



Weekly Australian Climate, Water and Agricultural Update

No. 47/2022

1 December 2022

Summary of key issues

- For the week ending 30 November 2022, high-pressure systems brought dry conditions to much of the southern Australia. Weekly rainfall totals exceeding 50 millimetres were observed across north-eastern Queensland, northern and central Western Australia and the Northern Territory, as well as isolated parts of northern South Australia and western Tasmania (see Section 1.1).
- A week of little to no rainfall across cropping regions in New South Wales, southern Queensland, Victoria, South Australia and Western Australia has benefitted winter crop harvesting. Across northern New South Wales and southern Queensland little rainfall is also likely to have allowed improved field access for the sowing of summer crops. The wet conditions across northern and central Queensland are likely to have stalled winter crop harvest and summer crop planting activities, and negatively grain quality in unharvested winter crops.
- November 2022 rainfall was very much above average across cropping regions of southern New South Wales, western and eastern Victoria, South Australia and south-eastern parts of Western Australia. November rainfall was generally average for remaining cropping regions. The very much above average rainfall in November is likely to have delayed winter crop harvesting across parts of New South Wales, Victoria and South Australia. The heavy rainfall is also likely to have further delayed the planting of summer crops across southern New South Wales (see Section 1.2).
- Spring 2022 rainfall was the second highest spring rainfall on record for Australia as a whole, and the highest on record in New South Wales and Victoria. Highest on record spring rainfall across large areas of New South Wales following well above average August rainfall has led to saturated soils in most cropping regions. Significant winter crop losses are expected, caused by widespread river flooding and damage to yield prospects for inundated crops across much of the state. Summer crops are also likely to be negatively impacted in the short-term - due to delays resulting in less than optimum planting conditions or preventing the planting of some summer crops - but will benefit yield potential due to ample plant available moisture going forward (see Section 1.3).
- Over the 8-days to 8 December 2022, high-pressure systems are forecast to bring dry condition to much of Australia. Meanwhile, low-pressure systems and a broad trough is forecast to bring moderate to heavy rainfall to eastern Queensland. The easing of wet conditions across flood-affected cropping regions of eastern Australia will likely further allow floodwaters to recede and reduce the risk of waterlogging and reductions in yield potential. The forecast drier conditions are also expected to provide an opportunity for soils to drain and allow improved access to fields for harvest and planting activities (see Section 1.5).
- Water storage levels in the Murray-Darling Basin (MDB) decreased between 23 November 2022 and 30 November 2022 by 180 gigalitres (GL). Current volume of water held in storage is 23 767 GL which represents 94 per cent of total capacity. This is 4 percent or 817 GL more than at the same time last year.
- Allocation prices in the Victorian Murray below the Barmah Choke increased from \$26 per ML on 21 November to \$37 per ML on 1 December 2022. Prices are lower in the Goulburn-Broken, Murrumbidgee and regions above the Barmah choke due to the binding of the Murrumbidgee export limit, Goulburn intervalley trade limit and Barmah choke trade constraint (see Section 1.6).

1. Climate

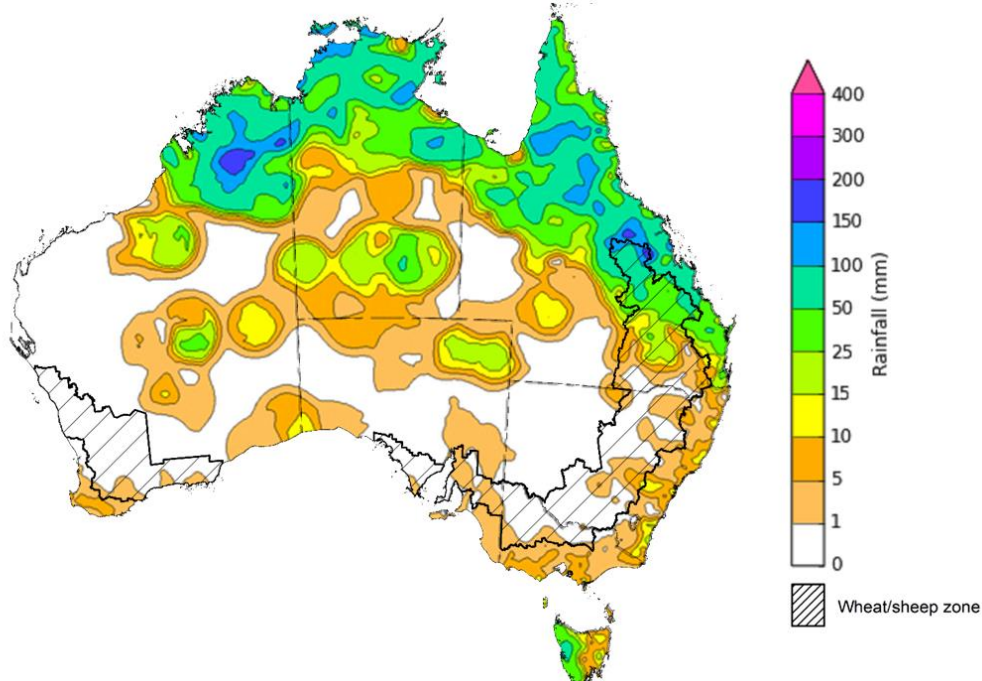
1.1. Rainfall this week

For the week ending 30 November 2022, high-pressure systems brought dry conditions to much of the southern two thirds Australia. Weekly rainfall totals exceeding 50 millimetres were observed across north-eastern Queensland, northern and central Western Australia and the Northern Territory, as well as isolated parts of northern South Australia and western Tasmania. Meanwhile, mostly dry conditions were observed across remaining parts of Australia.

In Australian cropping regions, rainfall totals of between 10 and 100 millimetres were recorded across areas of northern and central Queensland. Little to no rainfall was recorded in remaining cropping regions for the week ending 30 November 2022.

A week of little to no rainfall across cropping regions in New South Wales, southern Queensland, Victoria, South Australia and Western Australia has benefitted winter crop harvesting. Across northern New South Wales and southern Queensland little rainfall is also likely to have allowed improved field access for the sowing of summer crops. The wet conditions across northern and central Queensland are likely to have stalled winter crop harvest and summer crop planting activities, and negatively grain quality in unharvested winter crops.

Rainfall for the week ending 30 November 2022



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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. Monthly rainfall

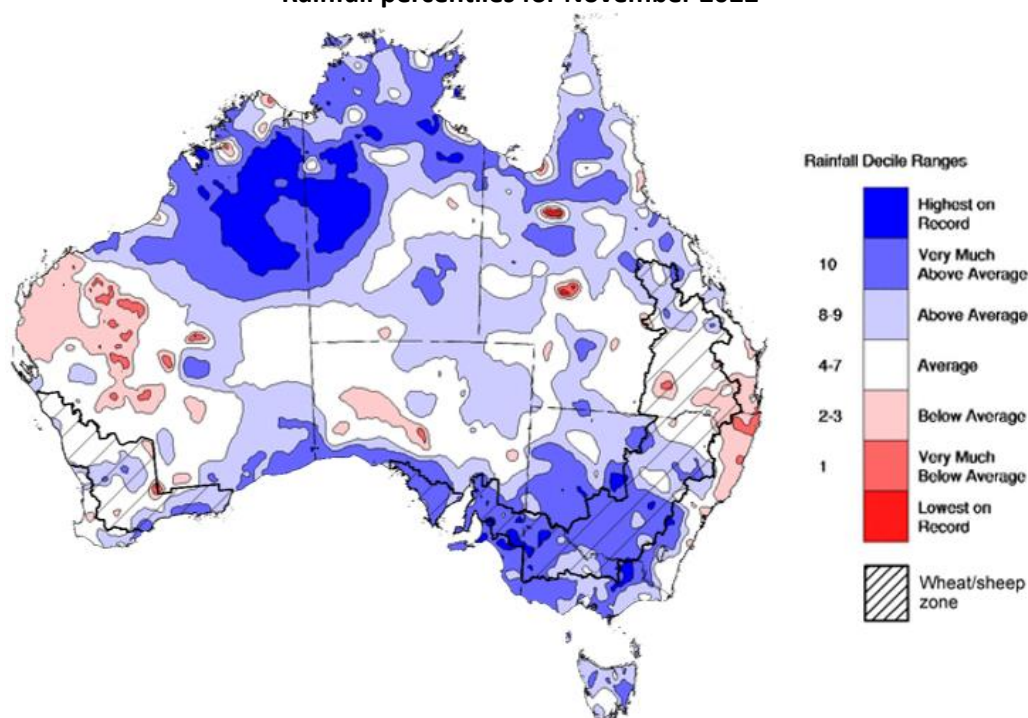
Rainfall during November 2022 was very much above average across southern New South Wales, and much of Victoria, southern South Australia, northern Western Australia, parts of northern Queensland and the north of the Northern Territory. In contrast, below average to average rainfall was recorded across scattered parts of south-east Queensland, north-east New South Wales, central South Australia, and north-west Western Australia.

The main climate influences for November were a negative Indian Ocean Dipole (IOD), a positive Southern Annular Mode (SAM) and the continued La Niña event in the Pacific Ocean. A negative IOD typically results in enhanced rainfall in a broad band extending from the north-west to the south-east of Australia. A positive SAM is associated with increased rainfall across parts of eastern Australia but less rainfall for parts of southern Australia. La Niña events tend to increase rainfall across eastern, central and north-west Australia.

November 2022 rainfall was very much above average across cropping regions of southern New South Wales, western and eastern Victoria, South Australia and south-eastern parts of Western Australia. November rainfall was generally average for remaining cropping regions.

