



Weekly Australian Climate, Water and Agricultural Update

No. 9/2023

9 March 2023

Summary of key issues

- For the week ending 8 March 2023, a monsoon burst has brought thunderstorms and heavy rain across the northern tropics throughout the week, with weekly totals greater than 150 millimetres recorded in parts of central Northern Territory and adjacent areas of north-west Queensland.
- Little to no rainfall was recorded in cropping regions over the past 7 days, except for parts of Queensland. Ongoing dry conditions across most summer cropping regions would have allowed for uninterrupted access to fields for crop maintenance activities and for the harvesting of early sown crops. However, in regions with below average soil moisture levels, little to no rainfall is likely to have negatively affected the growth and yield potential of late sown summer crops (see Section 1.1).
- La Niña is likely near its end. The oceanic indicators of La Niña have returned to neutral levels, while the atmospheric indicators that remain at La Niña levels are continuing to weaken. The Madden–Julian Oscillation (MJO) is currently weak; however, it is forecast to strengthen and re-emerge over the western Pacific during the coming fortnight. This may initially contribute to increased monsoonal activity across northern Australia, but as it progresses eastward it will increasingly favour drier conditions for tropical Australia (see Section 1.2).
- The outlook for April 2023 indicates that there is a 75% chance of rainfall totals between 10 and 50 millimetres for tropical northern Australia, eastern and south-eastern coastal areas, parts of Western Australia, as well as much of Tasmania. Rainfall totals in excess of 100 millimetres are expected in western Tasmania and in parts of north-eastern Queensland. For the remainder of Australia, rainfall totals are not expected to exceed 10 millimetres (see Section 1.3).
- The outlook for April to June 2023 suggests there is a 75% chance of rainfall totals between 25 and 100 millimetres across central and eastern New South Wales, northern and eastern Queensland, southern parts of South Australia and Western Australia, northern parts of the Northern Territory and much of Victoria and Tasmania. Rainfall totals in excess of 200 millimetres are forecast for coastal parts of New South Wales and Queensland, as well as western Tasmania.
- Over the 8-days to 16 March 2023, the monsoon trough is expected to generate rain and storms across the tropical north of Australia. Meanwhile, a low-pressure trough across eastern Australia is forecast to generate rainfall in excess of 25 mm, particularly over much of Queensland and in the northeast and coastal New South Wales. A high-pressure system is expected to bring mainly dry conditions elsewhere (see Section 1.4).
- Water storage levels in the Murray-Darling Basin (MDB) decreased between 27 February 2023 and 6 March 2023 by 271 gigalitres (GL). Current volume of water held in storage is 22 580 GL which represents 89 per cent of total capacity. This is 1 percent or 174 GL more than at the same time last year.
- Allocation prices in the Victorian Murray below the Barmah Choke remained steady at \$15 per ML from 2 March 2023 to 9 March 2023. Prices are lower in the Murrumbidgee and in regions above the Barmah choke due to the binding of the Murrumbidgee export limit and Barmah choke trade constraint.

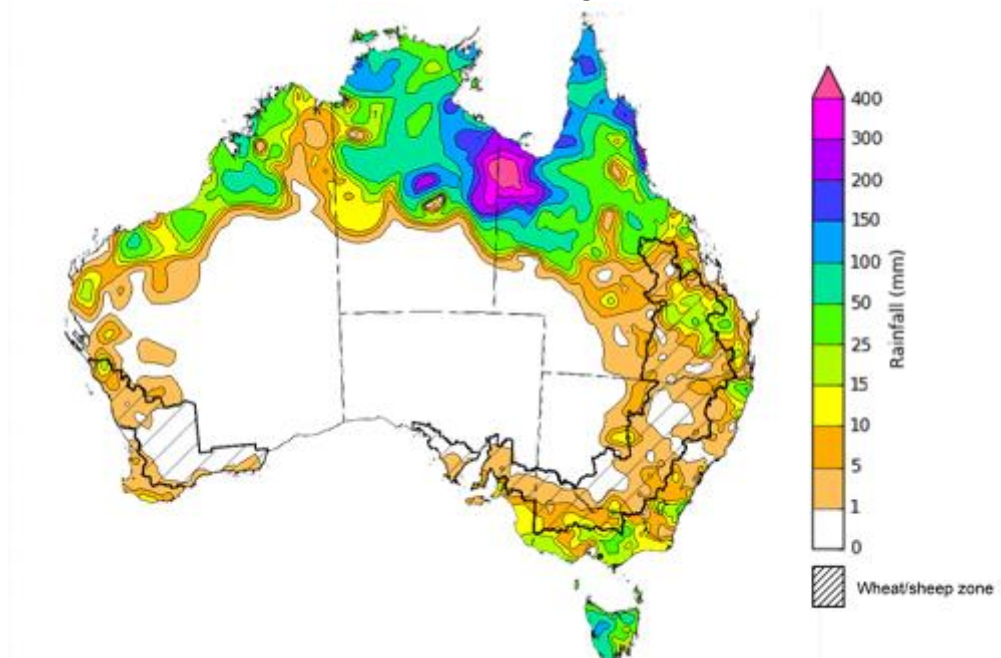
1. Climate

1.1. Rainfall this week

For the week ending 8 March 2023, the northern monsoon has brought thunderstorms and heavy rainfall to much of Australia's tropical north throughout the week. Weekly totals between 25 and 150 millimetres were recorded in the north of the Northern Territory, northern Queensland, and parts of northern Western Australia. Weekly totals greater than 150 millimetres recorded in parts of central Northern Territory and adjacent areas of north-west Queensland. Frontal activity in southern Australia brought rainfall totals of between 10 and 50 millimetres to Tasmania and southern Victoria, as well as pockets of eastern Queensland and New South Wales over the past week.

Little to no rainfall was recorded across the cropping regions over the past 7 days, except for parts of central Queensland. Ongoing dry conditions across most summer cropping regions would have allowed for uninterrupted access to fields for crop maintenance activities and for the harvesting of early sown crops. However, in regions with below average soil moisture levels, little to no rainfall is likely to have negatively affected the growth and yield potential of late sown summer crops.

Rainfall for the week ending 8 March 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/>

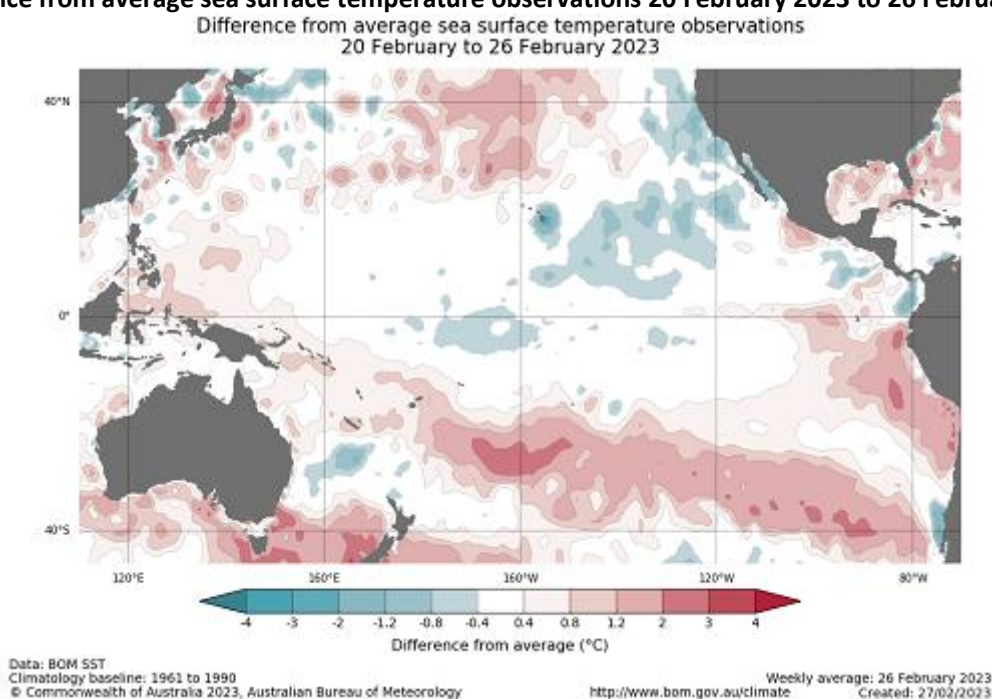
Issued: 08/03/2023

1.2. Climate Drivers

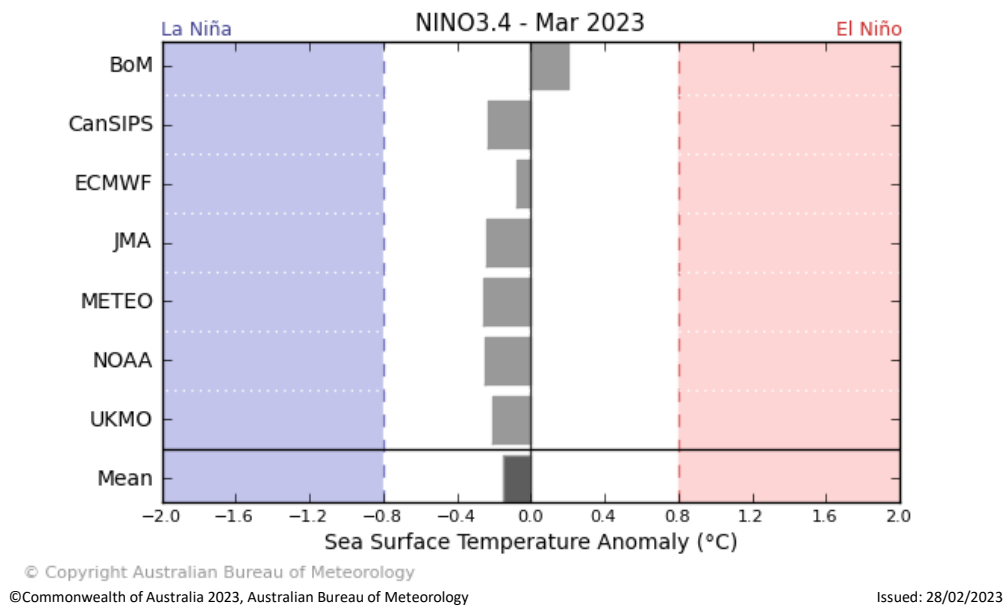
Throughout autumn the climate drivers with the largest potential impact on Australia's climate patterns are the El Niño–Southern Oscillation (ENSO) and the Madden-Julian Oscillation (MJO). These climate drivers are likely to influence the growth and development of later planted summer crops in northern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

La Niña has weakened in the tropical Pacific Ocean and is likely near its end. Oceanic indicators of La Niña have returned to neutral levels, while atmospheric indicators of La Niña continue to weaken. The Southern Annular Mode (SAM) is currently positive but is expected to return to neutral during the coming week where it is anticipated to remain neutral for the coming month. Neutral SAM has little influence on the rainfall and temperature outlook for Australia.

