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Report Highlights:

Milk production in 2022 in Australia is forecast to increase moderately to 9.1 million metric tons (MMT) after a falling in 2021 to an estimated 9.0 MMT, a one percent decline from 2020. The shortage of labor influenced by COVID-19 lockdowns in the major dairy farming states and Australia's international border closure, led to some dairy farms partially or fully transitioning to less labor-intensive beef cattle production. This had a negative impact on milk production in 2021 and is also expected to limit the growth in milk production for 2022. Despite lower milk production in 2021, insatiable demand for dairy products by China has driven a strong growth in exports of milk and all of the dairy manufactured product segments.

Executive Summary

Milk production in 2022 in Australia is forecast to increase moderately to 9.1 million metric tons (MMT) after a falling in 2021 to an estimated 9.0 MMT, a one percent decline from 2020. External forces have had a negative impact on milk production in 2021 which is also expected to limit the growth in production for 2022. The shortage of labor influenced by COVID-19 lockdowns in the major dairy farming states and Australia's international border closure, has created challenges for some dairy farmers. This has also led to some dairy farms partially or fully transitioning to less labor-intensive beef cattle production encouraged by record beef prices in Australia. In addition, overly wet conditions during the winter in 2021 in some major dairy farming regions negatively impacted milk production.

Better than average rainfall for dairy farmers in 2021 has set up a very good pasture and fodder production season, and along with average to below average grain prices and near record milk prices, has established a very positive outlook leading into 2022. Although these factors would result in expectations for strong production growth, negative external forces such as labor issues and farms transitioning from dairy are anticipated to continue to have an impact. The one positive feature that could support the dairy industry in 2022 is that international borders are expected to open in two of the major dairy farming states by the start of 2022, which could allow the labor shortage to gradually ease during the year. However, beef prices in Australia are expected to remain very high in 2022 and may continue to cause some further transitioning away from dairy farming.

Fresh milk consumption in 2022 is forecast to increase slightly by around one percent to 2.5 MMT as Australia transitions away from COVID-19-related lockdowns. This is expected to account for 27 percent of overall milk production while factory use consumption is also forecast to rise at a similar rate to 6.225 MMT, from an estimated 6.185 MMT in 2021.

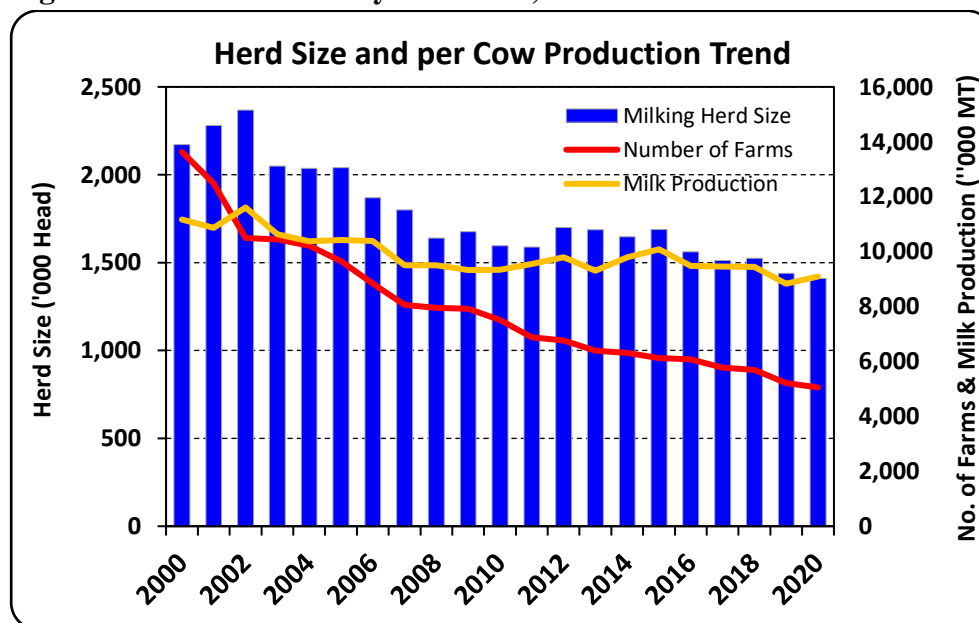
A widening gap in butter and whole milk powder (WMP) prices over cheese in the world market in 2021 resulted in manufacturers making a short-term shift away from cheese, reversing the trend in recent years of channelling more and more milk into cheese production. Insatiable demand for dairy products by China in particular has resulted in Australian manufacturers increasing butter and WMP production, away from cheese in 2021. Despite a decline in milk production, this demand has also driven strong growth in exports of milk and all of the manufactured product segments in 2021, resulting in depleting stock levels. Some analysts indicate that China has built up dairy stock levels during 2021 and that their demand is likely to ease by the end of 2021. Australian dairy manufacturers in 2022 are expected to revert back towards the previous path of increasing cheese production, with cheese anticipated to account for around 57 percent of manufactured milk and 39 percent of overall milk production in the forecast year.