The very much above average rainfall in November is likely to have delayed winter crop harvesting across parts of New South Wales, Victoria and South Australia. The heavy rainfall is also likely to have further delayed the planting of summer crops across southern New South Wales.

Rainfall percentiles for November 2022



Note: Rainfall for November 2022 is compared with rainfall recorded for that period during the historical record (1900 to present). For further information, go to <http://www.bom.gov.au/jsp/awap/>
Source: Bureau of Meteorology

1.3. Seasonal rainfall

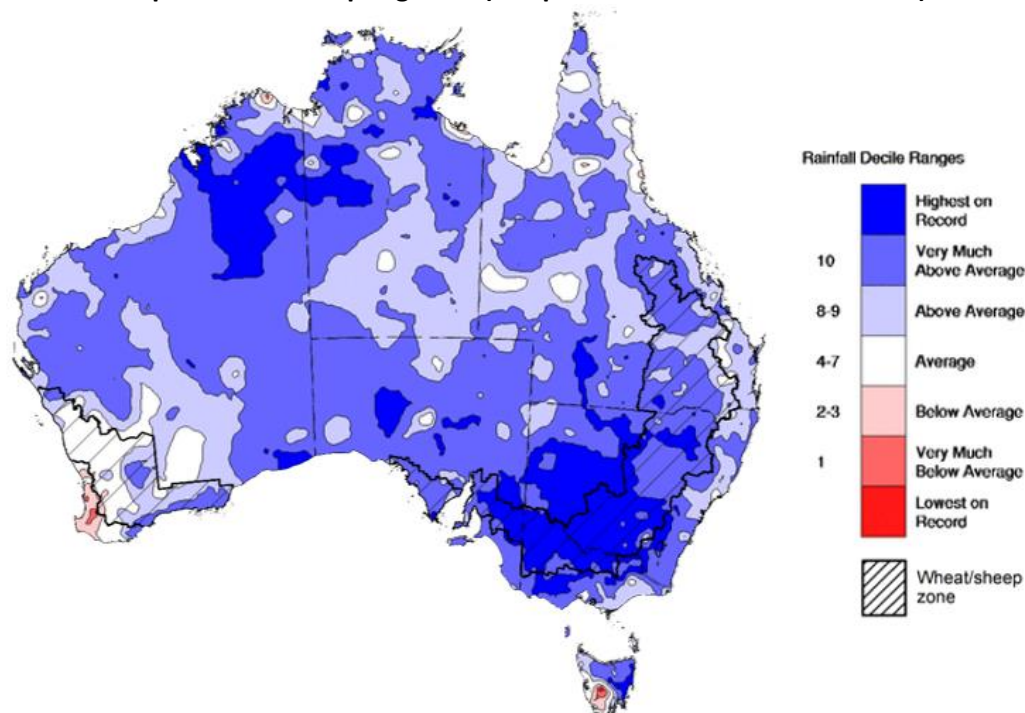
Spring 2022 rainfall was the second highest spring rainfall on record for Australia as a whole, and the highest on record in New South Wales and Victoria. Rainfall during spring 2022 was above average to very much above the national long-term average for much of Australia, with the build-up of a La Niña event and a negative Indian Ocean Dipole (IOD) influencing Australia's climate. In contrast, rainfall was below average for isolated parts of the far southwest of Western Australia, as well as parts of south-western Tasmania.

The season began with extremely high rainfall across most cropping regions in New South Wales, southern Queensland, Victoria and eastern South Australia during September. Meanwhile, cropping regions in western South Australia and Western Australia received generally average rainfall during September. The wet conditions across eastern states were reinforced in October with extremely high rainfall for most cropping regions while cropping regions in central and northern Western Australia saw generally average rainfall. Well above average rainfall has continued through November 2022 across southern New South Wales, Victoria and South Australia. Generally average to above average rainfall during November was recorded across remaining cropping regions.

The above average rainfall at the start of spring boosted soil moisture levels across eastern cropping regions, supporting yield potentials leading into the critical periods of flowering and grain filling. However, record rainfall totals during October and November have led to significant flooding events and widespread water logging occurred in large parts of eastern Australia, in some cases lasting for prolonged periods and recurring in multiple events. Highest on record spring rainfall across large areas of New South Wales following well above average August rainfall has led to saturated soils in most cropping regions. Significant winter crop losses are expected, caused by widespread river flooding and damage to yield prospects for inundated crops across much of the state.

Summer crops are also likely to be negatively impacted in the short-term - due to delays resulting in less than optimum planting conditions or preventing the planting of some summer crops - but will benefit yield potential due to ample plant available moisture going forward.

Rainfall percentiles for spring 2022 (1 September to 30 November 2022)



Note: Rainfall for September 2022 to November 2022 is compared with rainfall recorded for that period during the historical record (1900 to present). For further information, go to <http://www.bom.gov.au/jsp/awap/>
Source: Bureau of Meteorology

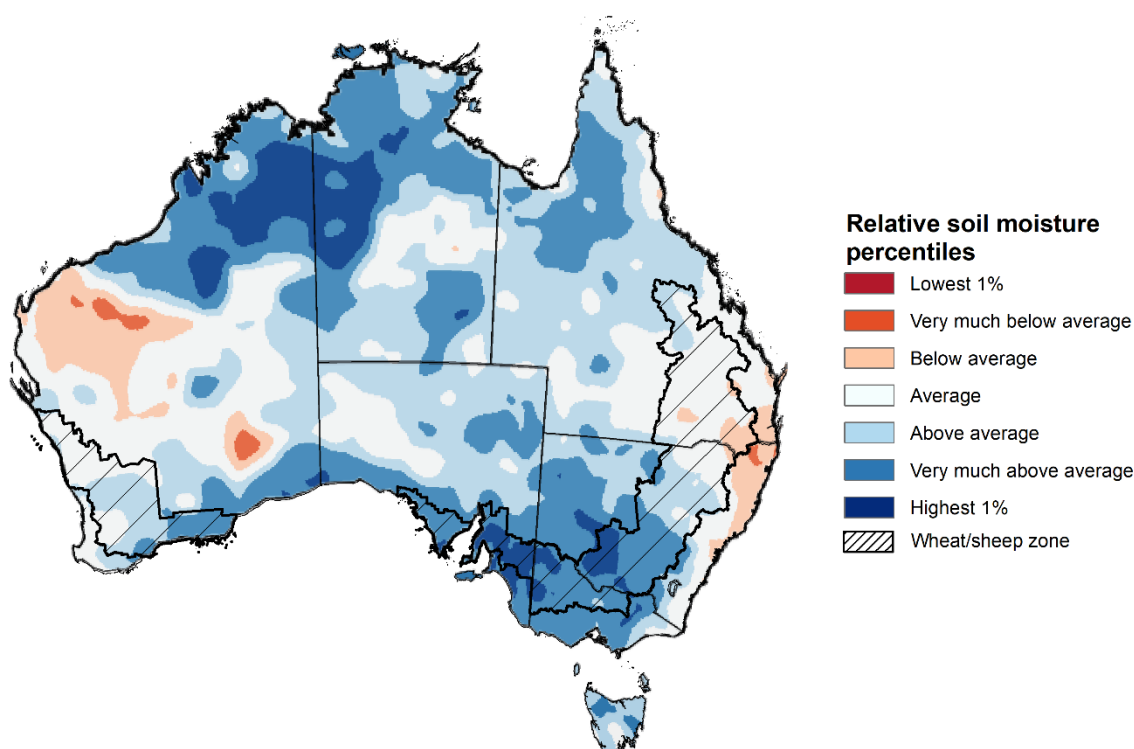
1.4. Monthly soil moisture

Upper layer soil moisture for November 2022 was extremely high for this time of year across much of New South Wales, Victoria, western Queensland and South Australia, as well as parts of southern and north-eastern Western Australia, north-eastern Tasmania and large areas of the Northern Territory, reflecting high monthly rainfall in these areas. Below average upper layer soil moisture was evident across isolated parts of south-eastern Queensland, north-eastern New South Wales and the northwest and central Western Australia. Modelled upper layer soil moisture was generally average to above average across the remainder of the country.

At this time of year, upper layer soil moisture is important at the beginning of the summer cropping season and for pasture growth across northern Australia since plant germination and establishment utilise this moisture. It is also important indicator of the ability to access paddocks for winter crop harvesting and summer crop planting activities.

Upper layer soil moisture is extremely high for this time of year across most cropping regions in central and southern New South Wales, Victoria and South Australia, as well as parts of southern Western Australia. Extremely high levels of upper layer soil moisture would have limited paddock access across large areas of New South Wales and Victoria to progress winter crop harvest. In contrast, below average to average upper layer soil moisture for northern New South Wales and Queensland would have allowed for predominately uninterrupted harvest access and for the planting of summer crops.

Modelled upper layer soil moisture for November 2022



Note: This map shows the levels of modelled upper layer soil moisture (0 to 10 centimetres) during November 2022. This map shows how modelled soil conditions during November 2022 compare with November conditions modelled over the reference period (1911 to 2016). Dark blue areas on the maps were much wetter in November 2022 than during the reference period. The bulk of plant roots occur in the top 20 centimetres of the soil profile. Soil moisture in the upper layer of the soil profile is therefore useful indicator of the availability of water, particularly for germinating seed.

