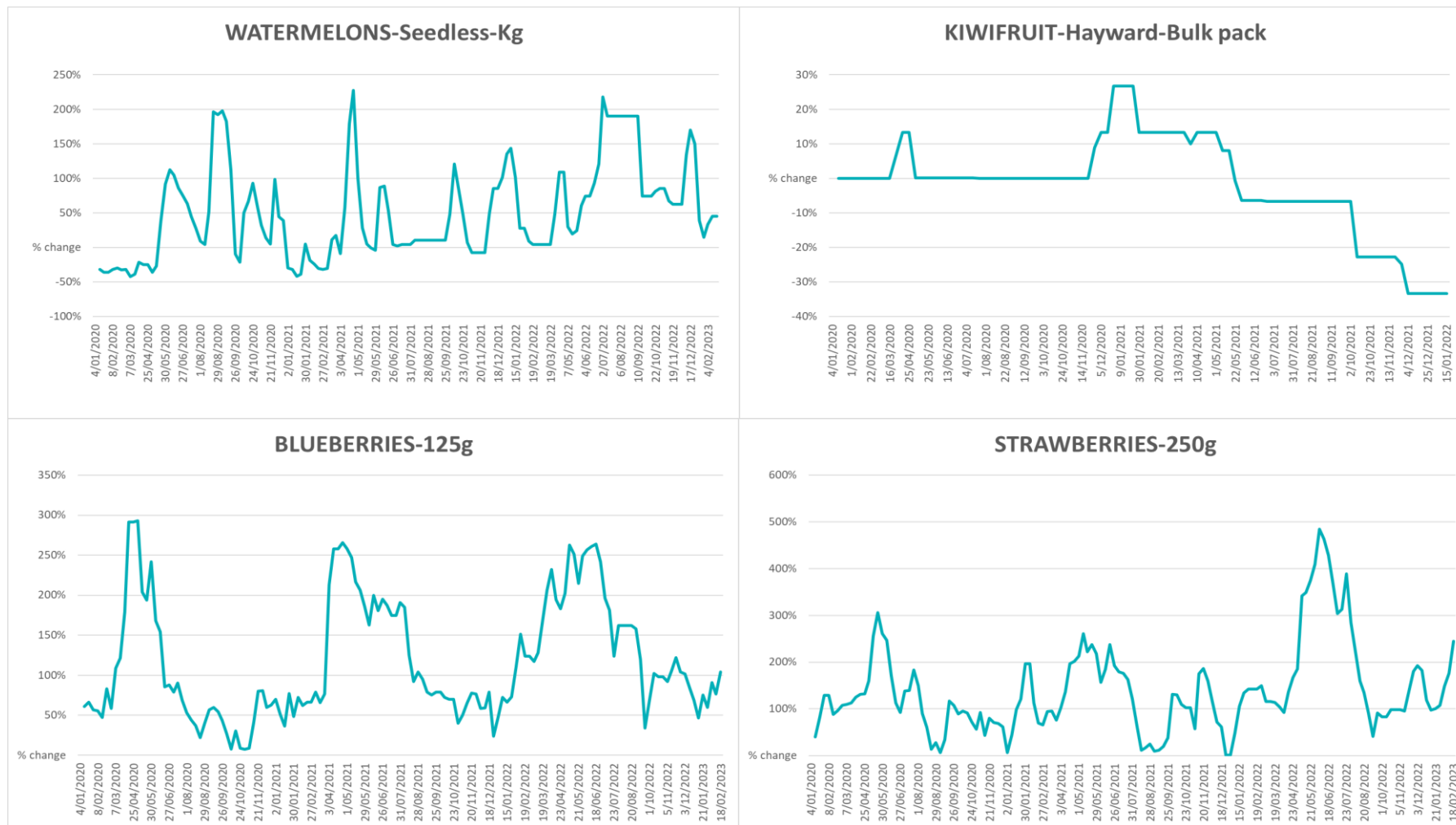


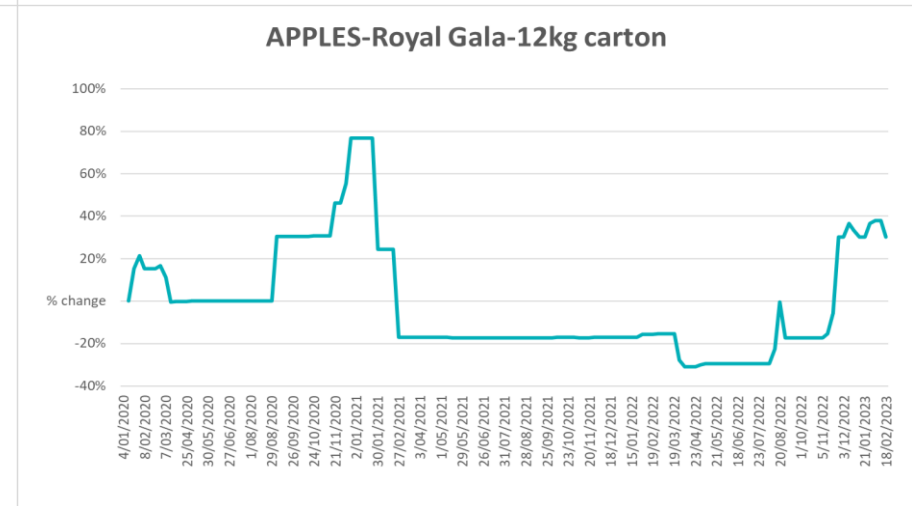
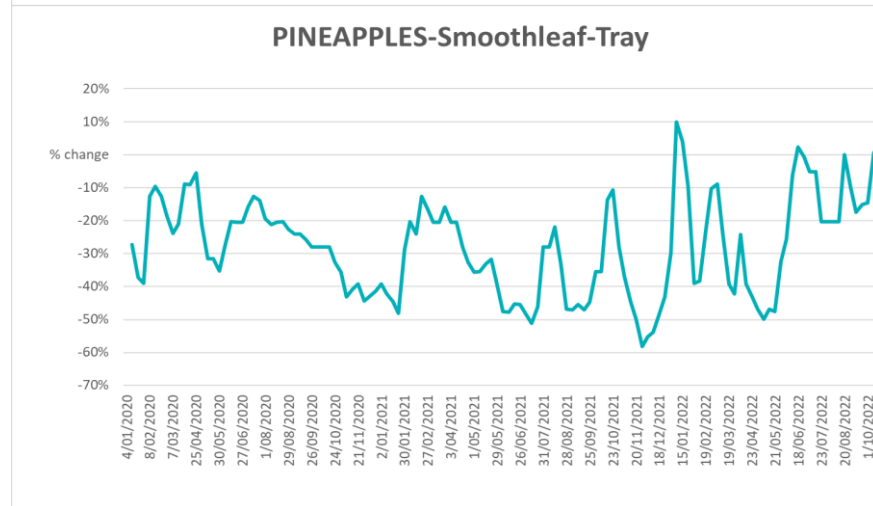