DAIRY INDUSTRY SUMMARY

The dairy industry has been one of the major agricultural industries in Australia for many decades. The milking herd size peaked in 2002 at 2.369 million head and milk production also peaked in the same year at 11.608 MMT (see Figure 1). This was merely two years after the dairy industry was deregulated. This deregulation involved breaking down the state-based regulated liquid milk market which had been of strong benefit to smaller milk producing states. In such states, a high proportion of their milk went toward the much higher value regulated liquid milk market and little or none to the manufactured milk sector which was more exposed to the domestic and export markets. As part of the deregulation process dairy farmers were paid a substantial lump sum compensation (by the Federal Government) calculated based on the individual farms level of dependence on the regulated liquid milk market.

Dairy deregulation enabled some dairy farmers to invest in their business and others to sell and step away from the industry. It also enabled the industry to gradually right-size and those farms that were in less efficient producing areas and were not competitive in the free-market arrangement could step away from the industry allowing it to consolidate. Broadly, this resulted in there being a greater reduction in dairy farm numbers in the more northern tropical and sub-tropical regions than in the more southern temperate regions. Between 2002 and 2020, the industry reduced the milking herd size by 40 percent to 1.41 million head and reduced dairy farm numbers by around 60 percent to 5,055. However, industry adaptation to the free market during this period allowed milk production to only decline by around 22 percent, from 11.6 MMT in 2002 to 9.1 MMT in 2020. During this period the average milking herd size increased by over 50 percent from around 180 head to 280 head. At the same time, average milk production per cow increased by over 30 percent from approximately 4.9 MT per cow to almost 6.5 MT per cow.

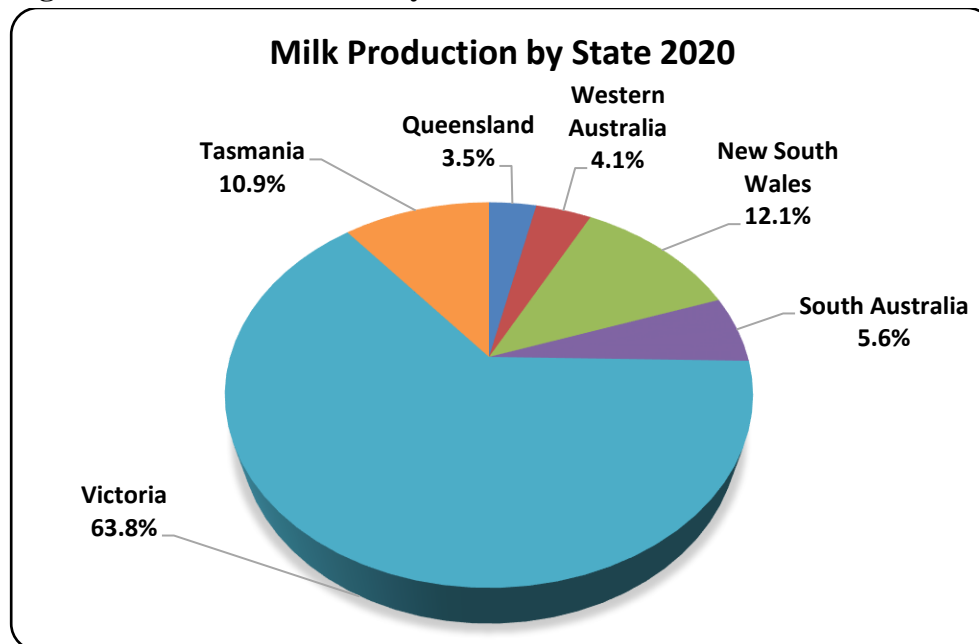
Figure 1 – Australian Dairy Herd Size, Farm Numbers and Production per Cow



Source: Dairy Australia / ABS / FAS-PSD

Almost two-thirds of milk production is from the southern state of Victoria (see Figure 2) which has a temperate climate. The north of the state, which is known as the Murray Dairy region, has traditionally been very dependent upon irrigation but has been forced to adapt as irrigation water prices have broadly increased and availability diminished due to competition from horticulture sectors. The two southern dairy regions known as West Vic Dairy and Gipps Dairy are pasture-based relying on natural rainfall with only small pockets able to access irrigation water. Tasmania is also an important contributor at around 11 percent of overall national milk production. Similarly to the two southern Victorian regions, Tasmanian dairy production is pasture-based and fed by natural rainfall and little irrigation. Milk production in New South Wales is mainly in the central and southern coastal areas and in the southern irrigation area adjacent to the Murray Dairy irrigation region in Victoria.

Figure 2 – Milk Production by State 2020



Source: Dairy Australia

Across the major dairying areas in the southern states, around 60 to 65 percent of the dairy herd feed requirements come from grazing pastures along with some fodder crops. The balance of feed requirements is met from supplementary feed, mainly grains, hay and silage. Very few dairy farms are entirely reliant on grazing. The shift over time towards increased supplementary feeding has contributed towards the increase in average per cow production along with herd genetic gains predominantly through decades of artificial insemination typically using U.S. genetics. Unlike the United States, at this point there are very few feedlot dairy farms in Australia, although there are a few notable large scale feedlots that have been in operation for over two decades.