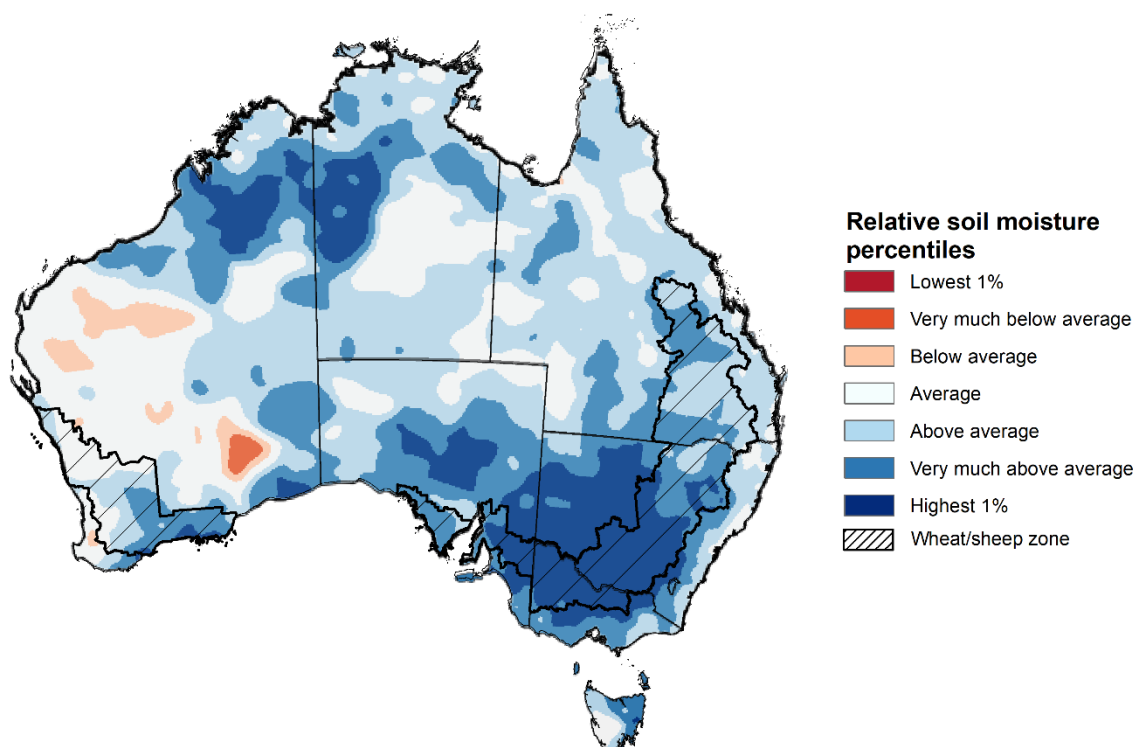
Source: Bureau of Meteorology ([Australian Water Resources Assessment Landscape model](#))

Lower layer soil moisture for November 2022 was well above average to extremely high for this time of year across large parts of New South Wales, Queensland, Victoria, South Australia, as well as parts of southern and northern Western Australia and Northern Territory, and eastern Tasmania. Lower layer soil moisture was below average to extremely low in isolated parts of western and eastern Western Australia. Modelled lower layer soil moisture was generally average across the remainder of the country.

Lower layer soil moisture will be important to support summer crops and pasture growth during a peak growth period. In Australian cropping regions, lower layer soil moisture was above average to extremely high across most of New South Wales, Queensland, Victoria, South Australia, and southern Western Australia. Lower layer soil moisture was generally average across remaining cropping areas.

Well above average to extremely high lower layer soil moisture levels across New South Wales, Queensland and Victorian cropping regions present a potential downside risk to yields. These areas are expected to receive above median rainfall over the next three months, increasing the risk that saturated soils and waterlogging will persist and reduce yield potentials. High lower layer soil moisture levels during November also provide a reserve of plant-available water for summer crops later in the growing season.

Modelled lower layer soil moisture for November 2022



Note: This map shows the levels of modelled lower layer soil moisture (10 to 100 centimetres) during November 2022. This map shows how modelled soil conditions during November 2022 compare with November conditions modelled over the reference period (1911 to 2016). Dark blue areas on the maps were much wetter in November 2022 than during the reference period. The dark red areas were much drier than during the reference period. The bulk of plant roots occur in the top 20 centimetres of the soil profile. The lower layer soil moisture is a larger, deeper store that is slower to respond to rainfall and tends to reflect accumulated rainfall events over longer time periods.

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

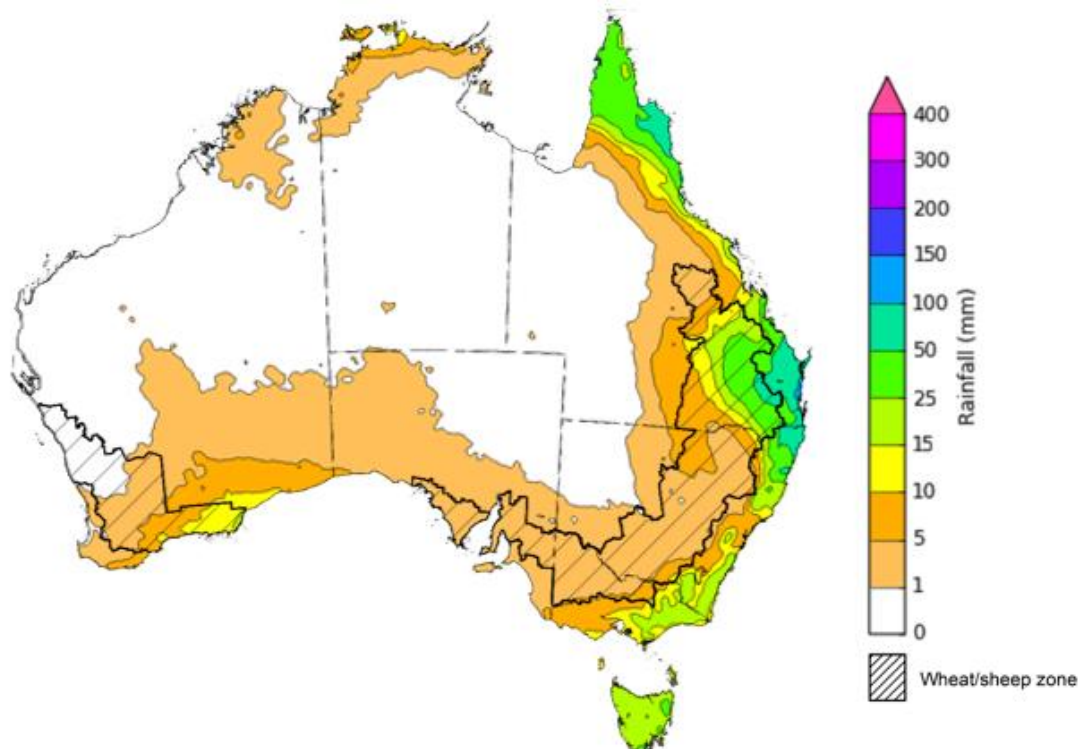
1.5. Rainfall forecast for the next eight days

Over the 8-days to 8 December 2022, high-pressure systems are forecast to bring dry condition to much of Australia. Meanwhile, low-pressure systems and a broad trough is forecast to bring moderate to heavy rainfall to eastern Queensland. Low-pressure systems and frontal activity are forecast to bring moderate rainfall to eastern New South Wales, south-eastern Victoria and Tasmania.

In Australian cropping regions, rainfall totals of between 10 to 50 millimetres are expected across eastern and central Queensland and isolated areas of south-eastern Western Australia. Little to no rainfall is forecast for remaining cropping regions during the next 8-days.

The easing of wet conditions across flood-affected cropping regions of eastern Australia will likely further allow floodwaters to recede and reduce the risk of waterlogging and reductions in yield potential. The forecast drier conditions are also expected to provide an opportunity for soils to drain and allow improved access to fields for harvest and planting activities. Little to no rainfall forecast across most cropping regions will provide favourable conditions for winter crop harvesting and summer crop planting following two relatively dry weeks.

Total forecast rainfall (mm) for the period 1 December to 8 December 2022



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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.

Issued 01/12/2022

2. Water

2.1. Water markets – current week

Water storage levels in the Murray-Darling Basin (MDB) decreased between 23 November 2022 and 30 November 2022 by 180 gigalitres (GL). Current volume of water held in storage is 23 767 GL which represents 94 per cent of total capacity. This is 4 percent or 817 GL more than at the same time last year.

Water storages in the Murray-Darling Basin, 2013–2022

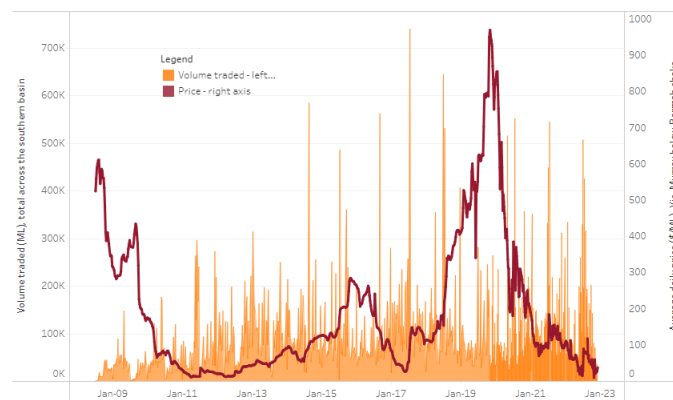


Water storage data is sourced from the Bureau of Meteorology.

Allocation prices in the Victorian Murray below the Barmah Choke increased from \$26 per ML on 21 November to \$37 per ML on 1 December 2022. Prices are lower in the Goulburn-Broken, Murrumbidgee and regions above the Barmah choke due to the binding of the Murrumbidgee export limit, Goulburn intervalley trade limit and Barmah choke trade constraint

Region	\$/ML
NSW Murray Above	30
NSW Murrumbidgee	20
VIC Goulburn-Broken	31
VIC Murray Below	37

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 01 December 2022.