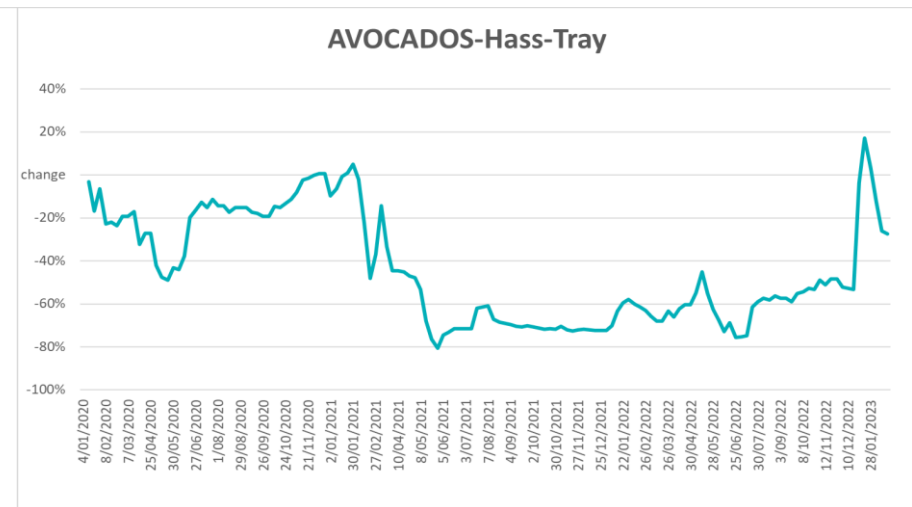
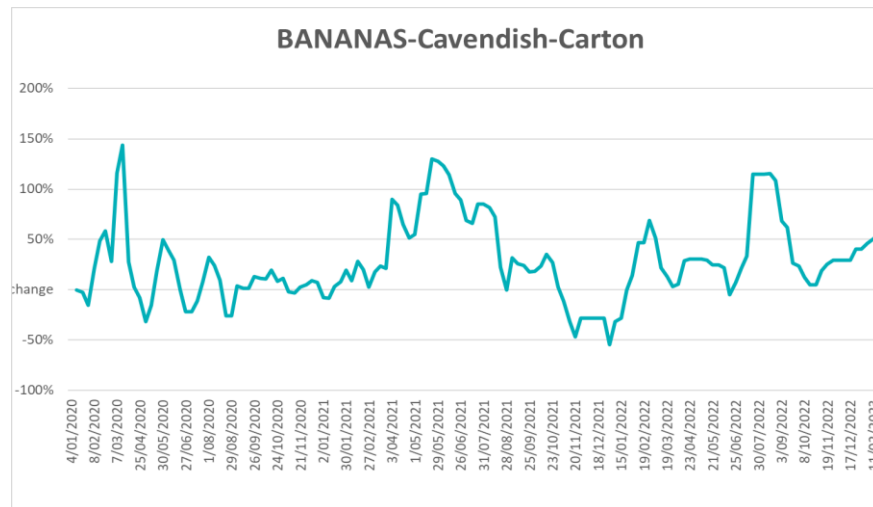


### 3.4. Global Dairy Trade (GDT) weighted average prices