FLUID MILK

Production:

FAS/Canberra forecasts Australia's milk production to increase slightly to 9.1 MMT in 2022, up from the 2021 downward revised estimate of 9.0 MMT. The growth in milk production is a result of further improved fodder and grain availability, increased irrigation water availability at lower cost compared to 2020, along with strong milk prices. The downward revised 2021 estimate is 99,000 MT lower than the 2020 production of 9.099 MMT despite the generally positive conditions. This fall in production in 2021, along with the slow rate of growth forecast for 2022, is a result of production being hampered by low labor availability and dairy farmer exits from the industry in 2021. In addition, very wet weather in the winter months of some major dairy farming regions has also had a negative impact on overall milk production in 2021.

A combination of factors outside of the dairy industry's control emerged in 2021 which resulted in dairy farmer exits, which are negatively influencing the 2021 estimate and the 2022 forecast. These factors are:

- Increased dairy farm property prices
- Labor shortages caused by the ongoing Australian border closure due to COVID-19
- High beef cattle prices

Labor shortages in combination with elevated dairy property prices are reported by industry analysts to have triggered an increased number of dairy farmers choosing to retire earlier than planned. The sale of some of these dairy farms has gone to a conversion to beef cattle production. The labor shortages are largely attributed to extended lockdowns, particularly in the largest milk producing state of Victoria. This resulted in financial support provided by the Government, and there are reports that this support appears to have discouraged some workers from availing themselves of work on dairy farms.

The challenge of maintaining or securing adequate labor, along with historical high beef cattle prices in Australia, according to industry sources has resulted in some dairy farmers partially or fully converting their properties to beef cattle production. However, this trend could be partially mitigated in 2022 due to the anticipation that international borders will open up in two of Australia's main dairy producing states. International travel for Australian citizens and family who are double vaccinated against COVID-19 opened up in Victoria and New South Wales as of November 1, 2021. It is anticipated that it will be some weeks delay before international citizens are allowed to travel to Australia. With this it is unlikely that there will be any significant entry of overseas worker from the likes of the Pacific Islands and other nearby countries to provide labor relief until well into 2022. As labour availability improves during 2022, it is likely to stem the tide of dairy farms partially or fully converting to beef production.

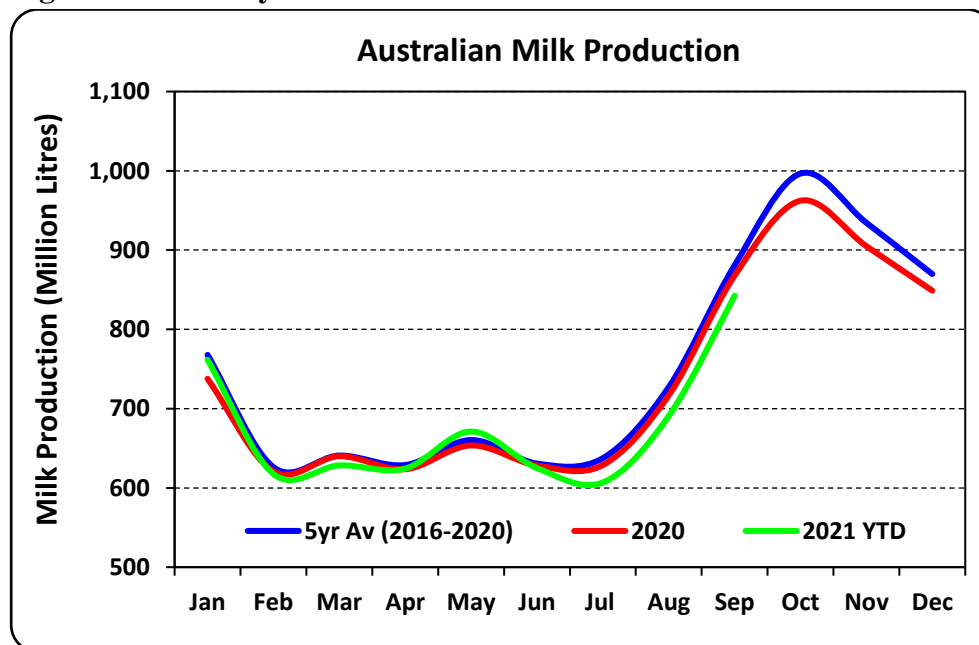
Despite very good overall conditions for dairy farmers, the lack of labour availability in 2021 has resulted in an estimated small decrease in dairy herd numbers of 1.42 million head in 2020 to 1.41

million head in 2021. However, a small rebound back to 1.42 million head is forecast for 2022 with an anticipated improvement in labour availability. Dairy farmers are expected to sell fewer heifers on the export market and retaining more to increase their herd size.