Difference from average sea surface temperature observations 20 February 2023 to 26 February 2023



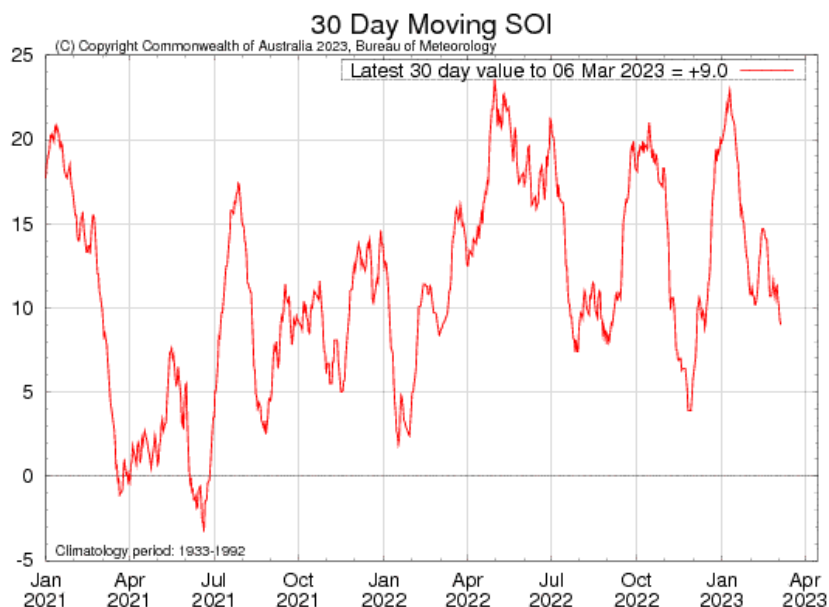
International climate model outlooks for the NINO 3.4 region in March 2023



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 reaching El Niño thresholds in May. For the period ending 6 March 2023, the 30-day Southern Oscillation Index (SOI) value was +9.0, which has decreased slightly over the past weeks; another indicator of the weakening La Niña.

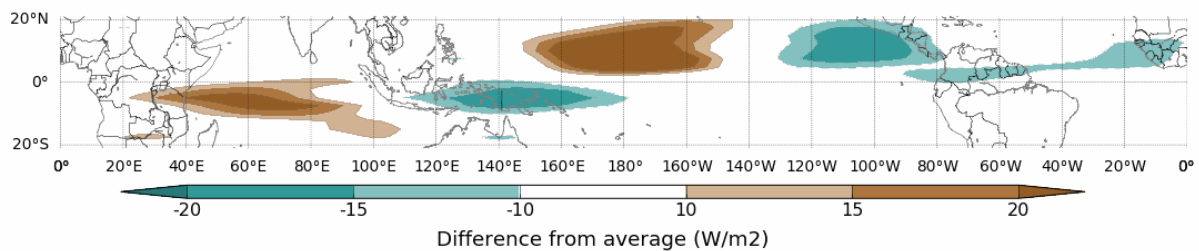
It is important to note that while most models suggest there is an increased chance of El Niño developing in mid-to-late 2023, the model accuracy when forecasting through autumn is low, and therefore ENSO outlooks that extend past autumn should be viewed with caution.

30-day Southern Oscillation Index (SOI) values ending 6 March 2023



The Madden–Julian Oscillation (MJO) is currently weak, however, it is forecast to strengthen and re-emerge over the western Pacific during the coming fortnight. This may initially contribute to increased monsoonal activity across northern Australia, but as it progresses eastward it will increasingly favour drier conditions for tropical Australia. While over the Pacific Ocean, the westerly winds associated with the MJO are expected to bring about the weakening of the trade winds, which may further contribute to the breakdown of La Niña in the coming fortnight.

Madden–Julian Oscillation (MJO) daily index



www.bom.gov.au/climate
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 Model: ACCESS-S2 Forecast date: 06/03/2023
 Base period: 1981-2018 Model run date: 06/03/2023
 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

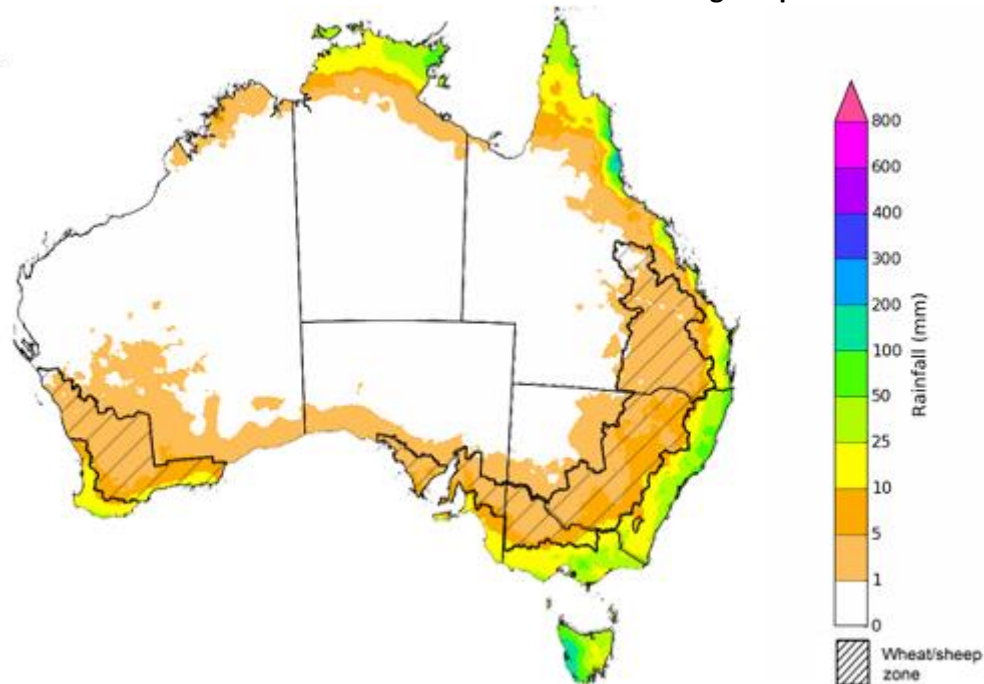
These climate outlooks are generated by ACCESS–S (Australian Community Climate Earth-System Simulator–Seasonal). ACCESS–S is the Bureau of Meteorology's dynamic (physics-based) weather and climate model used for monthly, seasonal, and longer-lead climate outlooks. For further information, go to <http://www.bom.gov.au/climate/ahead/about/>.

The Bureau of Meteorology's latest rainfall outlook for April 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 for tropical northern Australia, eastern and south-eastern coastal areas, parts of Western Australia, as well as much of Tasmania. Rainfall totals in excess of 100 millimetres are expected in western Tasmania and in parts of north-eastern Queensland. For the remainder of Australia, rainfall totals are not expected to exceed 10 millimetres.

Across much of the cropping regions there is a 75% chance of rainfall totals less than 10 mm, except for in eastern Victoria, and in south-eastern New South Wales and Western Australia where it may total up to 25 mm.

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

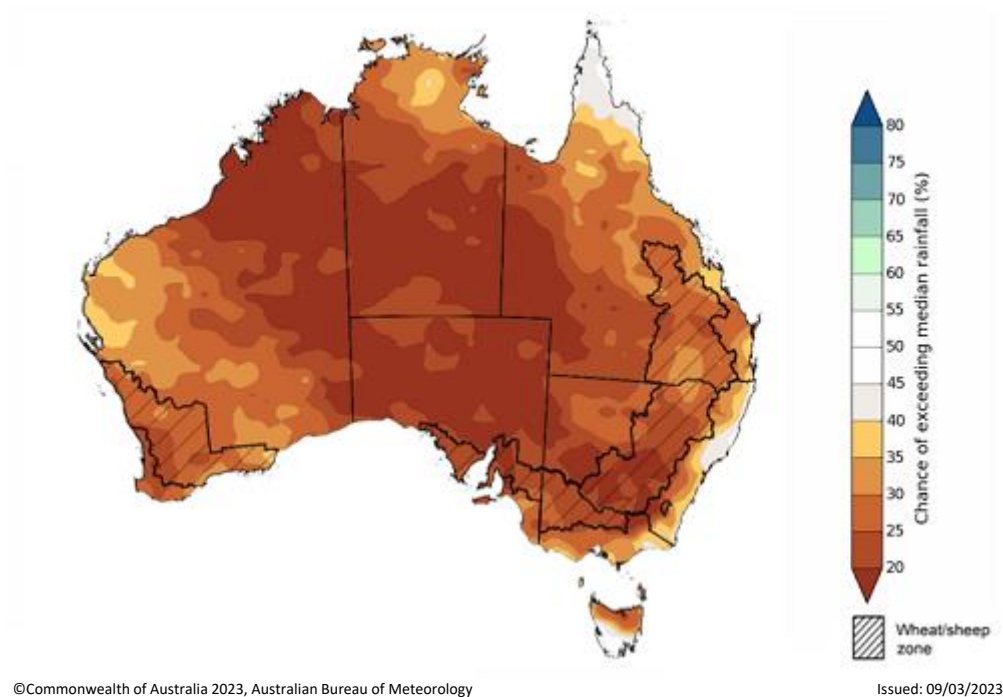


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The rainfall outlook for April to June 2023 suggests that below median rainfall is likely to very likely (60% to greater than 80% chance) for most of Australia the next three months. However, for tropical northern Queensland, parts of coastal New South Wales and southern Tasmania there is have close to equal chances of above or below median rainfall.

Chance of exceeding the median rainfall April to June 2023

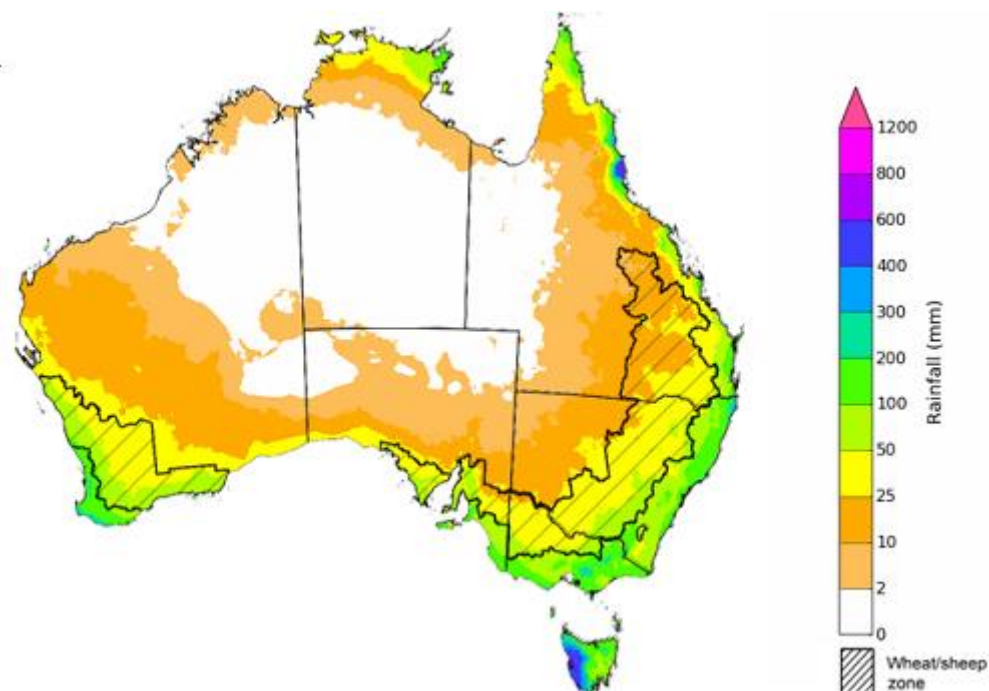


The outlook for April to June 2023 suggests there is a 75% chance of rainfall totals between 25 and 100 millimetres across central and eastern New South Wales, northern and eastern Queensland, southern parts of South Australia and Western Australia, northern parts of the Northern Territory and much of Victoria and Tasmania. Rainfall totals in excess of 200 millimetres are forecast for isolated coastal areas of New South Wales and Queensland, as well as western Tasmania.

Across cropping regions, there is a 75% chance of receiving between 25 and 100 millimetres across much of New South Wales, parts of eastern Queensland, Victoria, South Australia and Western Australia.

These rainfall totals are well below average for this three-month period across most of Australia. Relatively dry conditions during February and early March have seen soil moisture levels decline across large areas of Australia. This lack of rainfall and decline in soil moisture levels has led to reductions in yield potentials for later sown summer crops. Given these recent declines in soil moisture levels and the increased likelihood of below average rainfall over the next three months, crop producers will require adequate and timely rainfall to maintain current summer crop yield potentials to support the sowing and establishment of winter crops. For livestock producers experiencing below average rainfall, particularly across southern Australia, this will likely result in below average pasture production. However, ample supplies of conserved fodder will likely enable most producers to maintain current production levels and stocking rates.