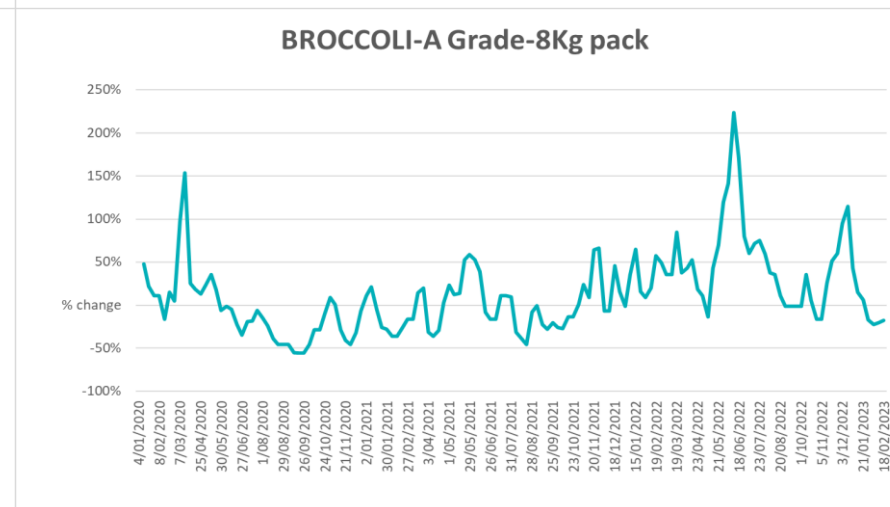
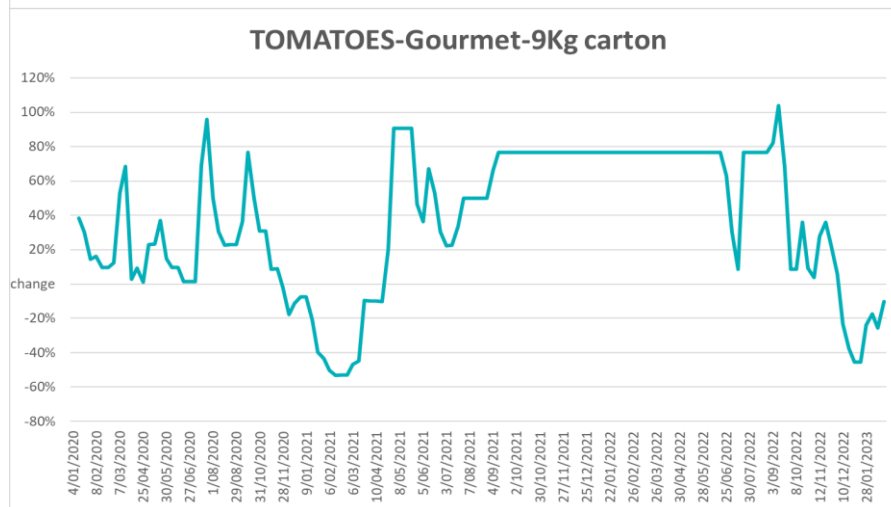
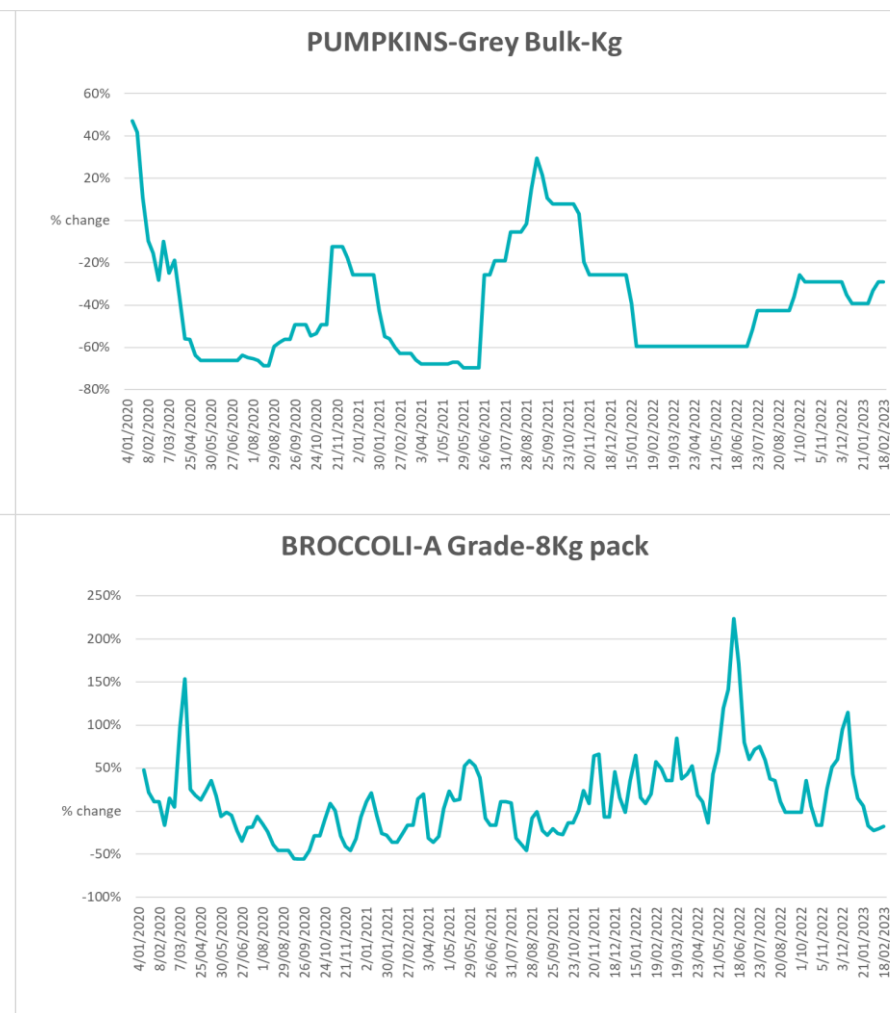