As mentioned, FAS/Canberra's milk production estimate for 2021 is downward revised to 9.0 MMT, with weaker than expected milk production in the first nine months. In 2020, the industry partially recovered as drought breaking rains commenced in early 2020, enabling fodder stocks to be fully replenished at the start of 2021 and feed grain prices to be much lower for the entire 2021. This allowed the year to start strong, and milk production was firm for the first six months of 2021 tracking a little above 2020 (see Figure 3). However, a wetter than average winter (June to August) in some major milk producing regions resulted in cows being dried off early, leading to milk production falling to below the 2020 level. When it is too wet for extended periods in grazing-based dairy farming operations it causes softening of hooves and elevated instances of hoof soreness. As the majority of the dairy industry is in the southern temperate regions and have predominantly spring calving herds, the timing of the wet early winter period is at the tail end of the lactation period. As a response, many dairy farmers in the southern regions opted to dry off their cows a little earlier than usual in order to alleviate the instances of hoof soreness. This caused the visible decline in milk production particularly in June and July 2021 compared to 2020.

It is anticipated that in the coming months during peak production there will be some catchup, via reaching a higher peak in October and a slower tailing off in November and December compared to 2020, but not enough for overall production to be expected to exceed 9.0 MMT.

Figure 3 – Monthly Milk Production in Australia 2016 to 2021 YTD



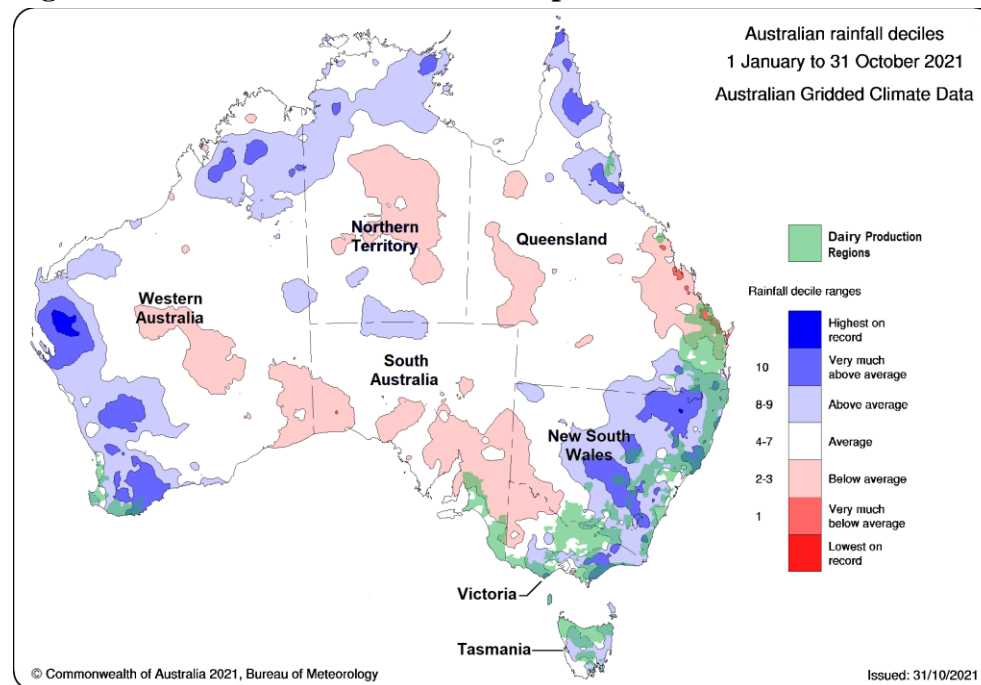
Source: Dairy Australia

For 2021 these two negative factors (too wet in some areas and dairy farmer exits) more than offset a large number of positive factors which were expected to boost milk production. These include:

1) Average to above average rainfall across the major dairying regions in 2021

A positive impact for the dairy industry was that rainfall during 2021 has broadly been above average across almost all dairy producing regions in Australia (see Figure 4). Most importantly, the dairying regions across Victoria, New South Wales and Tasmania - which represent 87 percent of overall milk production (see Figure 2) - have had above average rains in the July to October 2021 period. This boosted pasture production, but as mentioned too wet conditions did have a negative impact in some regions.