Rainfall totals that have a 75% chance of occurring April to June 2023

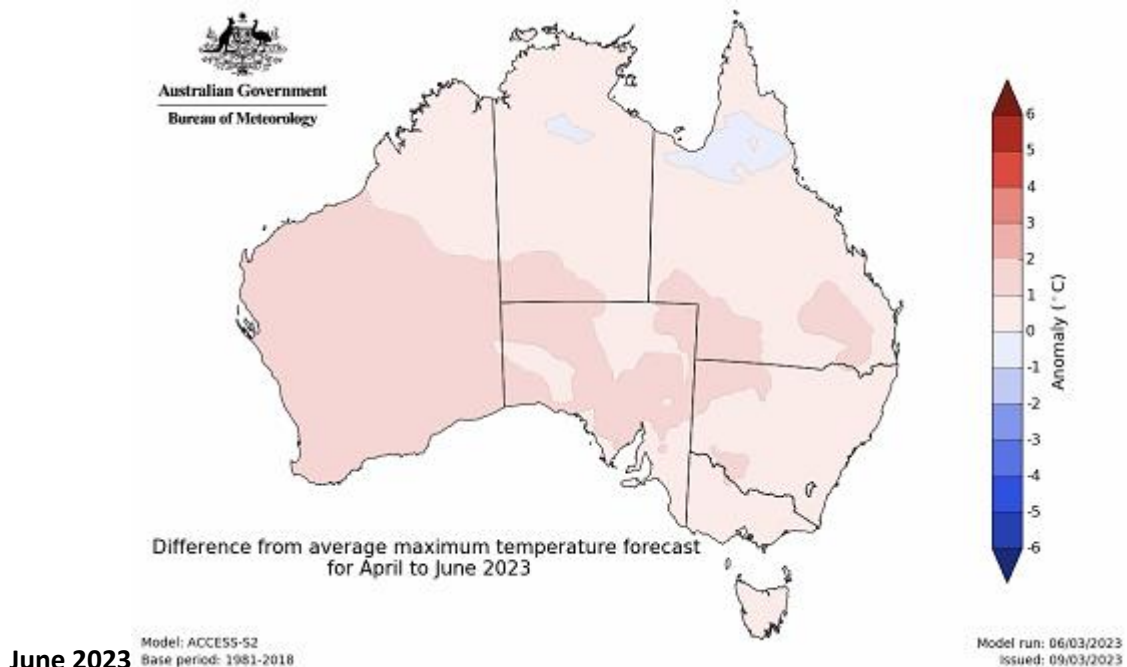


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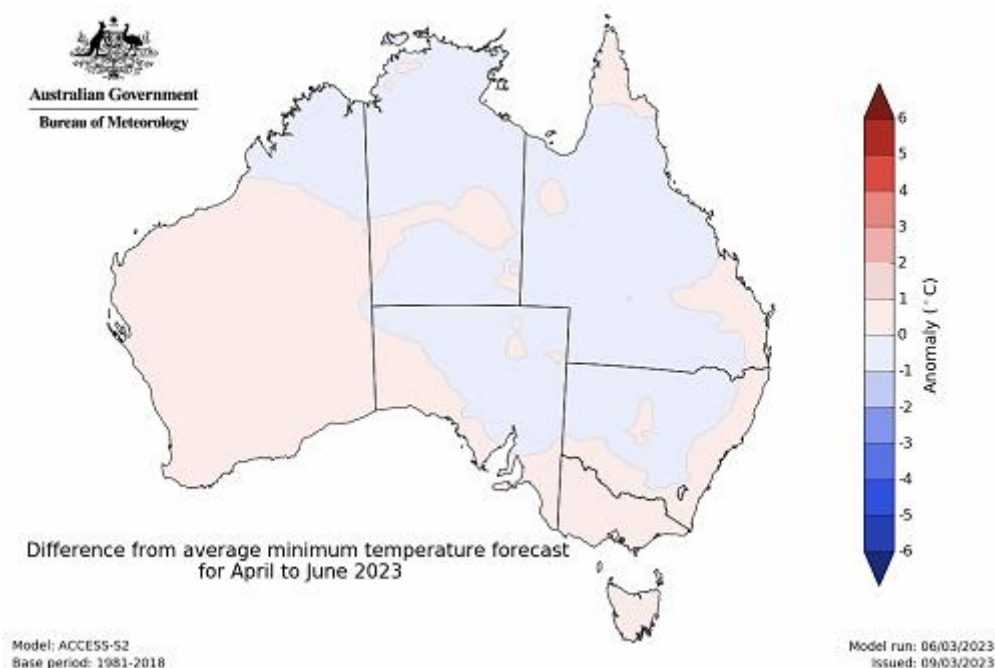
Issued: 09/03/2023

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

Predicted maximum temperature anomaly for April to June 2023



Predicted minimum temperature anomaly for April to June 2023

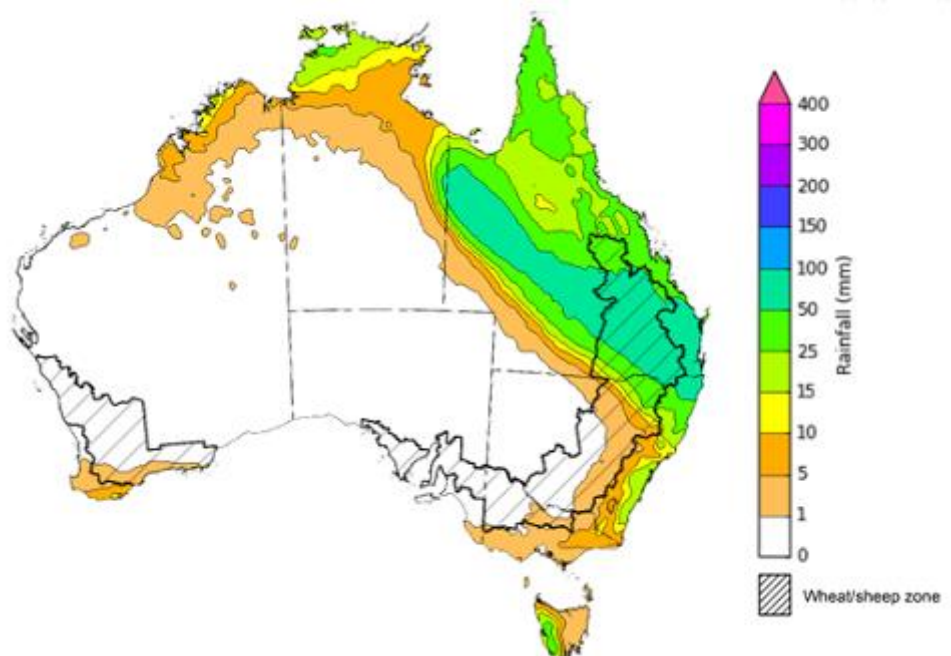


1.4. Rainfall forecast for the next eight days

Over the 8-days to 16 March 2023, the monsoon trough is expected to generate rain and storm across the tropical north of Australia. Meanwhile, a low-pressure trough across eastern Australia is forecast to generate rainfall in excess of 25 mm, particularly over much of Queensland and in the northeast and coastal New South Wales. A high-pressure system is expected to bring mainly dry conditions elsewhere.

Across Australian cropping regions, rainfall totals up to 100 millimetres are expected for much of Queensland, and up to 50 millimetres in much of the northeast of New South Wales over the next 8 days. Little to no rainfall is expected in the remaining cropping regions. If realised these falls are likely limit field access for crop maintenance activities and delay the harvest of early sown crops across summer cropping regions in Queensland and the far northeast of New South Wales. These falls are likely to provide a timely boost to soil moisture levels and stabilises yield potentials for late sown summer crops following recent reductions due to predominantly dry conditions during February and early March. The forecast rainfall over much of central and northern Queensland is likely to further benefit pasture growth rates and availability.

Total forecast rainfall for the period 9 March to 16 March 2023



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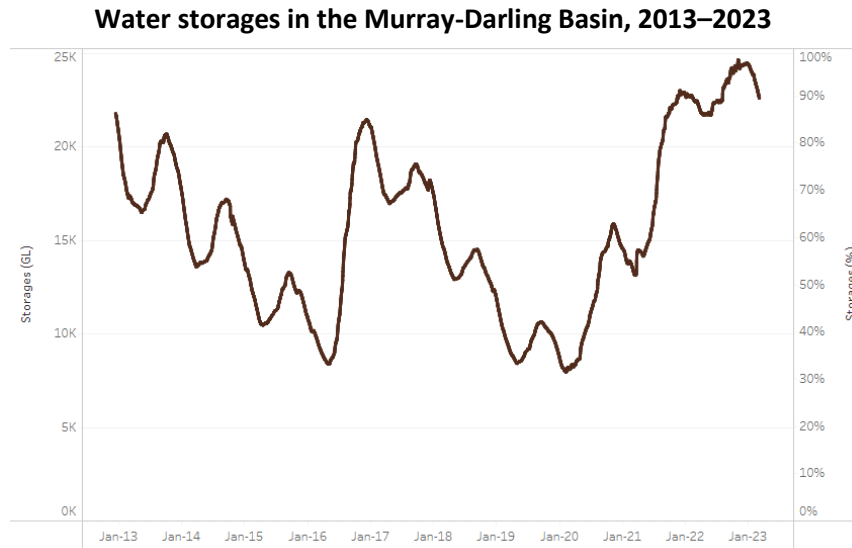
Issued 09/03/2023

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

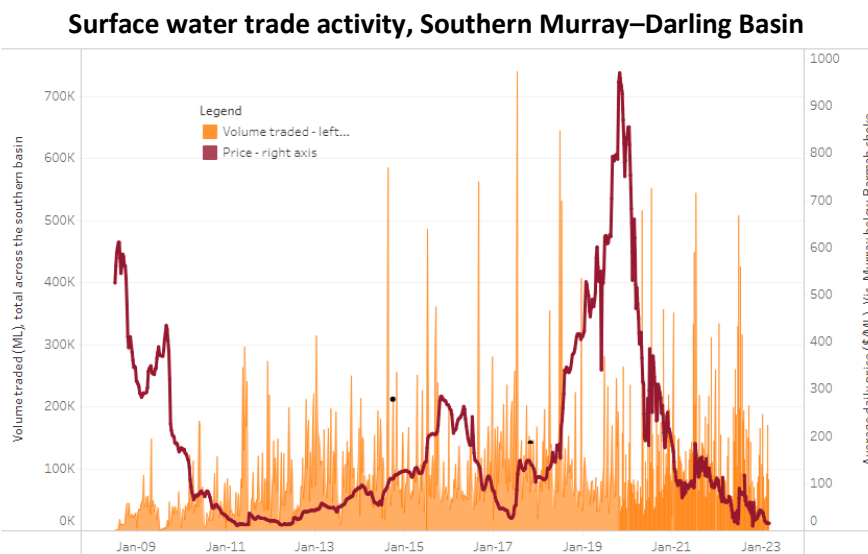
Water storage levels in the Murray-Darling Basin (MDB) decreased between 27 February 2023 and 6 March 2023 by 271 gigalitres (GL). Current volume of water held in storage is 22 580 GL which represents 89 per cent of total capacity. This is 1 percent or 174 GL more than at the same time last year.



Water storage data is sourced from the Bureau of Meteorology.

Allocation prices in the Victorian Murray below the Barmah Choke remained steady at \$15 per ML from 2 March 2023 to 9 March 2023. Prices are lower in the Murrumbidgee and in regions above the Barmah choke due to the binding of the Murrumbidgee export limit and Barmah choke trade constraint.