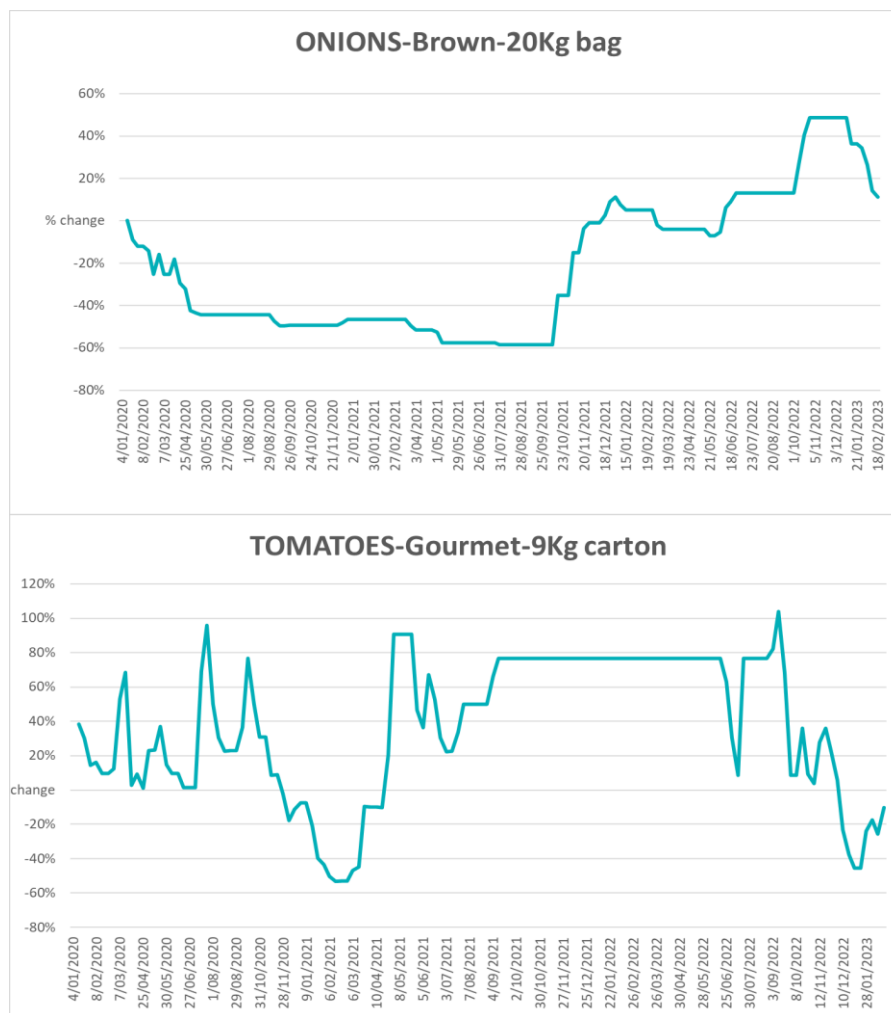


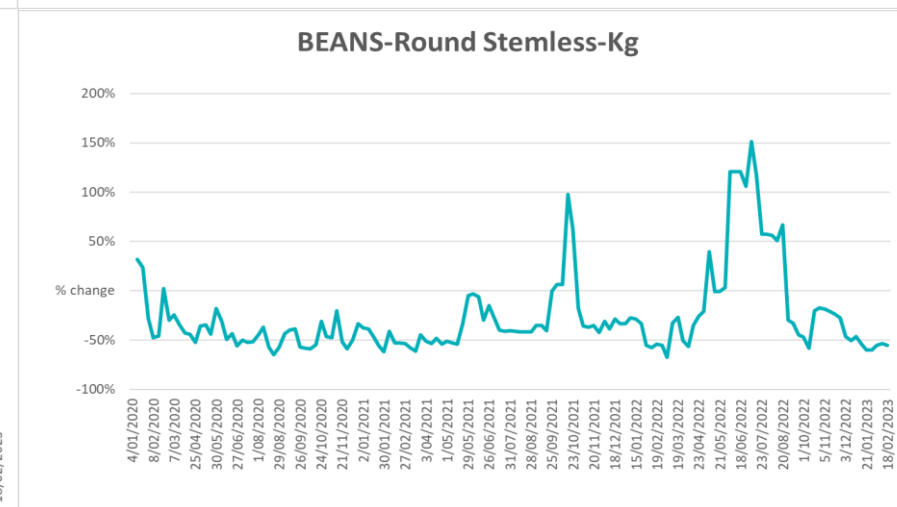
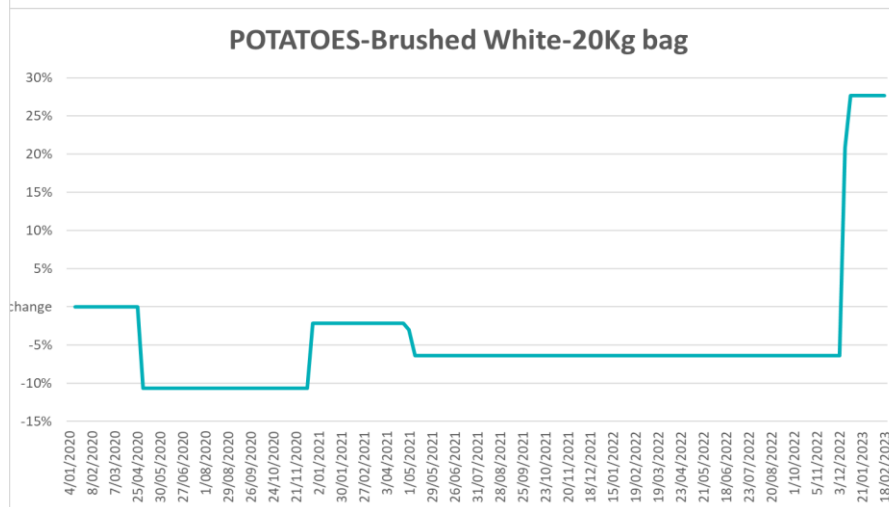