Figure 4 – Australia Rainfall Decile Maps – Jan-Oct 2021



Source: Bureau of Meteorology / Dairy Australia

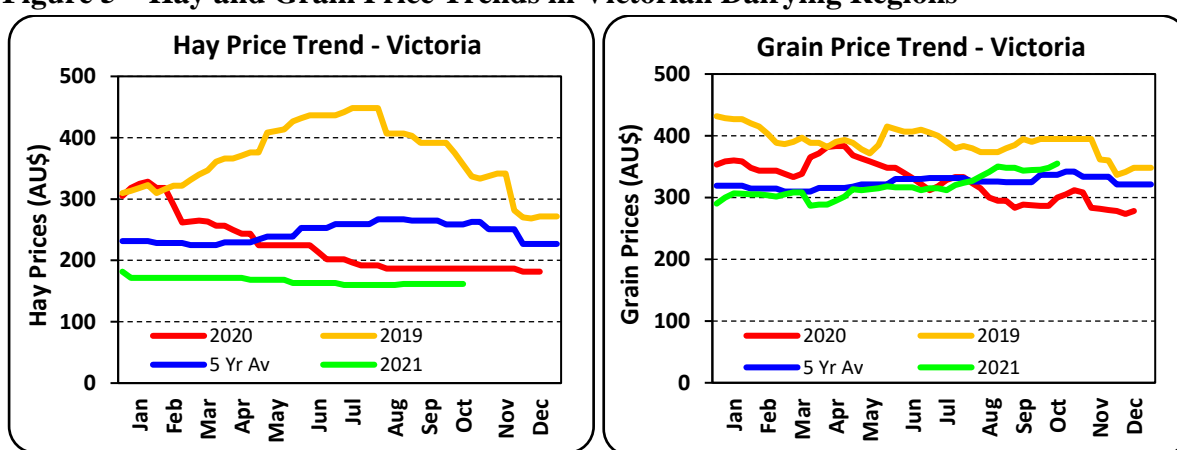
2) Hay prices at or below the 5-year average

Dairy producers have also benefited from reduced feeding costs in 2021. In Victoria, which produces almost two-thirds of national milk production, hay prices in particular during 2021 have been below those in 2020 and are well below the previous 5-year average (see Figure 5). Grain prices for the first half of 2021 were below the same period in 2021 and have been around the 5-year average throughout the year so far (Jan to Oct 2021).

With above average rainfall during winter and early spring there is an expectation of above average hay production in late spring. This is anticipated to keep hay prices low for the remainder of 2021 and well into 2022.

Australia is set for a second successive bumper year of winter grain production with harvest commencing in October 2021 in the most northern growing regions in Queensland and due to be completed in January 2022 in the southern most region in Victoria. Although domestic feed grain prices are significantly influenced by world prices, which are anticipated to remain strong, the big upcoming harvest is expected to influence an easing of domestic grain prices for the remainder of 2021 and into 2022.

Figure 5 – Hay and Grain Price Trends in Victorian Dairying Regions



Source: Dairy Australia

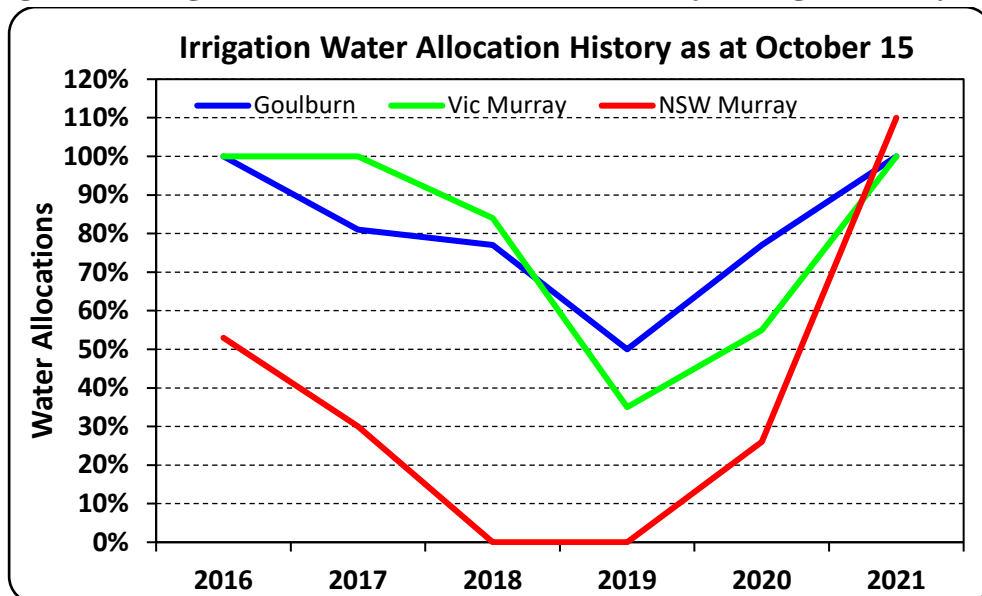
3) High irrigation water availability and lower costs in the irrigated regions

The majority of irrigated dairy farmers are located in northern Victoria and are part of the Goulburn irrigation system. Many dairy farmers in this region are also located in the adjoining Murray irrigation system which covers part of northern Victoria and also southern New South Wales. After successive above-average rainfall years in 2020 and 2021, following a multi-year drought, the irrigation catchments are now fully replenished. The Goulburn and Murray irrigation systems in Victoria have announced water allocations of 100 percent of water entitlements as at October 15, 2021 for the 2021/22 irrigation season, the first time since 2016 that this has occurred (see Figure 6). In addition, the Murray irrigation system in New South Wales at the same time has announced a water allocation of 110 percent of water entitlements, a level not seen in previous records.