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-011222

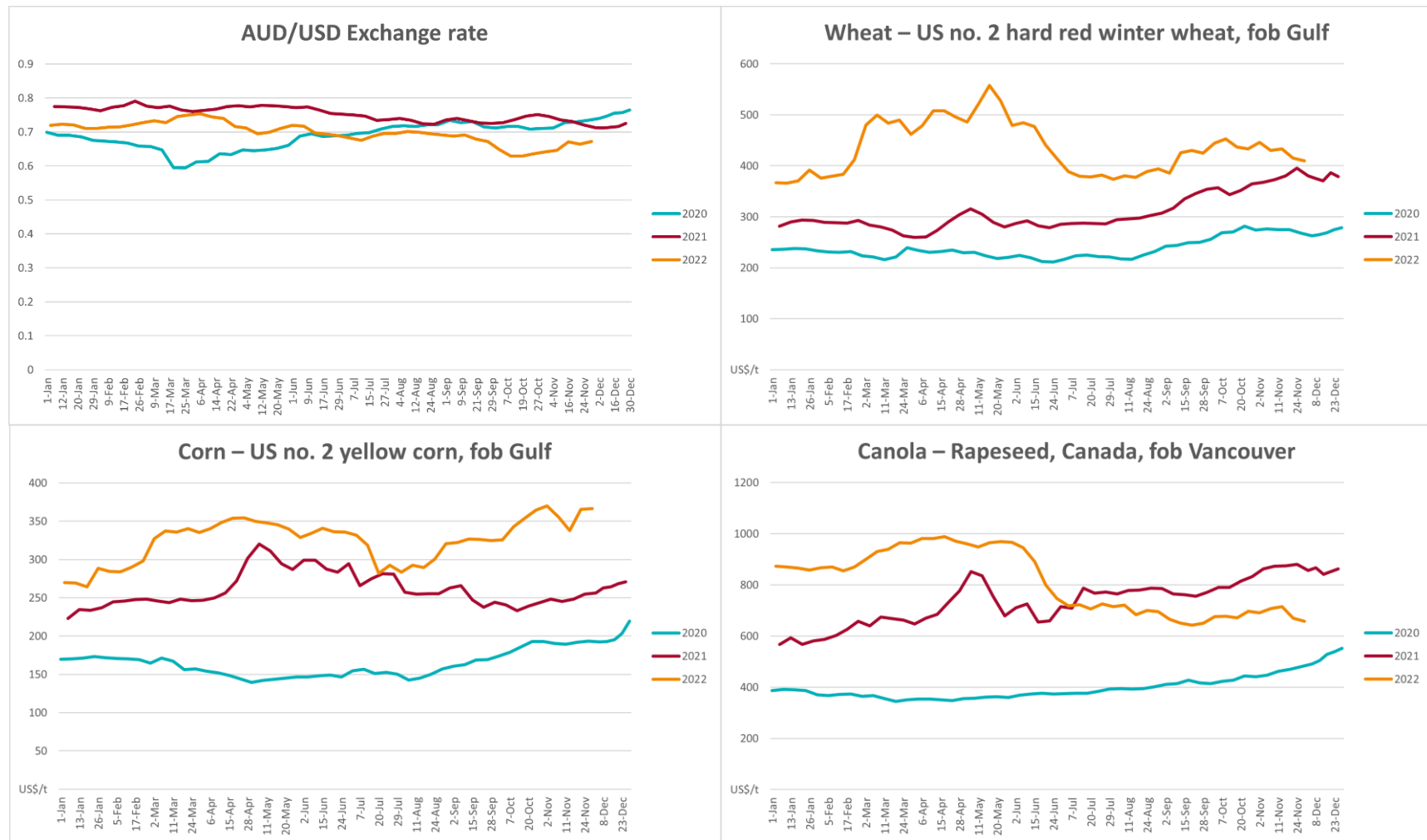
3. Commodities

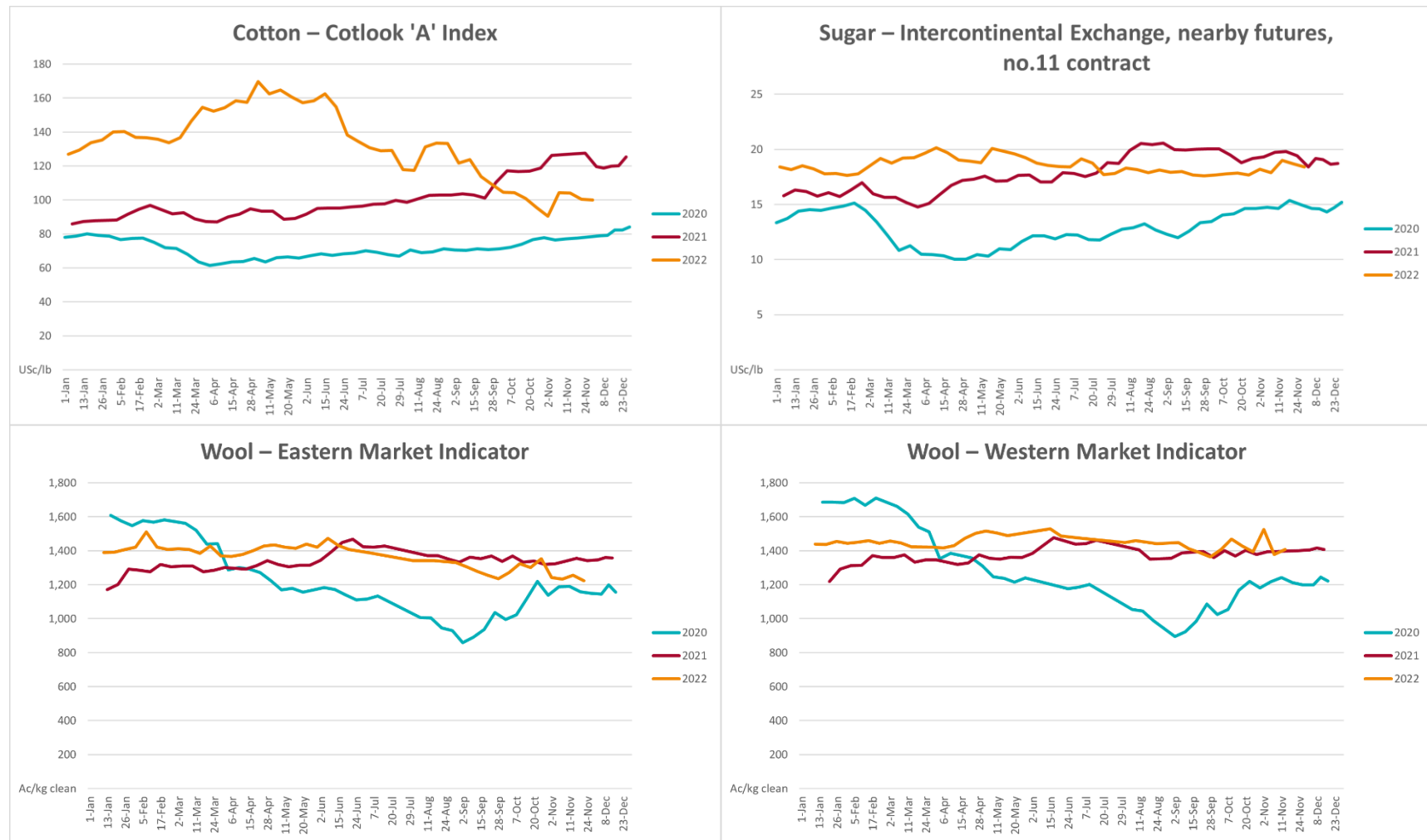
Indicator	Week ended	Unit	Latest price	Previous week	Weekly change	Price 12 months ago	Annual change
Selected world indicator prices							
AUD/USD Exchange rate	30-Nov	A\$/US\$	0.67	0.66	1%	0.71	-6%
Wheat – US no. 2 hard red winter wheat, fob Gulf	30-Nov	US\$/t	410	415	-1%	375	9%
Corn – US no. 2 yellow corn, fob Gulf	30-Nov	US\$/t	367	365	0%	263	39%
Canola – Rapeseed, Canada, fob Vancouver	30-Nov	US\$/t	658	670	-2%	866	-24%
Cotton – Cotlook 'A' Index	30-Nov	USc/lb	100	100	0%	119	-16%
Sugar – Intercontinental Exchange, nearby futures, no.11 contract	30-Nov	USc/lb	18.4	18.7	-1%	19	-4%
Wool – Eastern Market Indicator	23-Nov	Ac/kg clean	1,224	1,256	-3%	1,369	-11%
Wool – Western Market Indicator	16-Nov	Ac/kg clean	1,408	1,379	2%	1,462	-4%
Selected Australian grain export prices							
Milling Wheat – APW, Port Adelaide, SA	30-Nov	A\$/t	558	571	-2%	504	11%
Feed Wheat – ASW, Port Adelaide, SA	30-Nov	A\$/t	502	514	-2%	461	9%
Feed Barley – Port Adelaide, SA	30-Nov	A\$/t	433	434	0%	390	11%
Canola – Kwinana, WA	30-Nov	A\$/t	1,065	1,083	-2%	970	10%
Grain Sorghum – Brisbane, QLD	30-Nov	A\$/t	477	477	0%	375	27%
Selected domestic livestock indicator prices							
Beef – Eastern Young Cattle Indicator	30-Nov	Ac/kg cwt	912	954	-4%	1,094	-17%
Mutton – Mutton indicator (18–24 kg fat score 2–3), Vic	30-Nov	Ac/kg cwt	392	458	-14%	649	-40%
Lamb – Eastern States Trade Lamb Indicator	30-Nov	Ac/kg cwt	730	744	-2%	850	-14%
Pig – Eastern Seaboard (60.1–75 kg), average of buyers & sellers	09-Nov	Ac/kg cwt	376	376	0%	328	15%
Goats – Eastern States (12.1–16 kg)	02-Nov	Ac/kg cwt	485	680	-29%	818	-41%
Live cattle – Light steers ex Darwin to Indonesia	17-Aug	Ac/kg lwt	420	480	-13%	320	31%
Live sheep – Live wethers (Mucnea WA saleyard) to Middle East	14-Sep	\$/head	93	113	-18%	114	-18%