Region	\$/ML
NSW Murray Above	7
NSW Murrumbidgee	9
VIC Goulburn-Broken	14
VIC Murray Below	15



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 on 9 March 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/weekly-update-9323

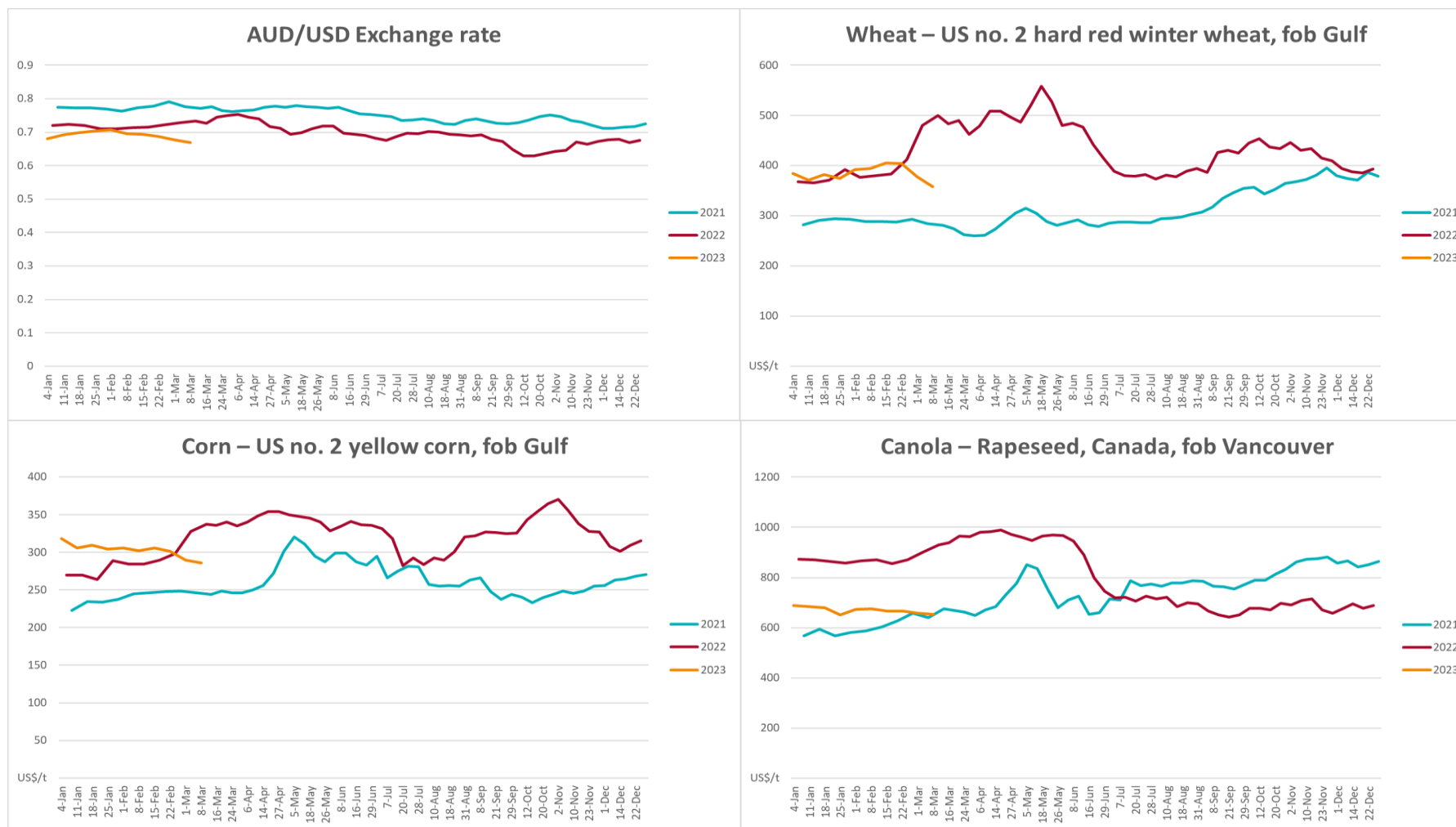
3. Commodities

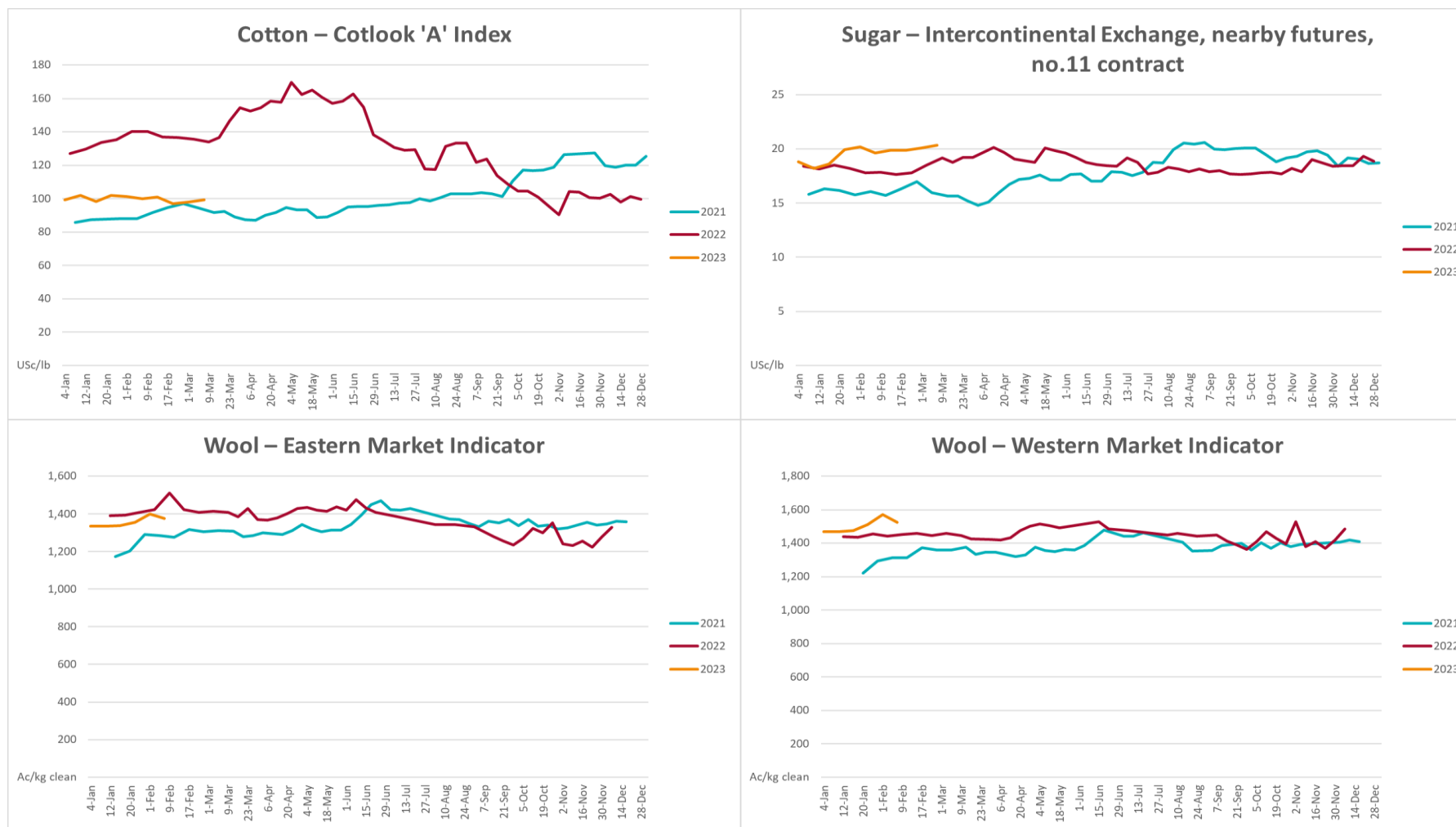
Indicator	Week ended	Unit	Latest Price	Previous Week	Weekly change	Price 12 months ago	Annual change
Selected world indicator prices							
AUD/USD Exchange rate	08-Mar	A\$/US\$	0.67	0.68	-1%	0.73	-8%
Wheat – US no. 2 hard red winter wheat, fob Gulf	08-Mar	US\$/t	358	377	-5%	483	-26%
Corn – US no. 2 yellow corn, fob Gulf	08-Mar	US\$/t	286	290	-1%	336	-15%
Canola – Rapeseed, Canada, fob Vancouver	08-Mar	US\$/t	654	658	-1%	938	-30%
Cotton – Cotlook 'A' Index	08-Mar	USc/lb	99	98	1%	137	-27%
Sugar – Intercontinental Exchange, nearby futures, no.11 contract	08-Mar	USc/lb	20.3	20.1	1%	19	9%
Wool – Eastern Market Indicator	08-Feb	Ac/kg clean	1,374	1,400	-2%	1,346	2%
Wool – Western Market Indicator	08-Feb	Ac/kg clean	1,525	1,570	-3%	1,368	11%
Selected Australian grain export prices							
Milling Wheat – APW, Port Adelaide, SA	08-Mar	A\$/t	497	499	0%	595	-17%
Feed Wheat – ASW, Port Adelaide, SA	08-Mar	A\$/t	458	467	-2%	560	-18%
Feed Barley – Port Adelaide, SA	08-Mar	A\$/t	405	409	-1%	452	-11%
Canola – Kwinana, WA	08-Mar	A\$/t	1,014	971	4%	1,175	-14%
Grain Sorghum – Brisbane, QLD	08-Mar	A\$/t	512	509	1%	375	37%
Selected domestic livestock indicator prices							
Beef – Eastern Young Cattle Indicator	08-Mar	Ac/kg cwt	698	734	-5%	1,118	-38%
Mutton – Mutton indicator (18–24 kg fat score 2–3), Vic	08-Mar	Ac/kg cwt	354	328	8%	538	-34%
Lamb – Eastern States Trade Lamb Indicator	08-Mar	Ac/kg cwt	719	734	-2%	825	-13%
Pig – Eastern Seaboard (60.1–75 kg), average of buyers & sellers	15-Feb	Ac/kg cwt	367	367	0%	357	3%
Goats – Eastern States (12.1–16 kg)	01-Mar	Ac/kg cwt	325	325	0%	813	-60%
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%
Global Dairy Trade (GDT) weighted average prices ^a							
Dairy – Whole milk powder	22-Feb	US\$/t	3,264	3,329	-2%	3,458	-6%
Dairy – Skim milk powder	22-Feb	US\$/t	2,769	2,829	-2%	3,198	-13%
Dairy – Cheddar cheese	22-Feb	US\$/t	5,086	4,980	2%	4,178	22%
Dairy – Anhydrous milk fat	22-Feb	US\$/t	5,447	5,586	-2%	5,463	0%