The high-water allocations for the 2021/22 irrigation season have supported relatively low water trade prices of around \$100 per million liters (ML) well below the peak of over \$600 per ML seen during the recent drought (see Figure 7). There is an expectation that there will be some further reduction in the price of traded water in 2021. However, it is unlikely to fall greatly as owners of the water may opt to

carry over unused water into the following season to secure their future water needs or consider trading more water in the following season when prices may be higher.

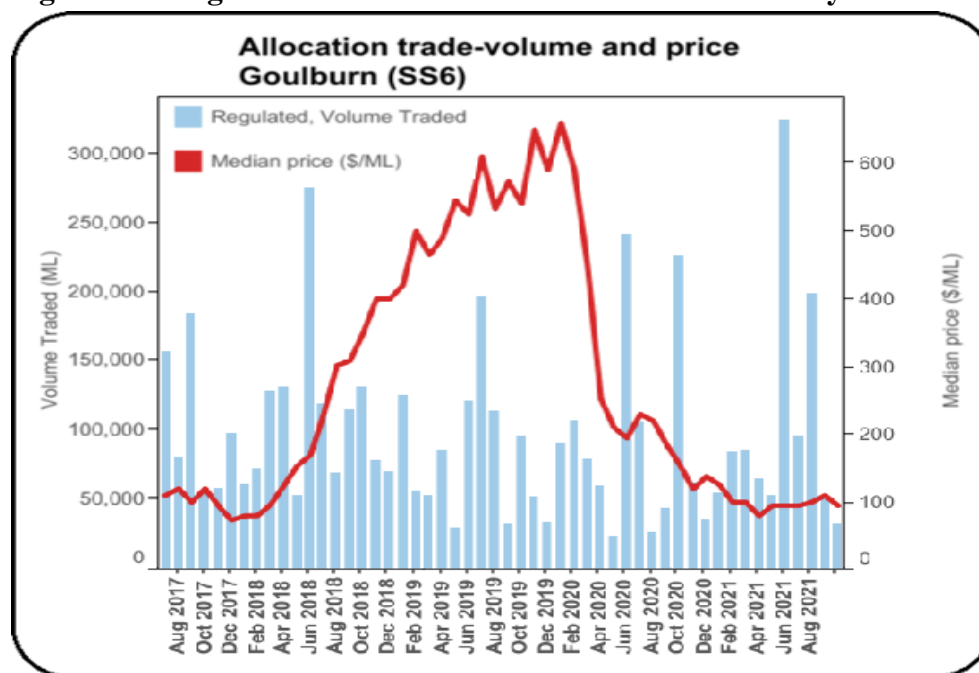
Figure 6 – Irrigation Water Allocation Trend in major Irrigated Dairying Regions



Source: Victoria Department of Environment Land Water and Planning / NSW Department of Planning Industry and Environment

Notes: Goulburn and Murray Vic system allocations are High Reliability Water Shares
NSW Murray system allocations are General Security

Figure 7 – Irrigation Water Trade Volume and Price History



Source: Bureau of Meteorology

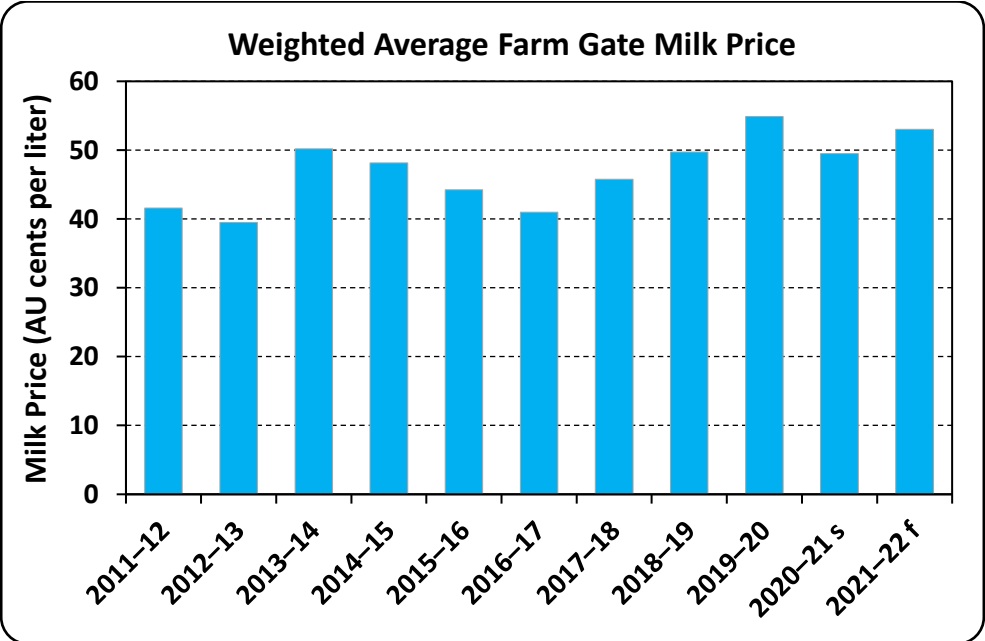
The irrigation season typically commences in early September each year and water allocations are revised upwards as inflows into water catchments occur in the spring period. With water prices at the early stages of the 2021/22 irrigation season around \$50 per ML lower than the same time in the previous year, dairy farmers in the main irrigation regions are well placed to finish off 2021 strongly and establish good momentum for pasture and fodder production into 2022.