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	16-Nov	US\$/t	3,397	3,279	4%	3,037	12%
Dairy – Skim milk powder	16-Nov	US\$/t	3,057	2,972	3%	2,851	7%
Dairy – Cheddar cheese	16-Nov	US\$/t	4,746	4,802	-1%	3,803	25%
Dairy – Anhydrous milk fat	16-Nov	US\$/t	5,711	5,562	3%	4,110	39%

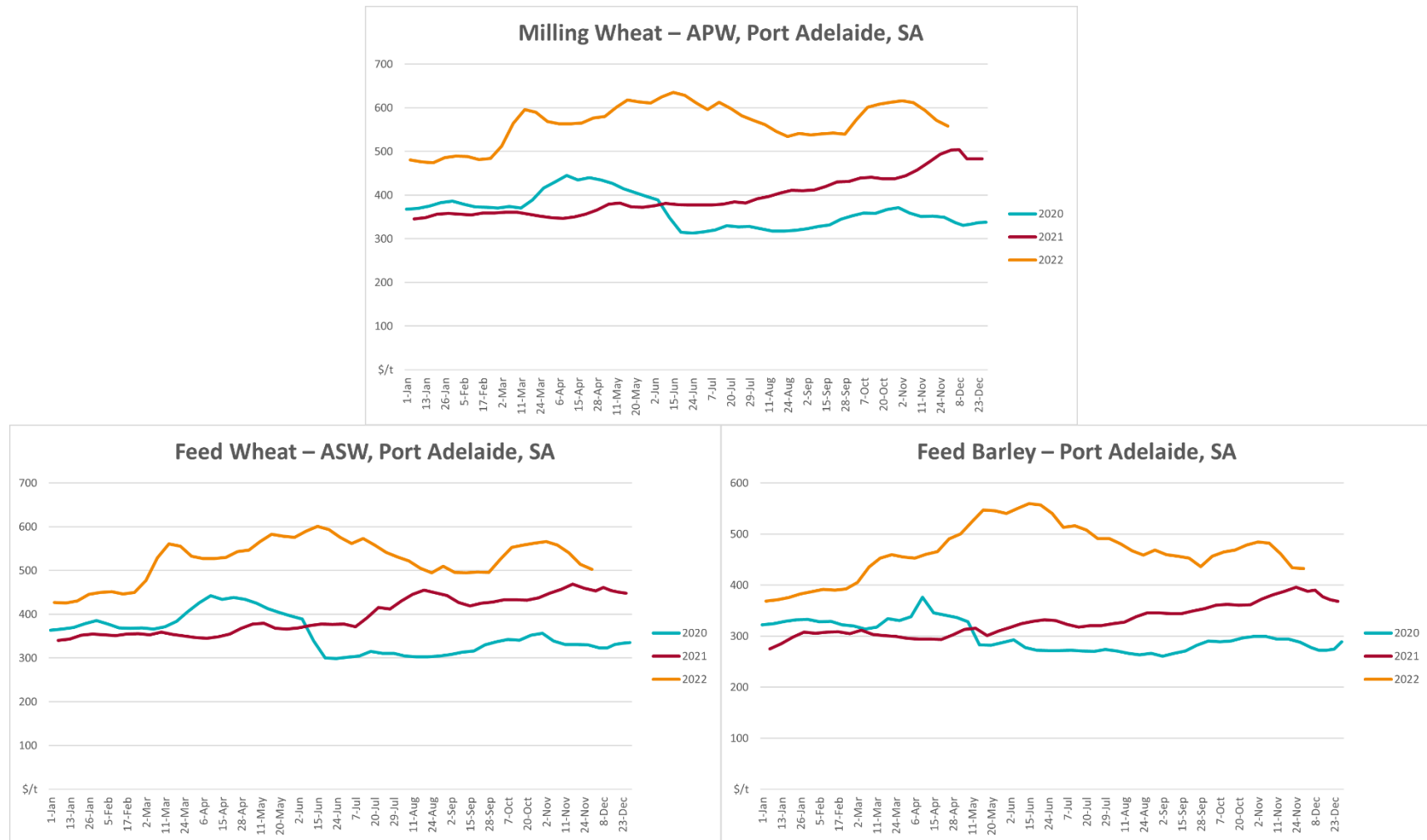
a Global Dairy Trade prices are updated twice monthly on the first and third Tuesday of each month.