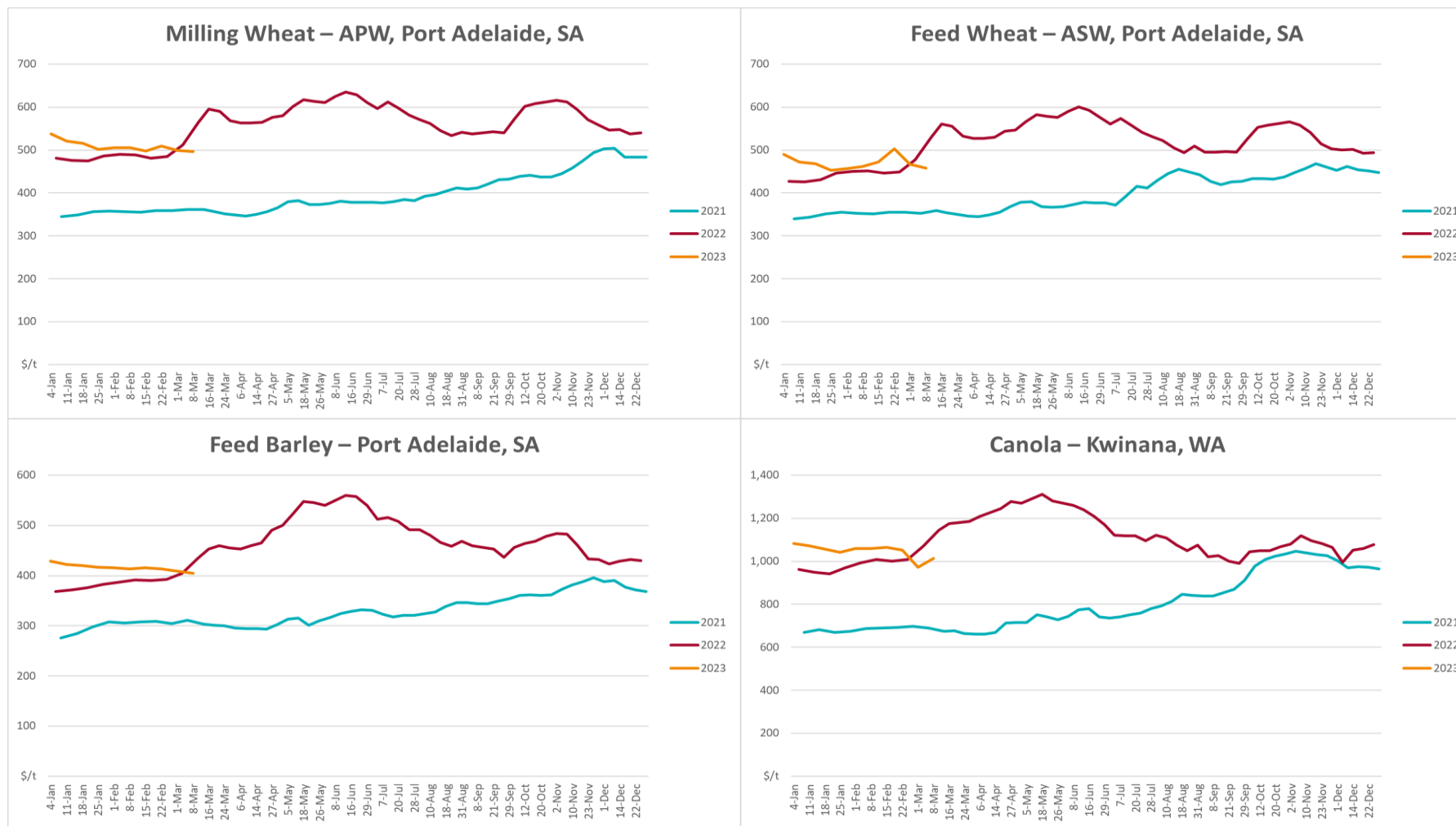
^a Global Dairy Trade prices are updated twice monthly on the first and third Tuesday of each month.

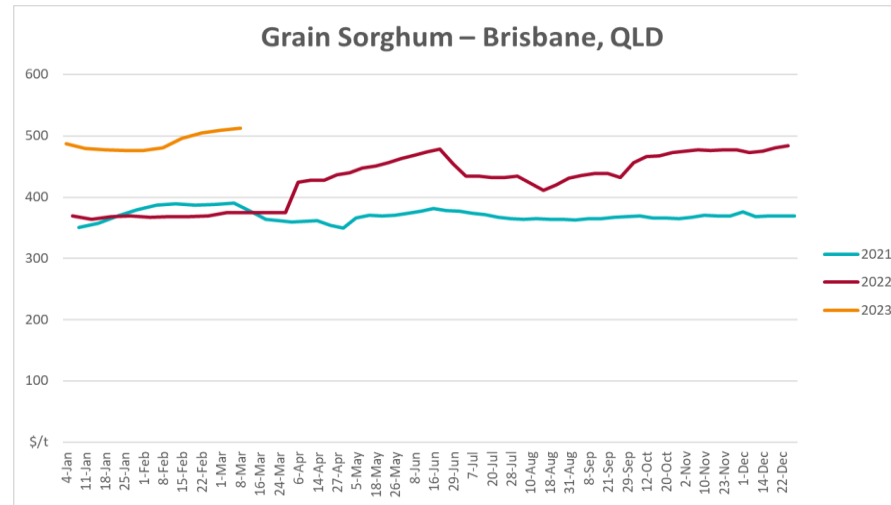
3.1. Selected world indicator prices



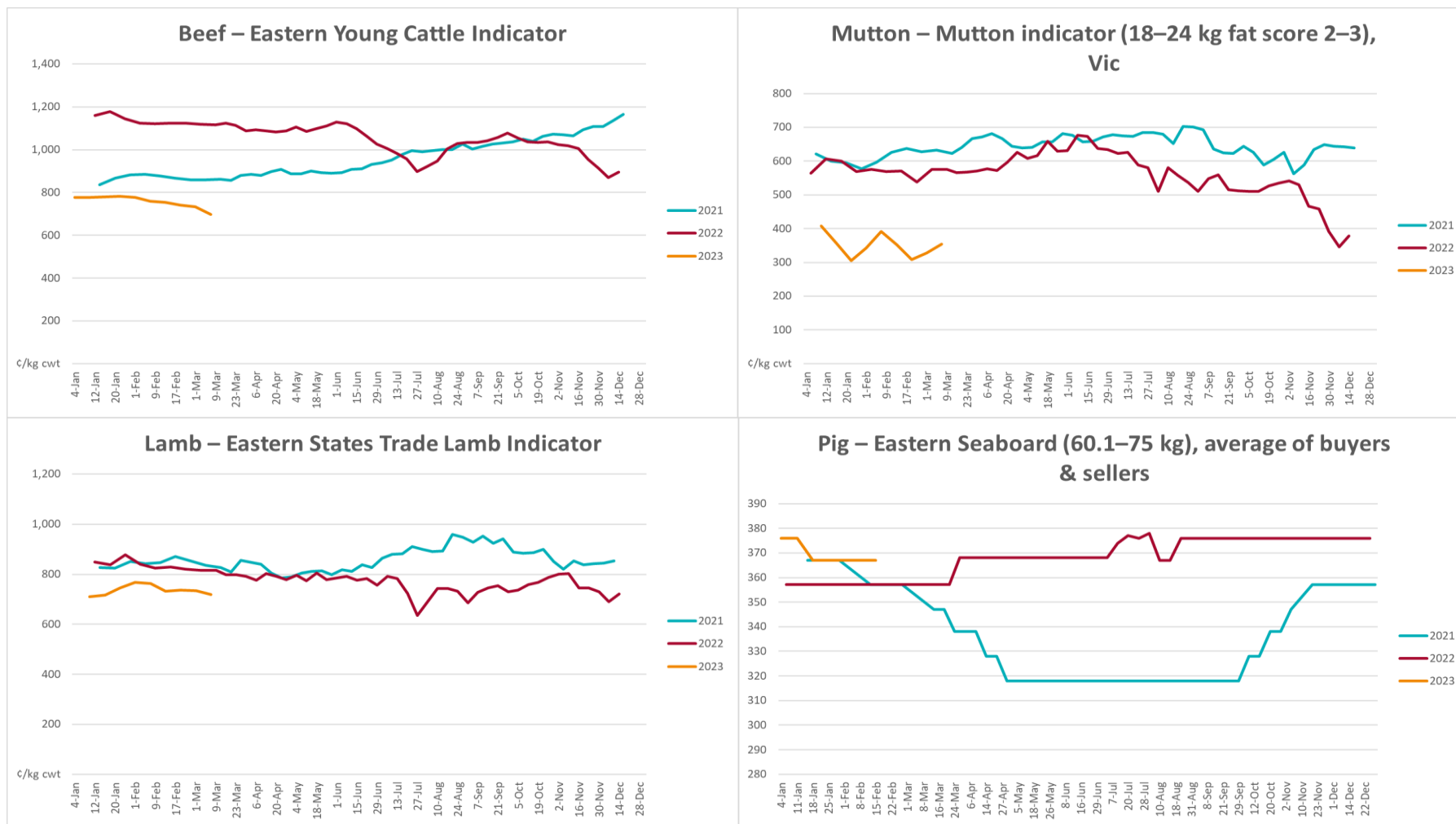


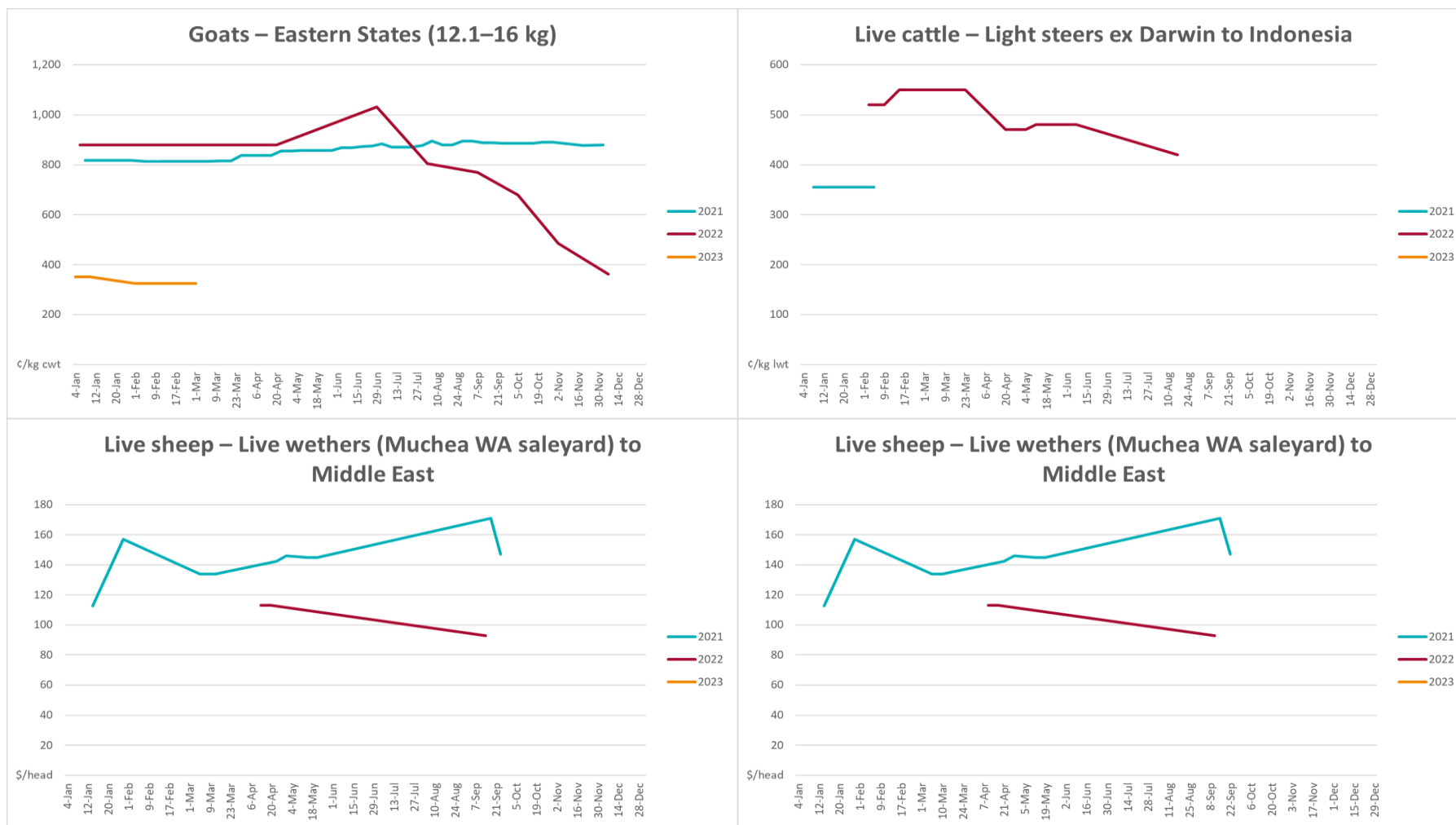
3.2. Selected domestic crop indicator prices