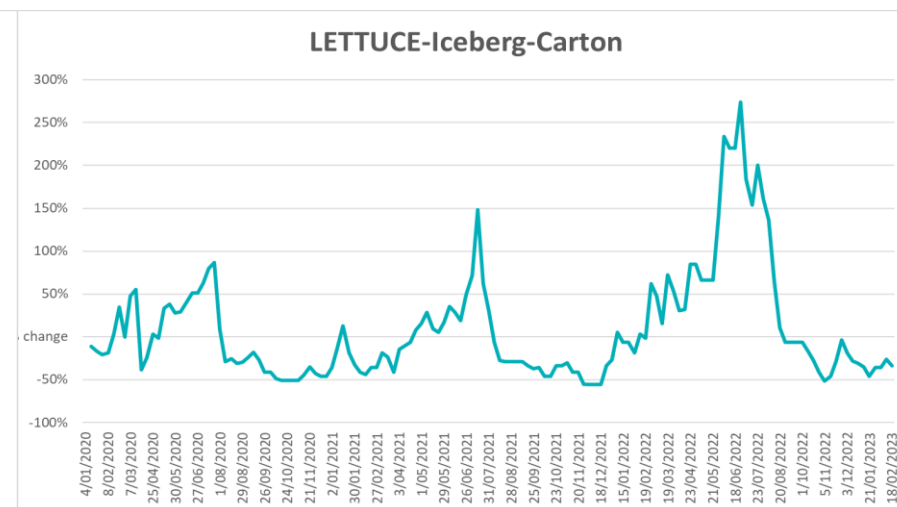
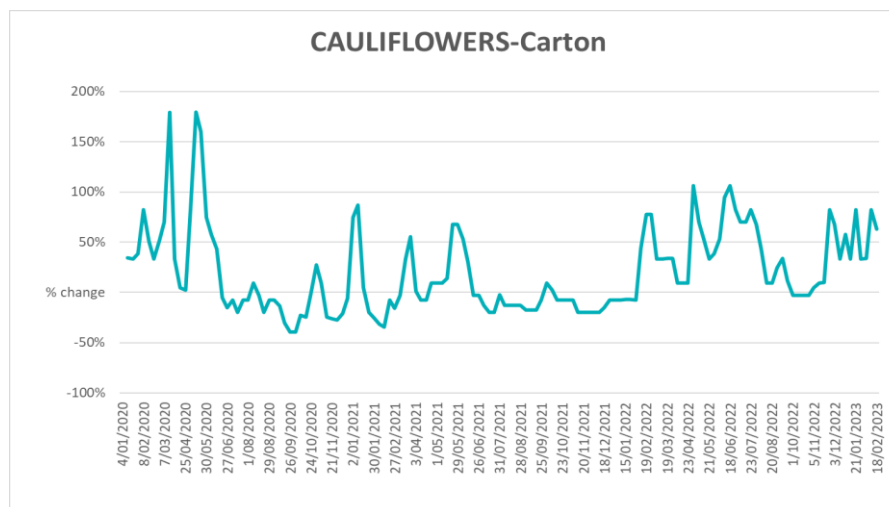
### 3.5. Selected fruit and vegetable prices