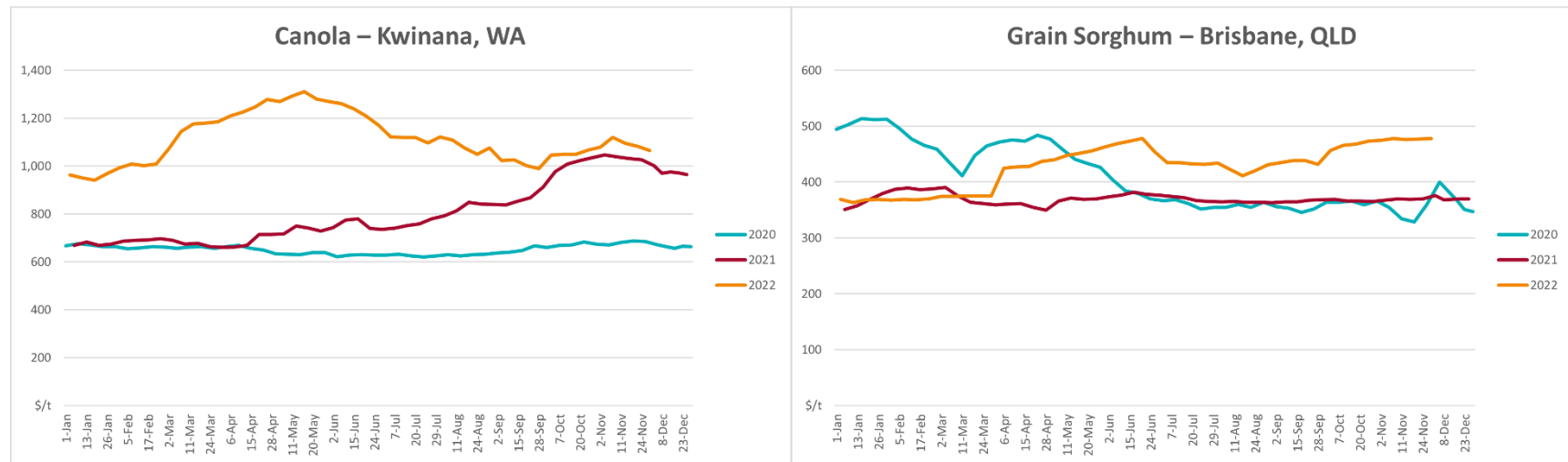
3.1. Selected world indicator prices



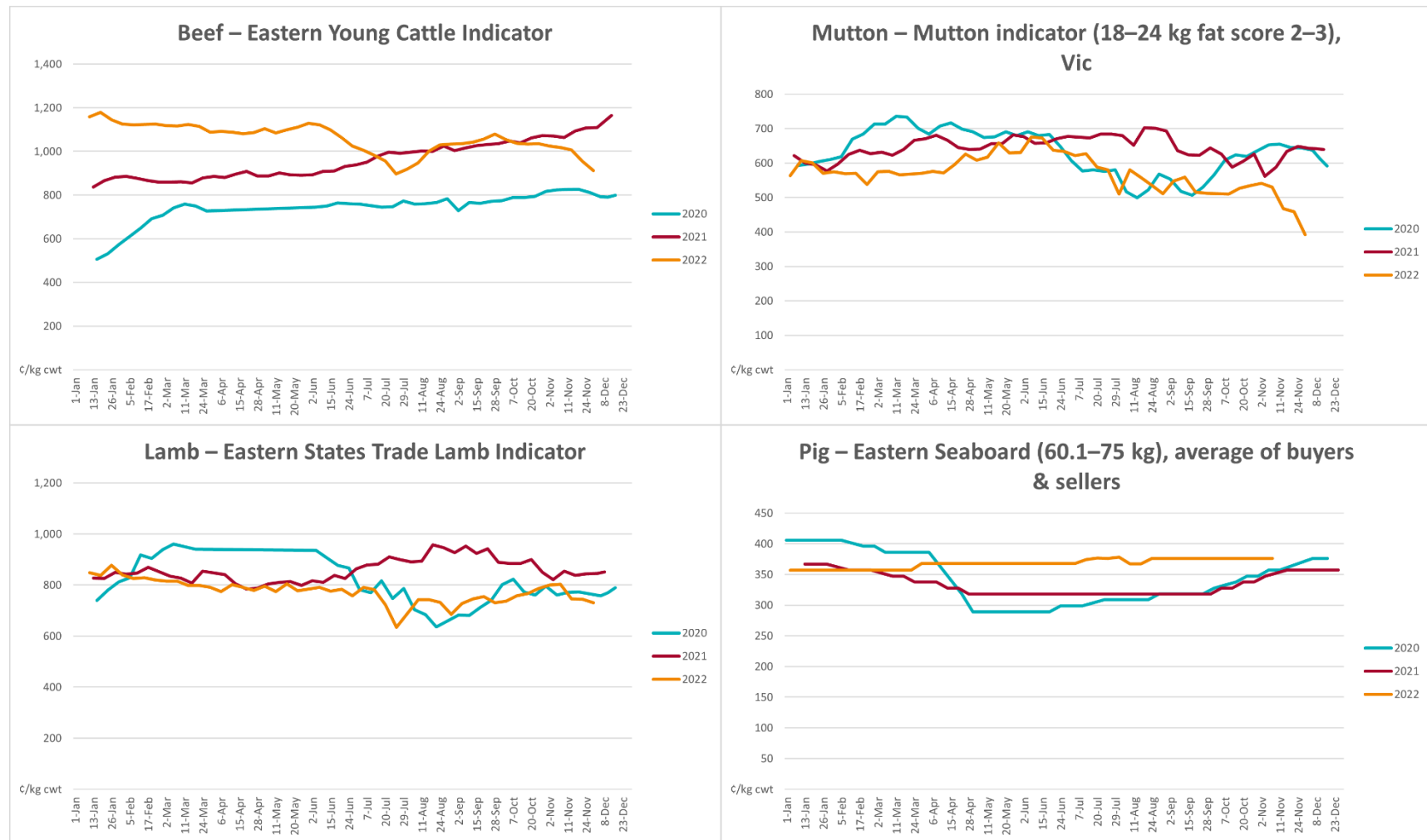


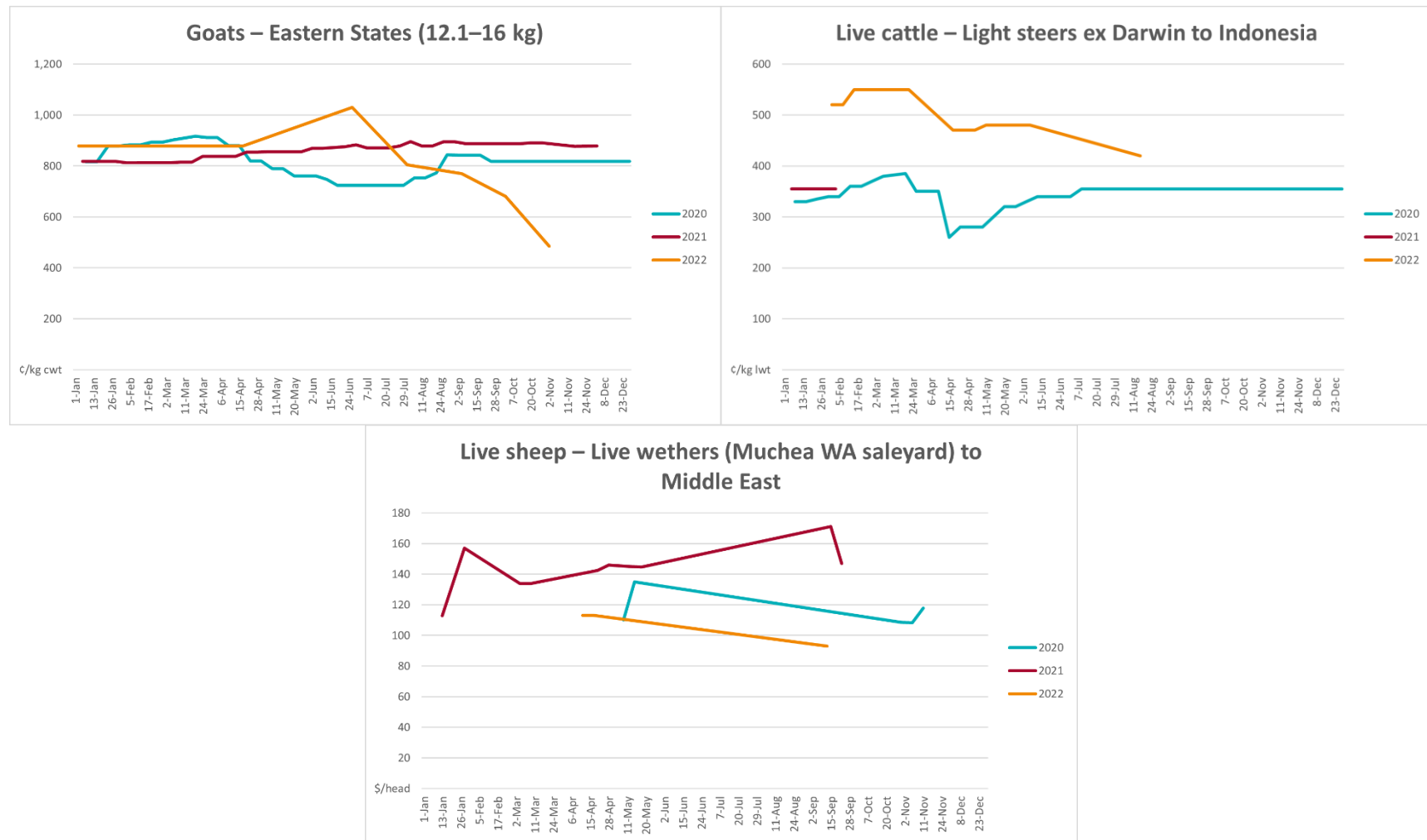
3.2. Selected domestic crop indicator prices