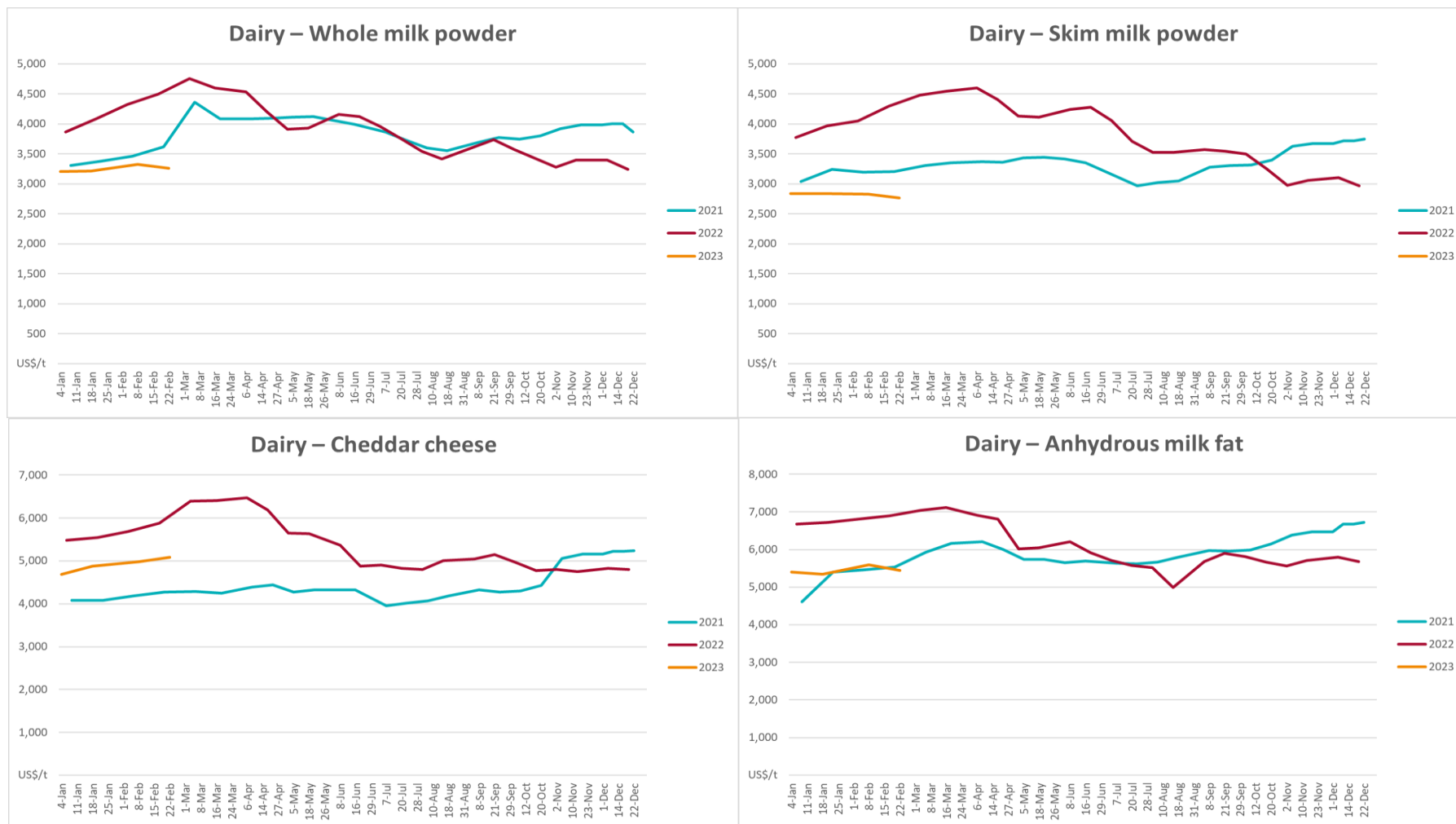


3.3. Selected domestic livestock indicator prices

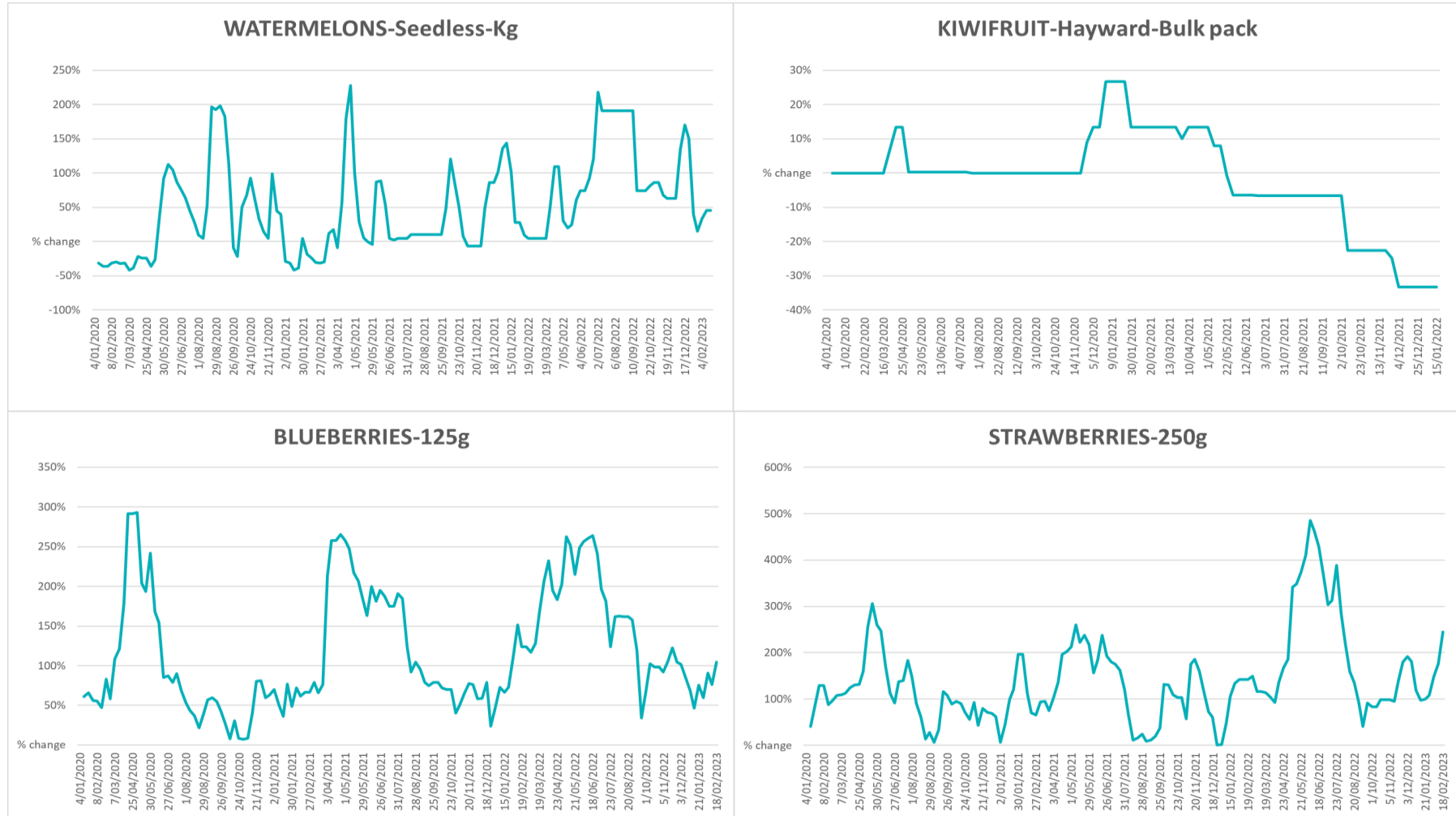


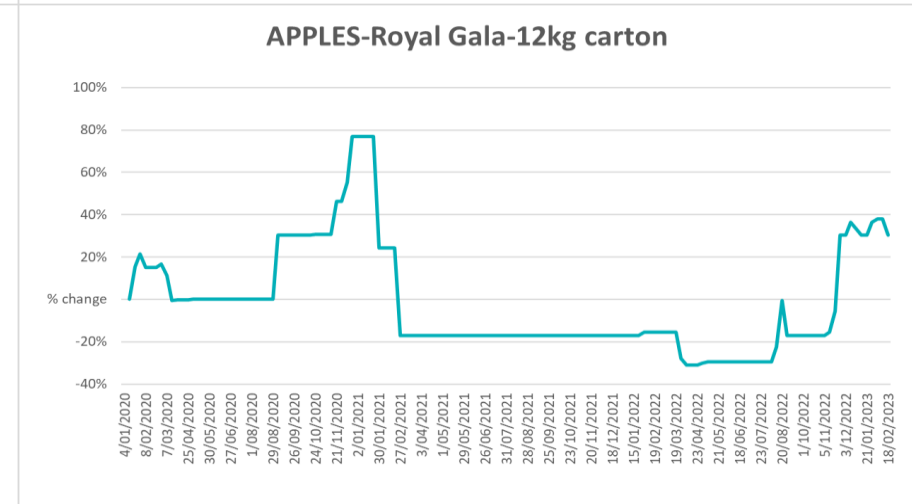
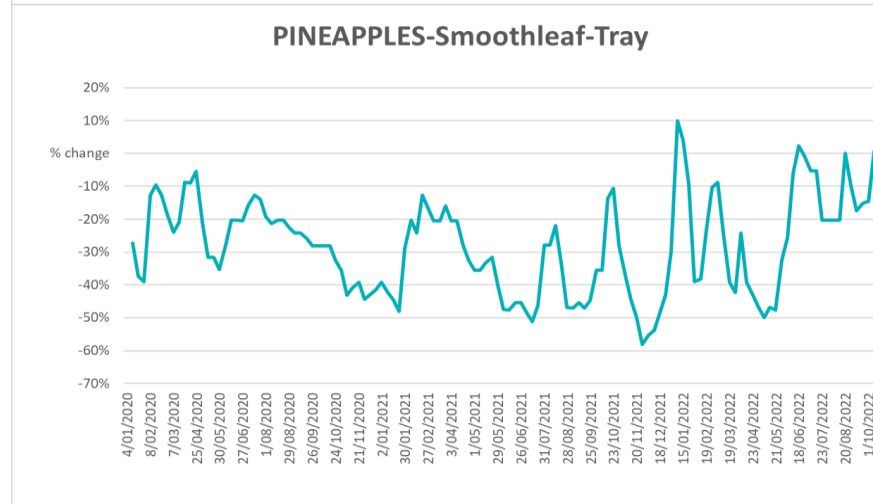
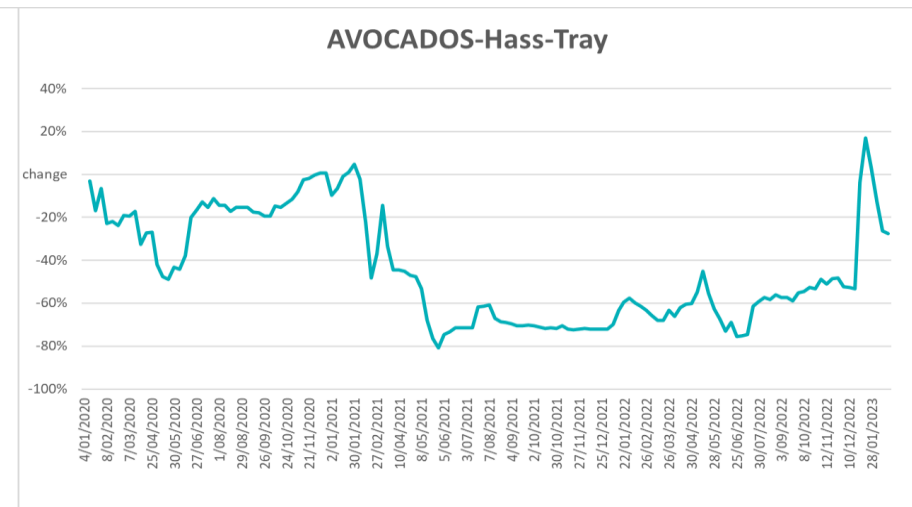
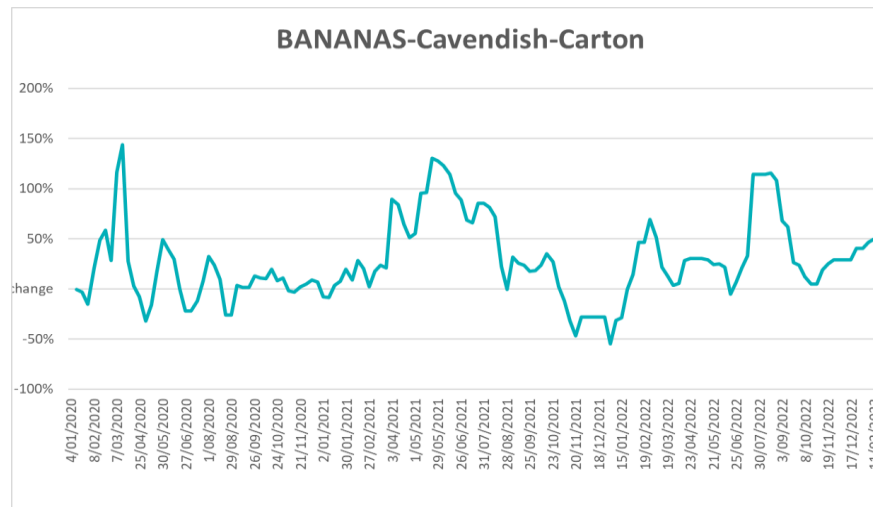