4) Strong farm gate milk prices

In addition to reduced input costs, dairy farmers have benefited from continued strong milk prices in 2021. Domestic milk prices vary from one manufacturer to the next and from region to region. Areas which almost exclusively supply the liquid milk market for domestic consumption receive the highest milk prices, whereas for those regions where the majority of milk is used for manufactured products, the milk price to dairy farmers is the lowest. On a weighted average basis, dairy farmers received a very high milk price in 2019/20, but fell somewhat in 2020/21, before a forecast recovery in 2021/22 which is estimated by the Australian Bureau of Agriculture Resources, Environment and Sciences (ABARES) to be the second highest weighted average price on record of 53 cents per liter (see Figure 8). With strong world market prices so far in the second half of 2021 the final result may be higher.

Although the above factors have supported the estimated milk production of 9.0 MMT in 2021, it is still well below the 2016-2018 period of around 9.45 MMT as a result of fewer cows, primarily caused by the severe drought in 2018 and 2019, as well as farmer exits and too wet conditions in some areas, as previously mentioned.

Figure 8 – Farm Gate Milk Price – Recent History and Forecast



Source: Australian Bureau of Agricultural and Resource Economics and Sciences

The positive conditions and strong milk price in 2021 are set to establish a positive momentum of milk production at the end of 2021, which is expected to flow through to improved milk production in 2022. The four key factors influencing improvement of milk production in 2022 are:

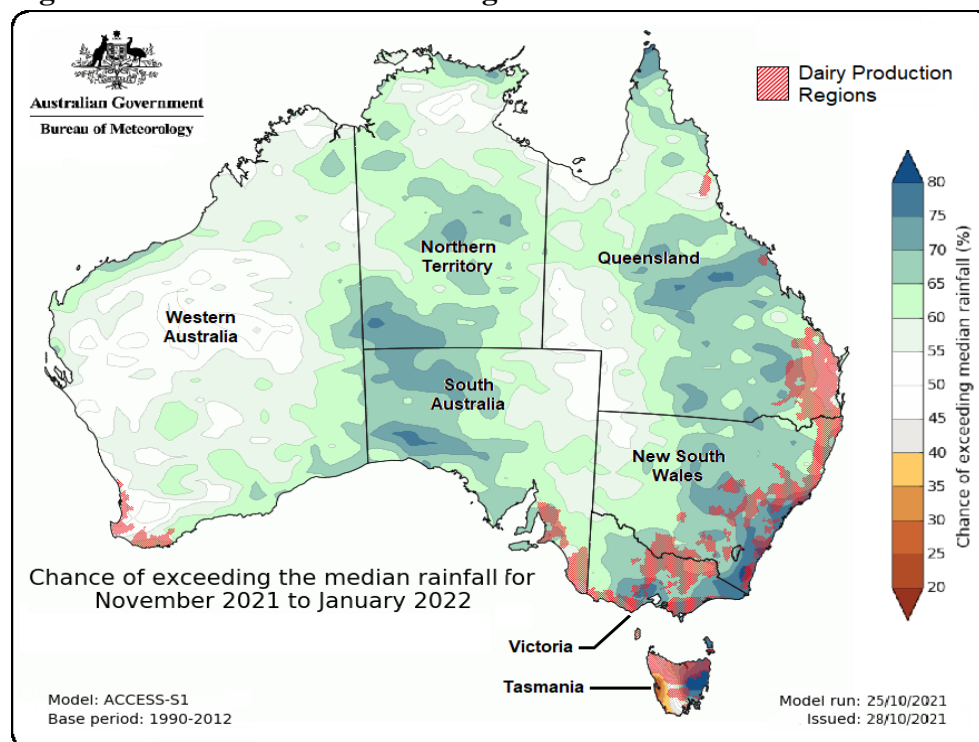
1) Strong fodder reserves entering 2022

With very plentiful rainfall across the major dairy producing regions in 2020 and 2021, farmers will be in position to build on already drought-replenished hay and silage reserves in the spring period in 2021 and be well set up going into 2022. The very positive crop and pasture conditions in spring 2021 in the major dairy producing regions will provide those dairy farmers with confidence that they have adequate and good quality fodder reserves leading in to 2022, enabling them to achieve higher yield per cow and overall milk production through at least early 2022.

2) Above average forecast rainfalls

The Bureau of Meteorology three month forecast for December 2021 to February 2022 is for above average rainfall in the major dairy farming regions in Australia (see Figure 9). If the forecast is realized, this will benefit all dairy farming regions early in 2022, but in particular the irrigation regions. These areas will not only require less irrigation water across the current irrigation season, typically from September 2021 to April 2022, but it will allow the major irrigation water storage dams to remain high and fully replenish for the 2022/23 irrigation season. This would support improved milk production in the peak spring milk production period in 2022.