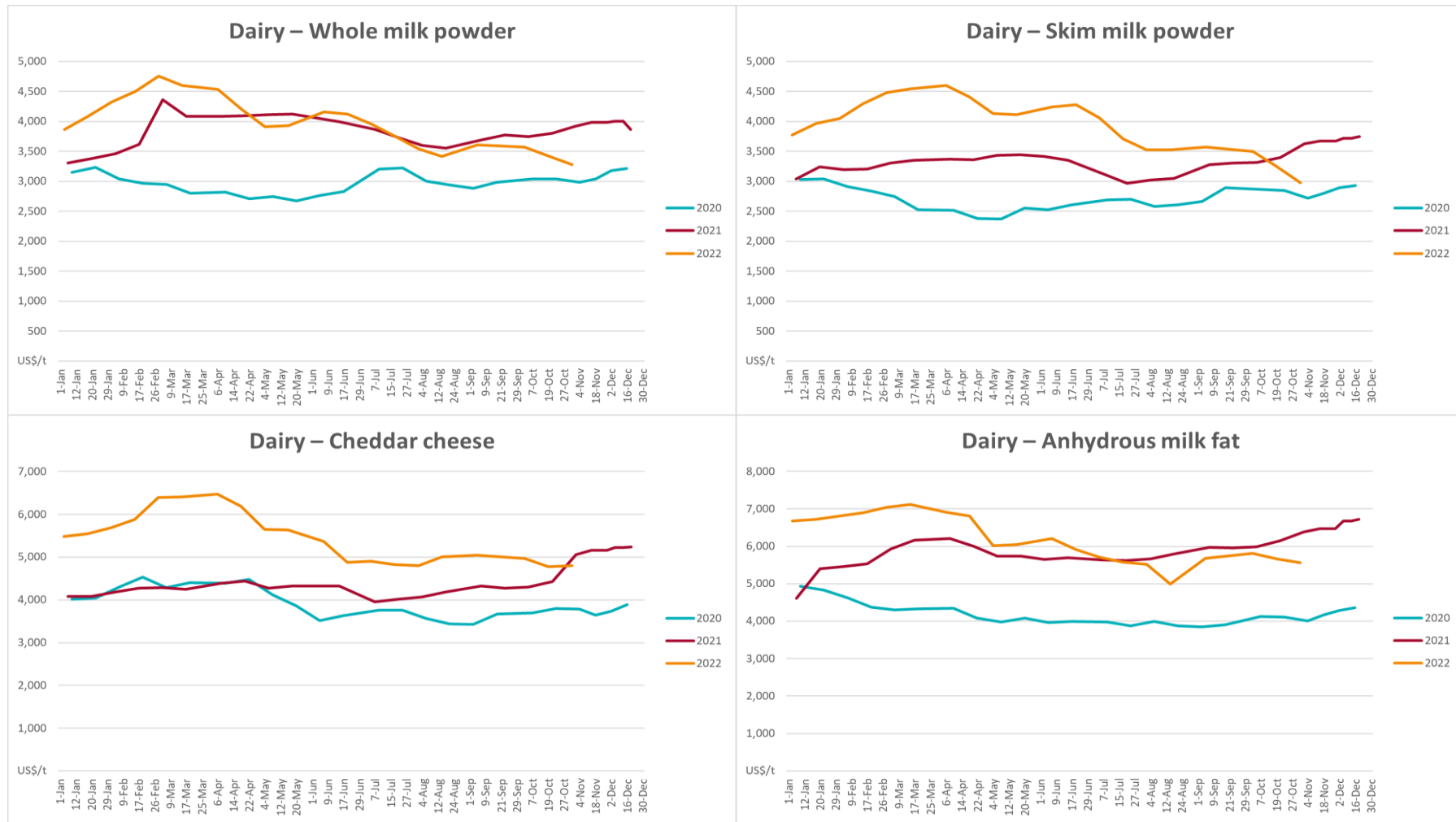


3.3. Selected domestic livestock indicator prices

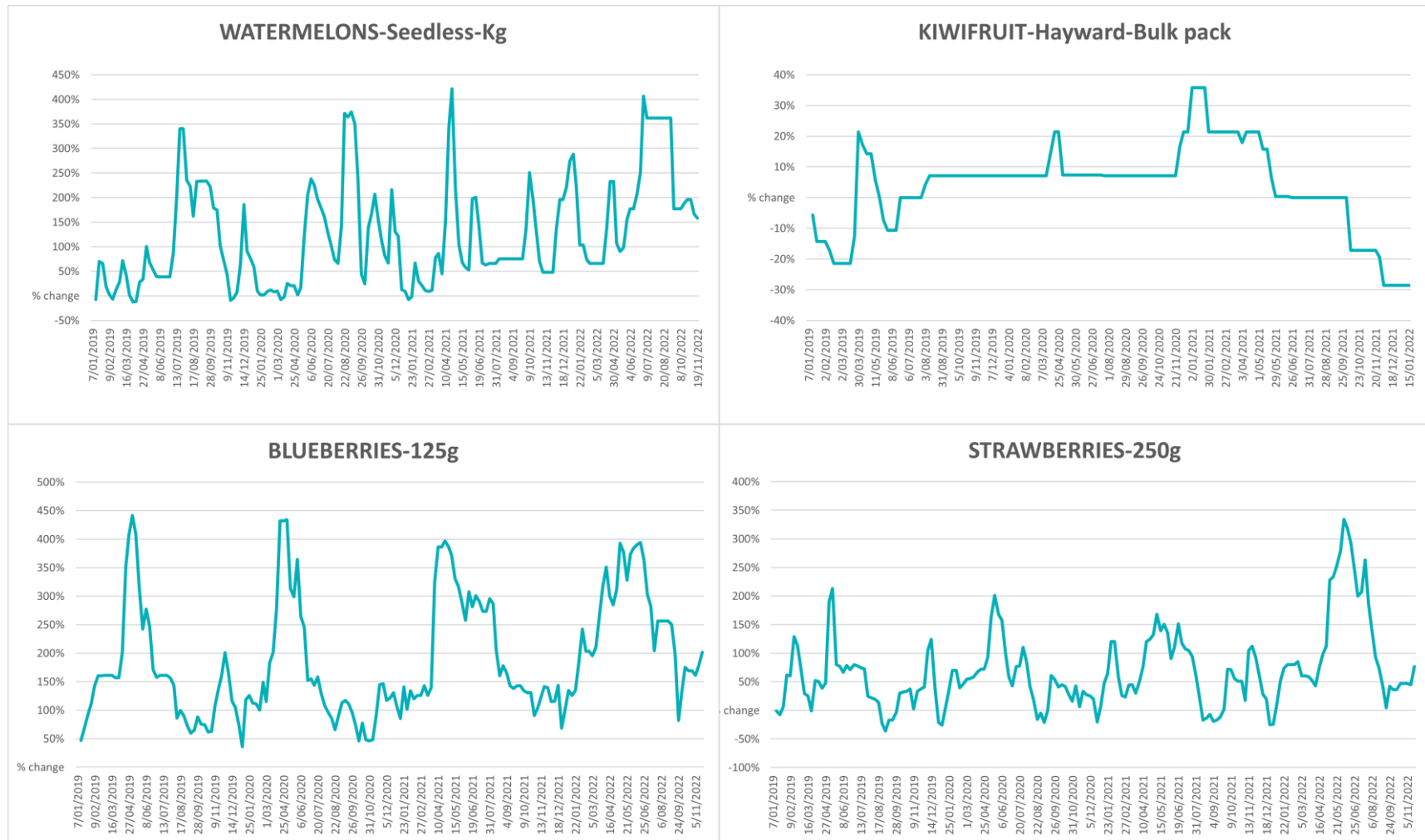


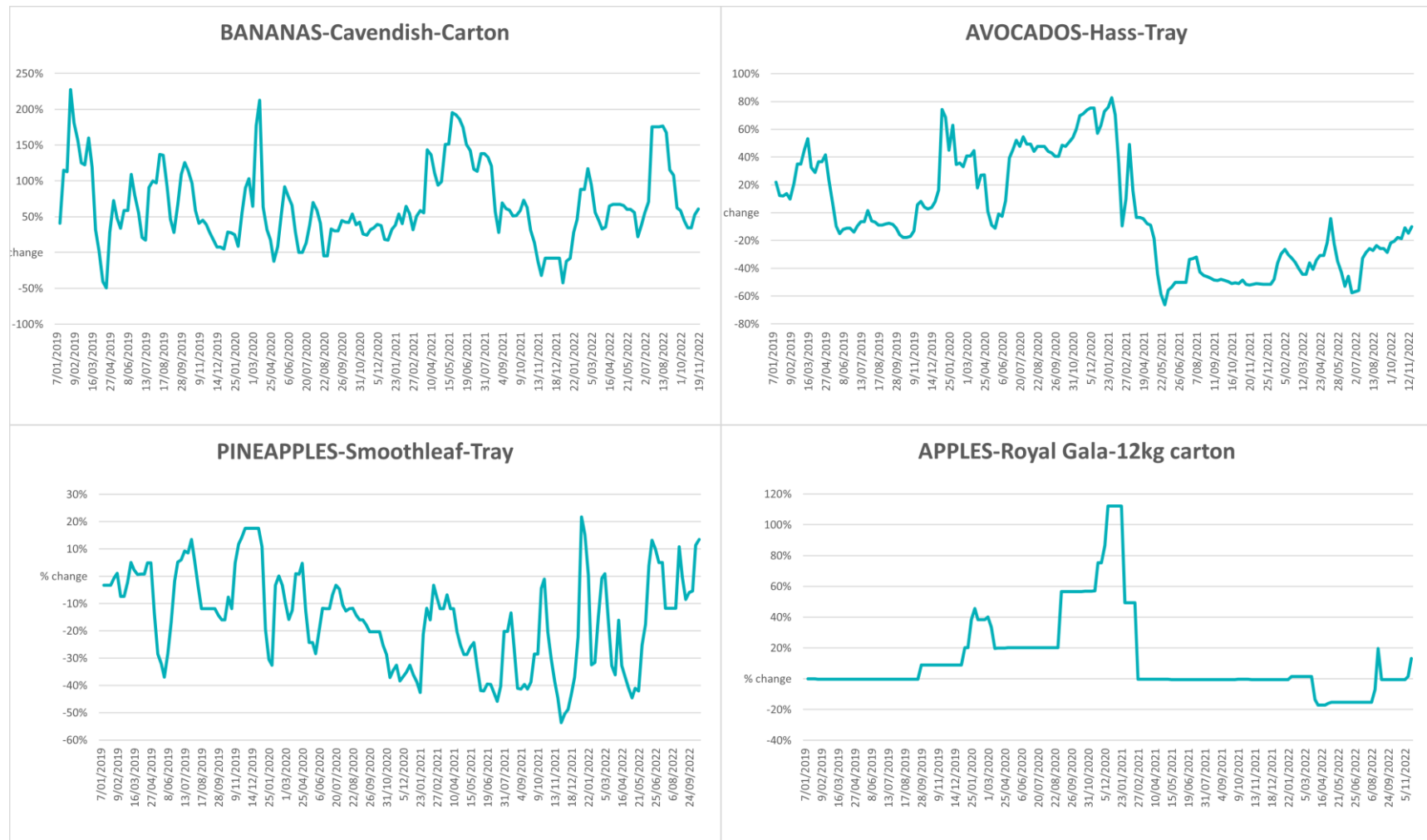


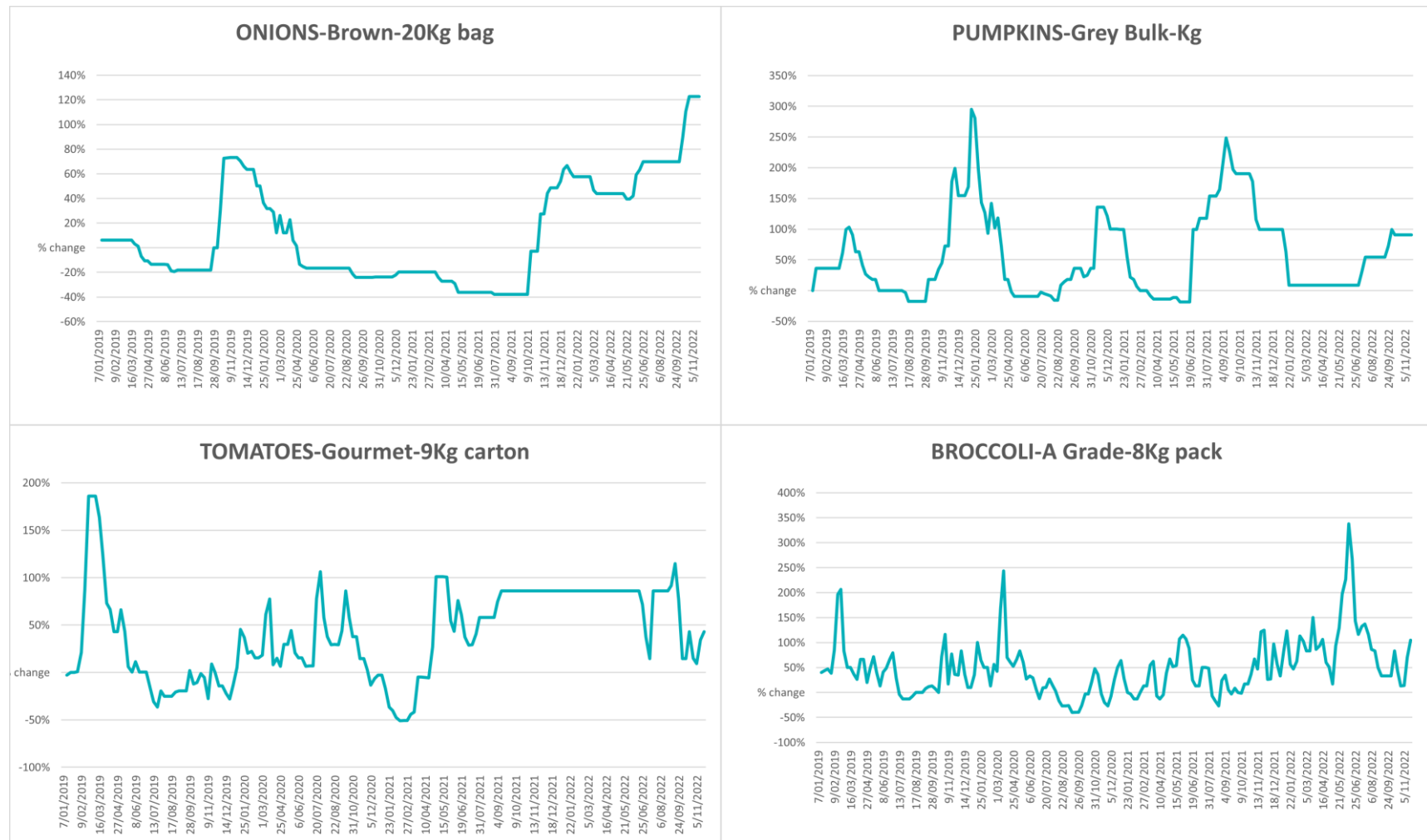
3.4. Global Dairy Trade (GDT) weighted average prices