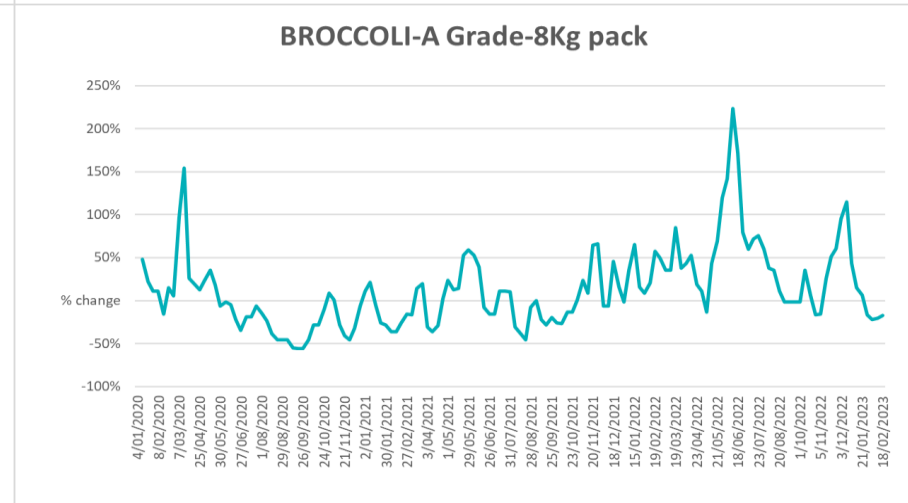
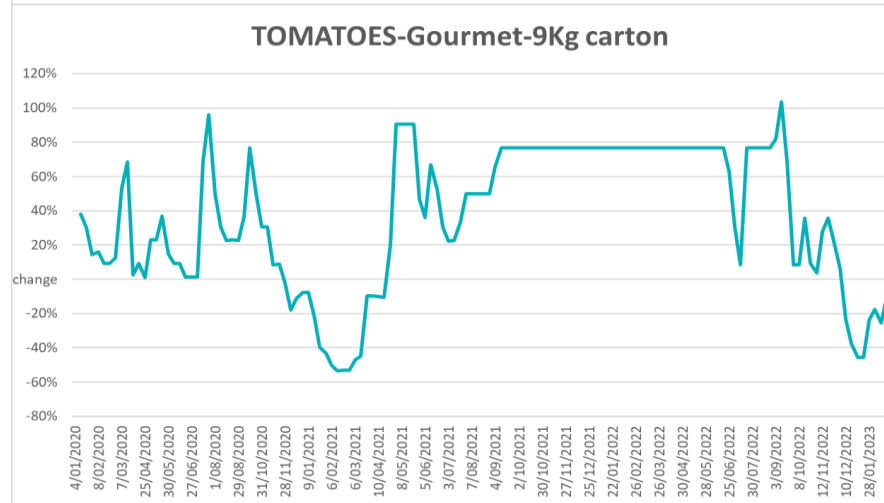
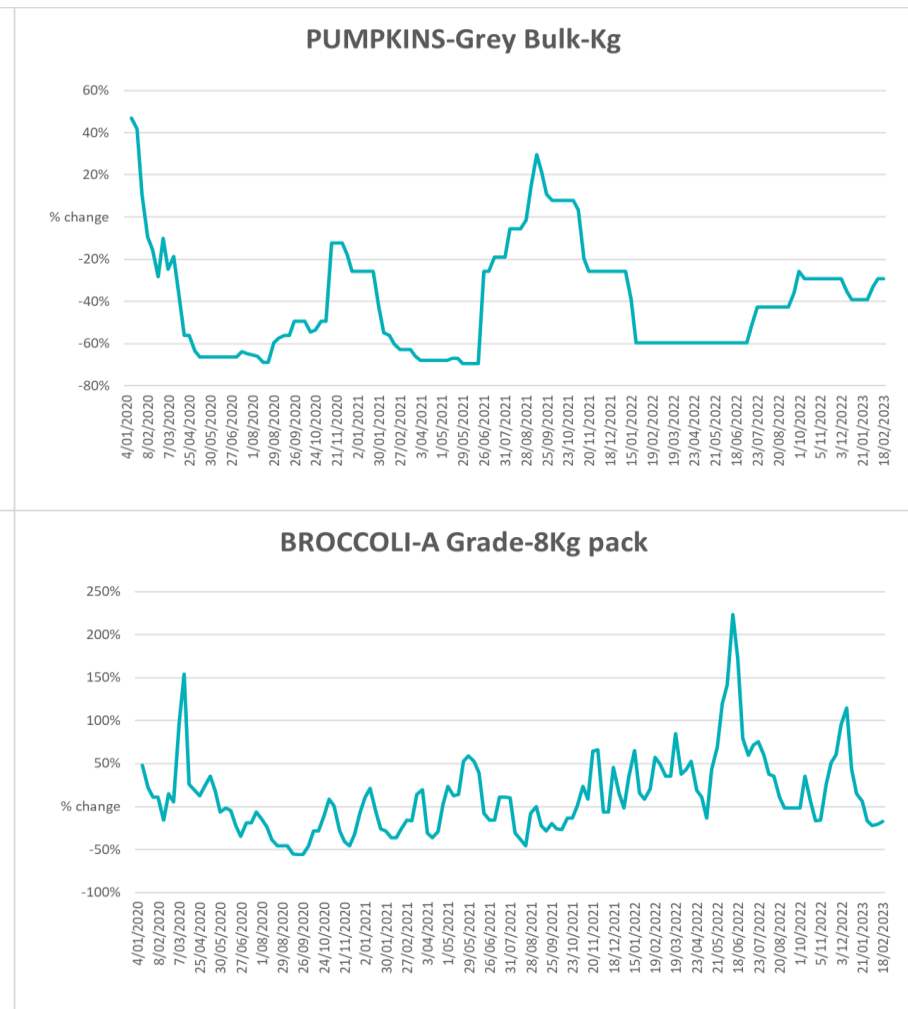
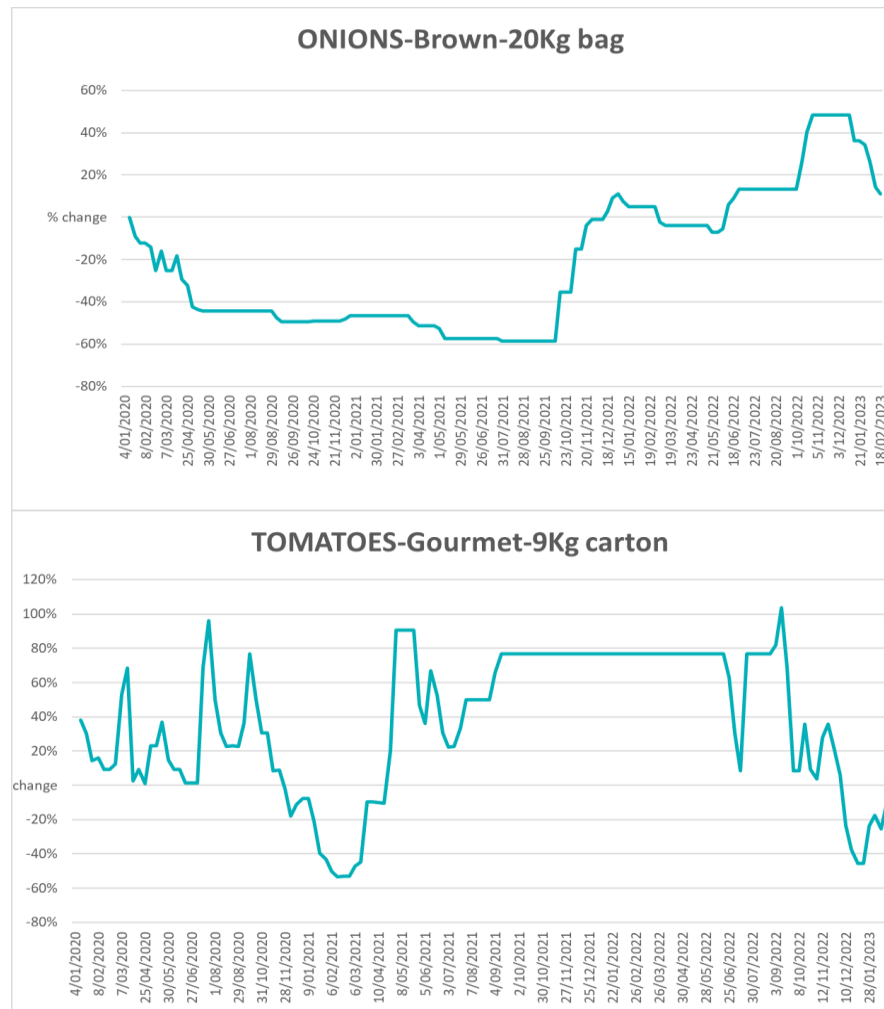
3.4. Global Dairy Trade (GDT) weighted average prices