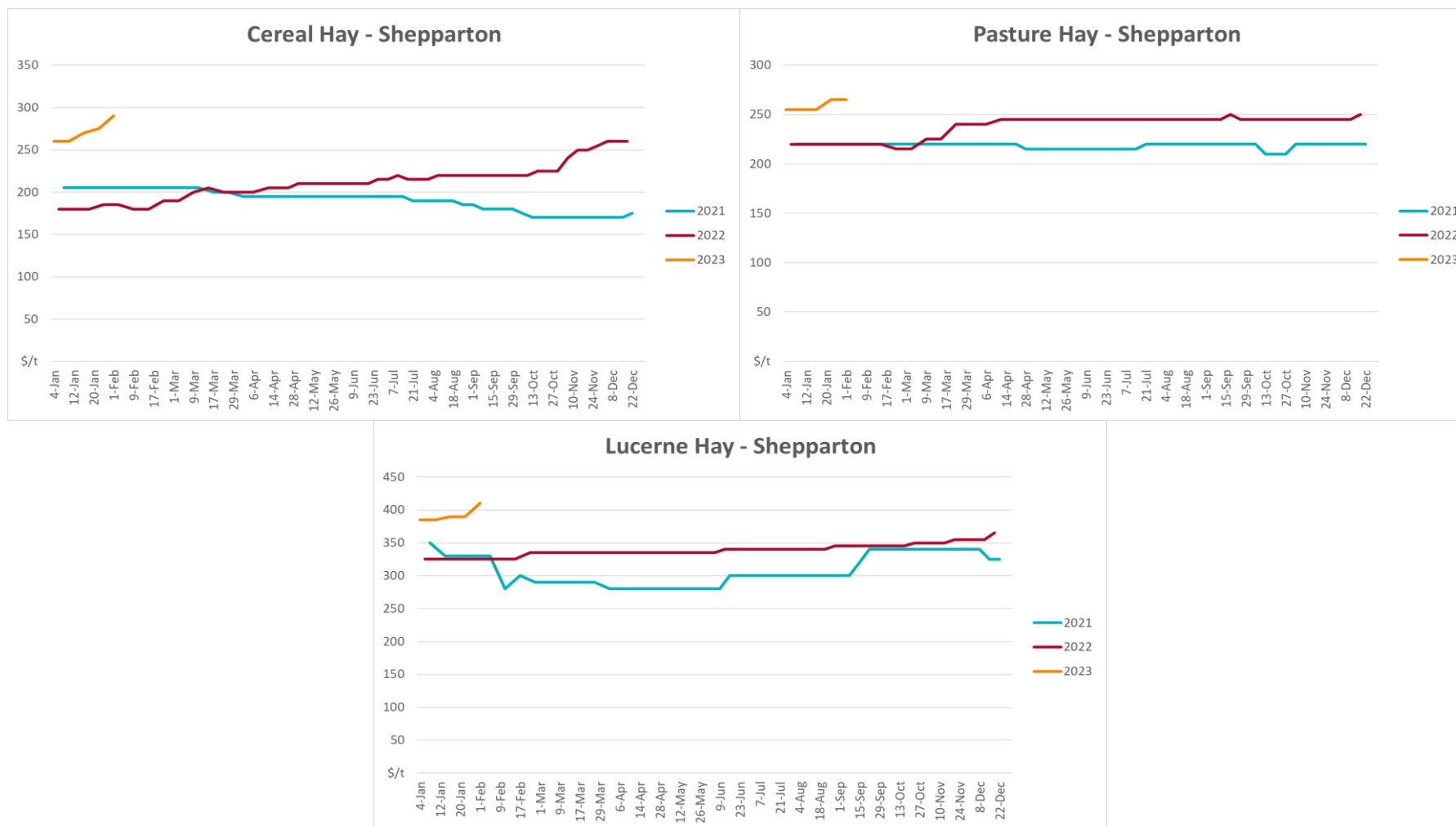








### 3.6 Selected domestic fodder indicator prices



## 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, canola and fodder

- 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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