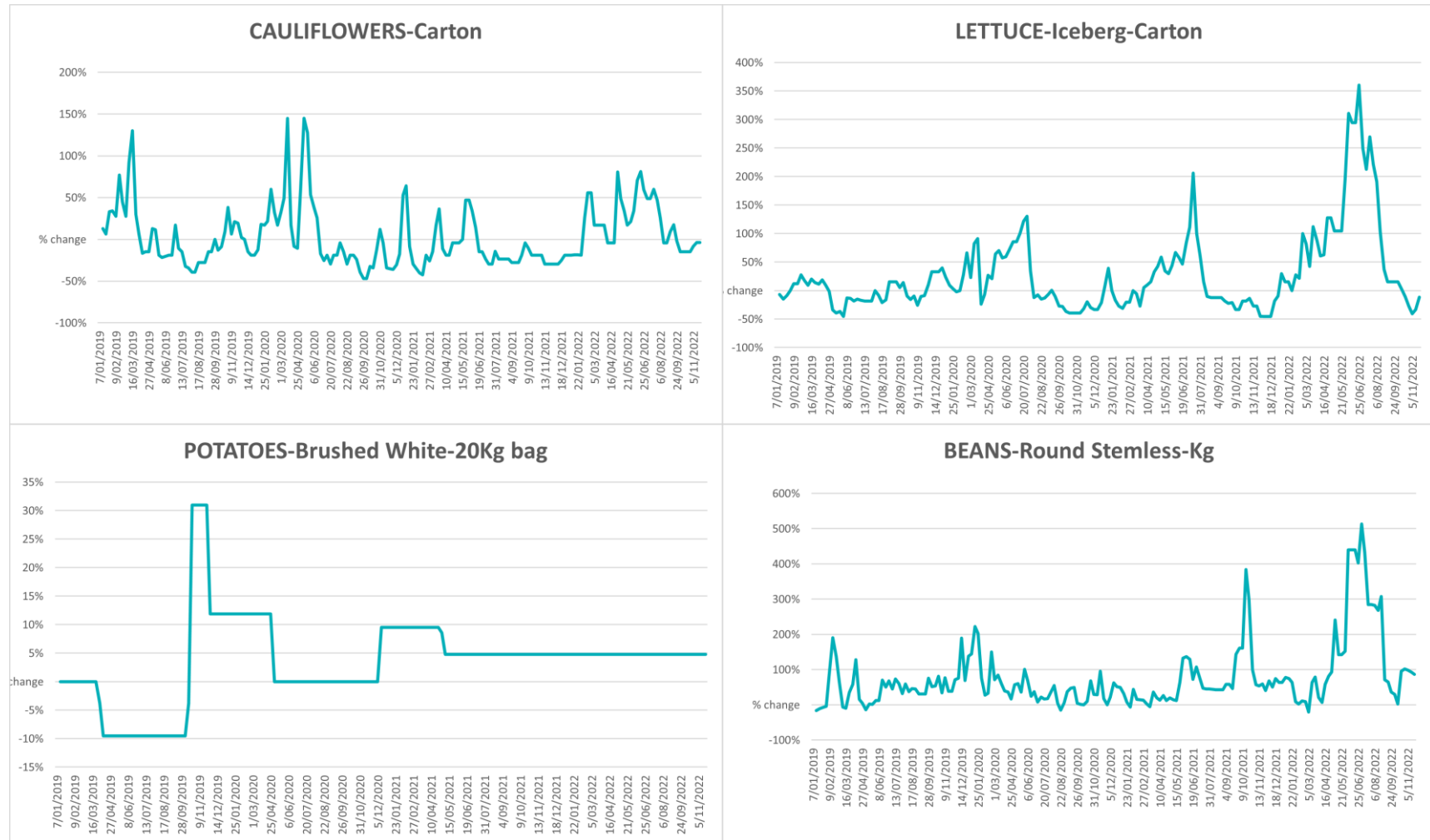


3.5. Selected fruit and vegetable prices

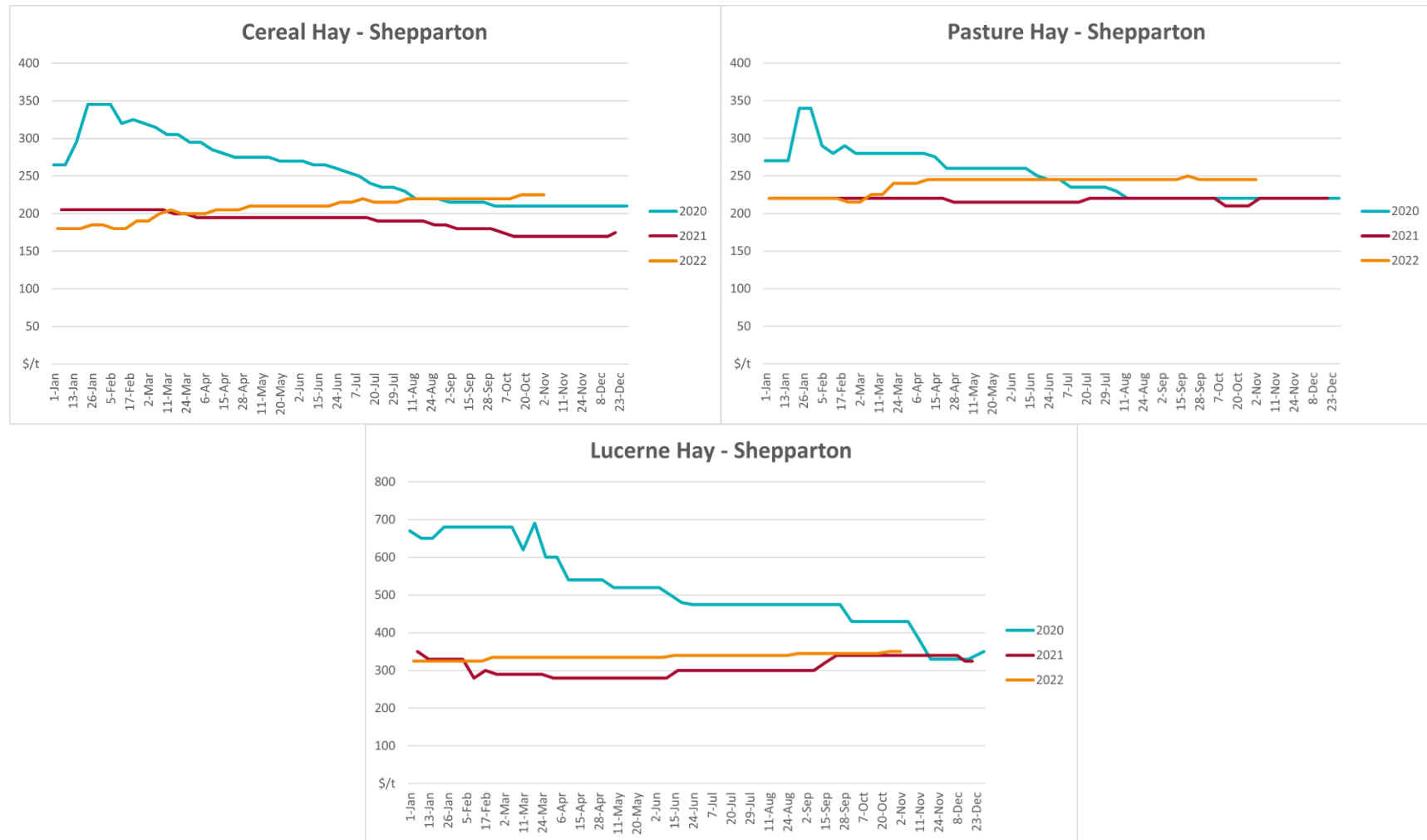








3.6. Selected domestic fodder indicator prices



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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