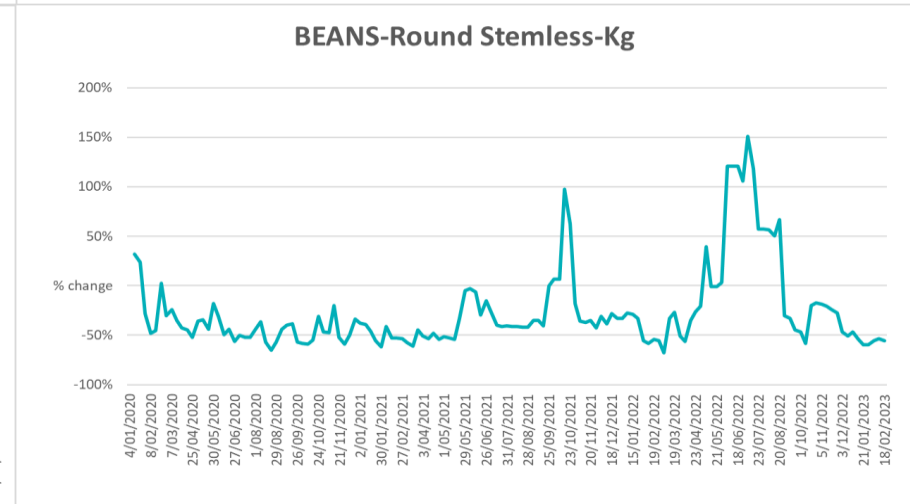
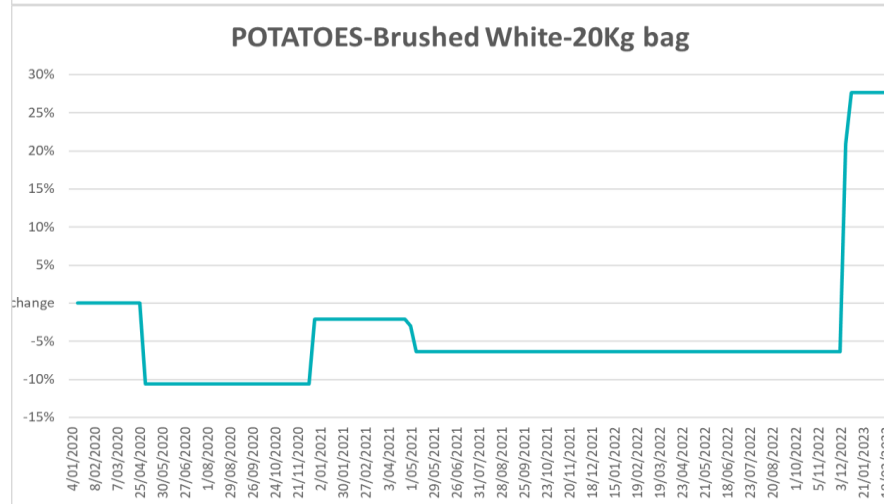
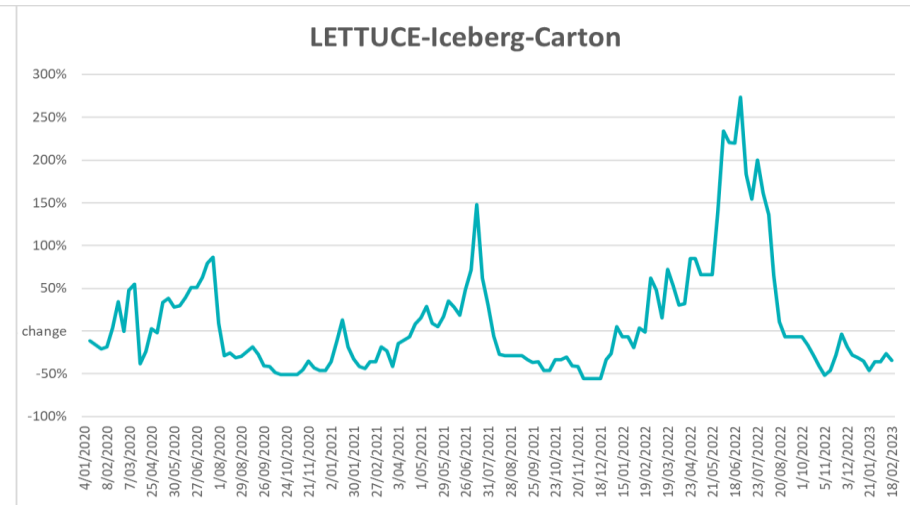
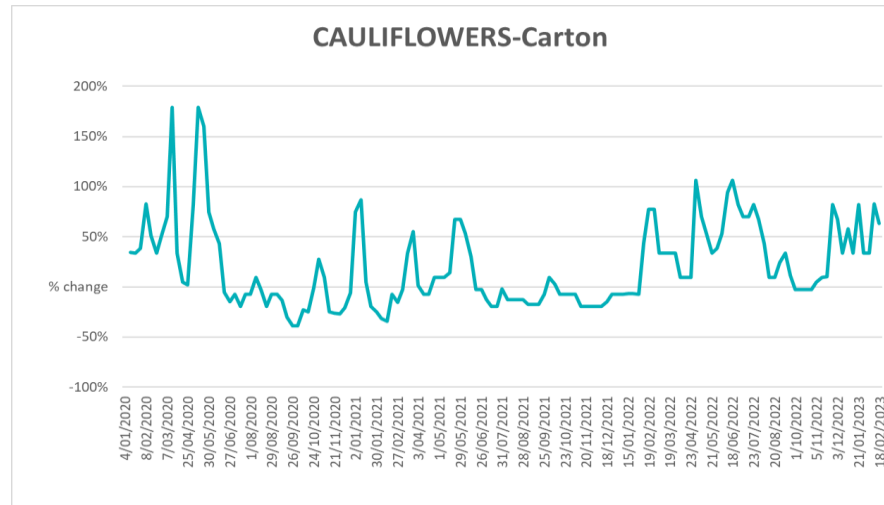


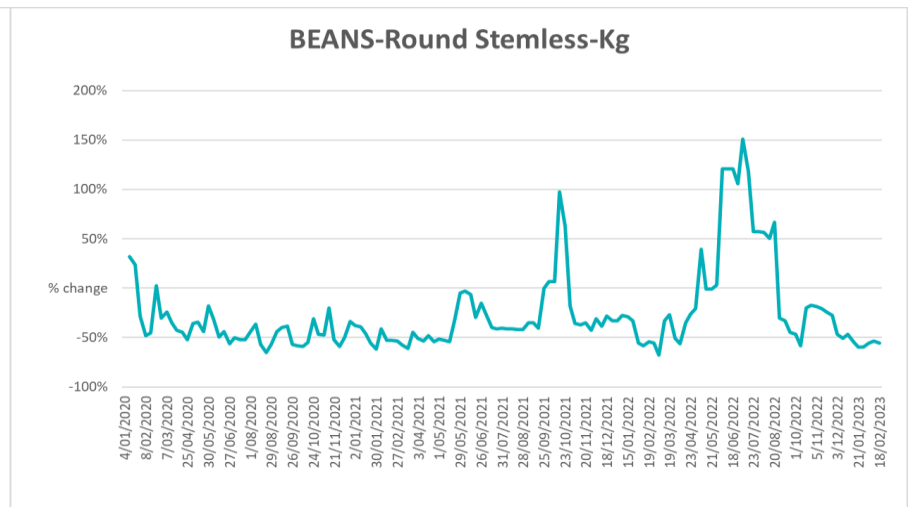
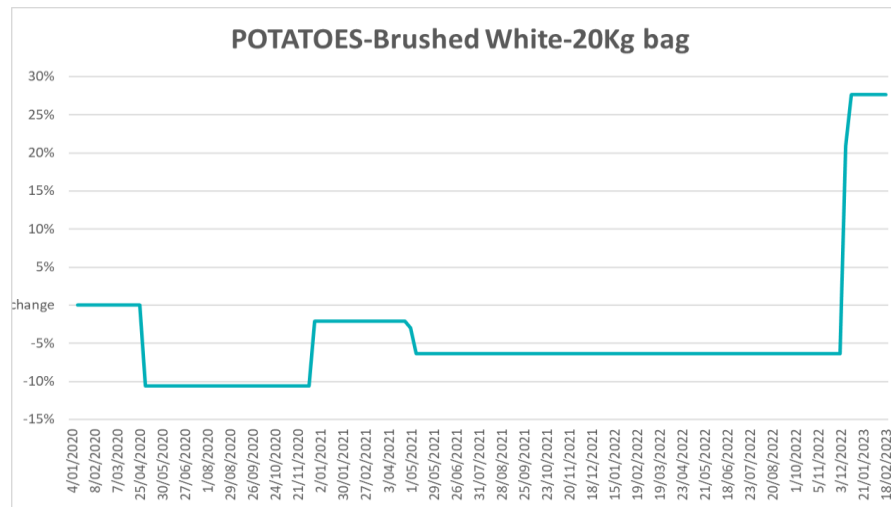
3.5. Selected fruit and vegetable prices



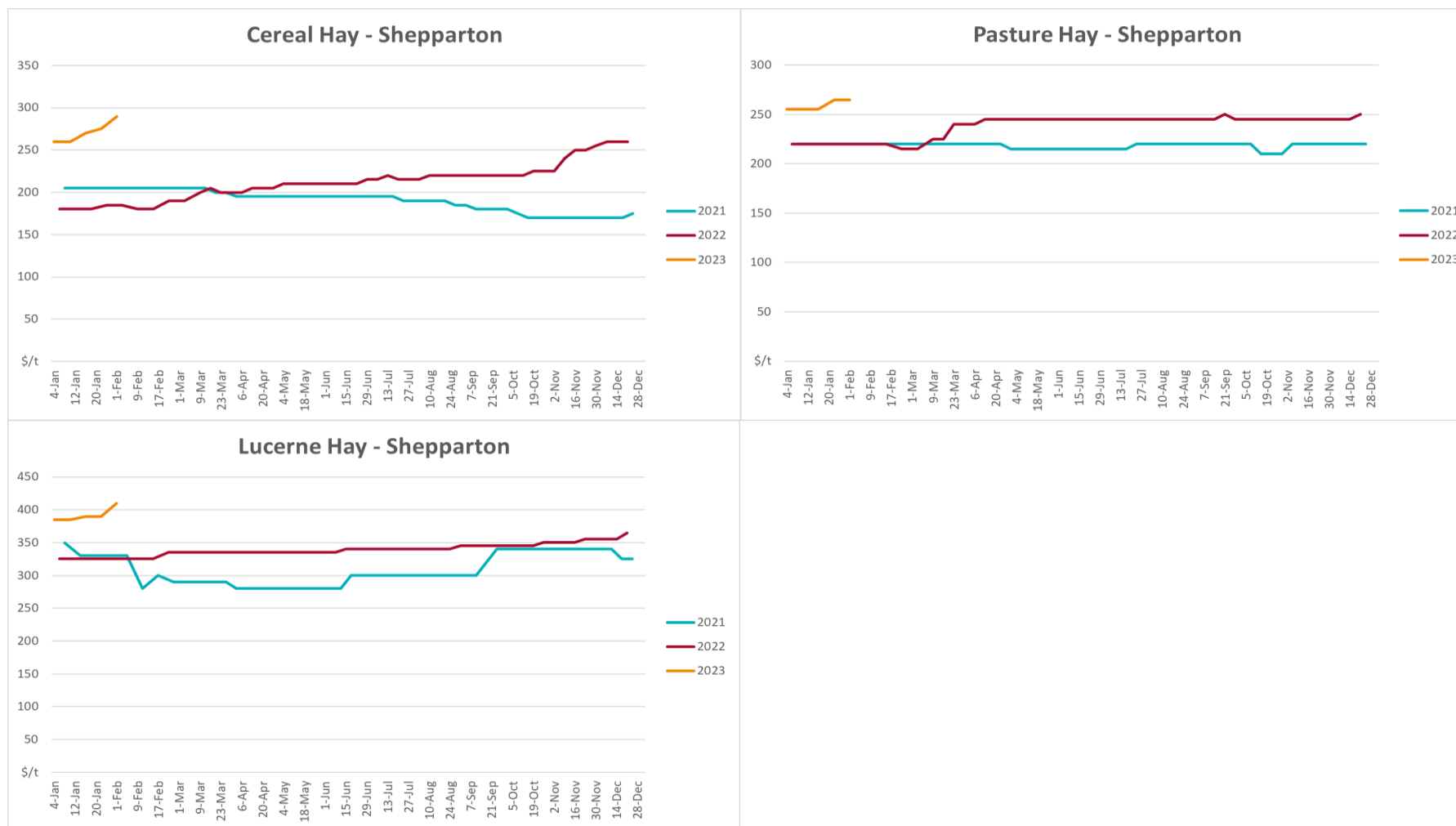








3.6 Selected domestic fodder indicator prices



4. Data attribution

Climate

Bureau of Meteorology

- Weekly rainfall totals: www.bom.gov.au/climate/maps/rainfall/
- Monthly and last 3-month rainfall percentiles: www.bom.gov.au/water/landscape/
- 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/
- Climate drivers: <http://www.bom.gov.au/climate/enso/>
- Soil moisture: www.bom.gov.au/water/landscape/

Other

- Pasture growth: 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

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, 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

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