Figure 9 – Chance of Above Average Rainfall – November 2021 to January 2022



Source: Bureau of Meteorology

3) Lower grain prices across the entire year

As previously mentioned, a second successive bumper grain harvest is expected in late 2021. With this there is optimism that grain prices may fall somewhat from 2021 levels and remain below the five-year average well into 2022.

Although dairy production in Australia is primarily based on pasture grazing, in Victoria (by far the largest producing state with almost two-thirds of overall production) on average around 30 percent of the energy consumed by the dairy herd (includes dry stock and replacement heifers) is from various forms of grain feeds (Source: Dairy Farm Monitor Project – Victoria Annual Reports). Because of this, a modest reduction in feed grain prices would provide dairy farmers with the confidence to feed higher levels of supplementary feed and increase milk yields.

4) Strong farm gate milk prices

Over recent years world dairy commodity prices have strengthened and are currently at near peak historical levels. This has led to a record milk price paid to farmers in Australia in 2019/20 and the estimated second highest price on record for 2021/22. Australian dairy farmers, particularly those supplying manufactured milk processors, are paid from a July to June period. An opening milk price is stated prior to July 1 and the price is progressively increased as certainty of commodity prices improves with the price being backdated to milk produced from July 1.

With a very strong milk price estimated by ABARES for 2021/22, this bodes well to encourage increased production for the first half of 2022. Analysts broadly anticipate some easing of world dairy commodity prices in 2022 but expect them to remain firm. This will contribute to encouraging an increase in milk production in Australia for the full year in 2022. However, as mentioned limited numbers of cows and fewer farms are expected to limit further growth.

Consumption

Fluid milk consumption is forecast by FAS/Canberra to increase moderately in 2022 to 2.5 MMT, from the downward revised 2.47 MMT in 2021. Domestic fluid milk consumption is forecast to account for 27 percent of all milk produced in Australia in 2022. This is in line with the estimate for 2021 but a marginal reduction from 28 percent in 2020. Domestic consumption of fluid milk per capita has been gradually declining over recent years.

The revised fluid milk consumption estimate for 2021 of 2.47 MMT is 2.3 percent lower than the 2020 result. With reduced travel and the closing of cafes and restaurants at times due to COVID-19 restrictions in the largest states of Victoria and New South Wales, there was an expectation that consumption would decline. However, the decline was partially offset by increased home cooking and baking which is reported to have resulted in improved sales via the supermarket channel, while other sales channels have declined. According to Dairy Australia, milk sales figures for the January to June

period in 2021 were 1.237 MMT compared to 1.267 MMT in 2020, equivalent to only a 2.4 percent decrease.

Overall drinking milk consumption in Australia remains high compared to world levels. Consumers have shifted their milk preference towards regular (full-fat) and away from reduced fat/skim milk over the last decade. Regular milk accounts for 57 percent of milk sales and reduced/non-fat has over time declined to be 23 percent. Flavored milk sales are around ten percent and UHT milk is eleven percent and they have remained relatively constant over the last decade.

FAS/Canberra forecasts factory milk consumption in 2022 to reach 6.225 MMT from the downward revised 2021 estimate of 6.185 MMT. Much of this increase is expected to be channelled towards cheese production. The FAS/Canberra 2021 factory milk consumption estimate of 6.185 MMT is significantly lower than the official USDA estimate of 6.355 MMT. This is due to a substantial reduction in the overall milk production estimate for 2021.

Trade

Exports

FAS/Canberra forecasts fluid milk exports to reach 380,000 MT in 2022, a nine percent increase over the 2021 estimate of 350,000 MT. This is a continuation of strong growth in fluid milk exports, which grew by 26 percent from 2020 to 2021. Due to the majority of milk exported (around 98 percent) being long life UHT milk and is transported by sea freight, the current freight disruption challenges, although still a concern, are less of an issue compared to perishable goods.

The major trading partner for Australian milk fluid is China, which now accounts for over half of all exports, and for the January to September 2021 period grew by 67 percent relative to the same period in the previous year (see Figure 10). Of the other five major destinations, which combined account for around 40 percent of exports, Singapore and Hong Kong have increased moderately, whereas Malaysia, Philippines and Vietnam have decreased somewhat.

The FAS/Canberra 2021 milk export estimate has been revised upward to 350,000 MT and is six percent higher than the official USDA estimate of 330,000 MT. Exports for the January to September 2021 period are at 249,000 MT and the pace of exports over recent years typically accelerates in the final three months prompting the upward revision.

Change in Milk Fluid Exports - Jan-Sep 2020 to 2021

Country/Region	Change in Exports - Jan to Sep 2020 to 2021 (%)	Percent of Total Exports - Jan to Sep 2021 (%)
China	68	54
Singapore	9	17
Malaysia	-17	7
Philippines	-2	6
Vietnam	-6	5
Hong Kong	10	5
Other	-16	8

Imports

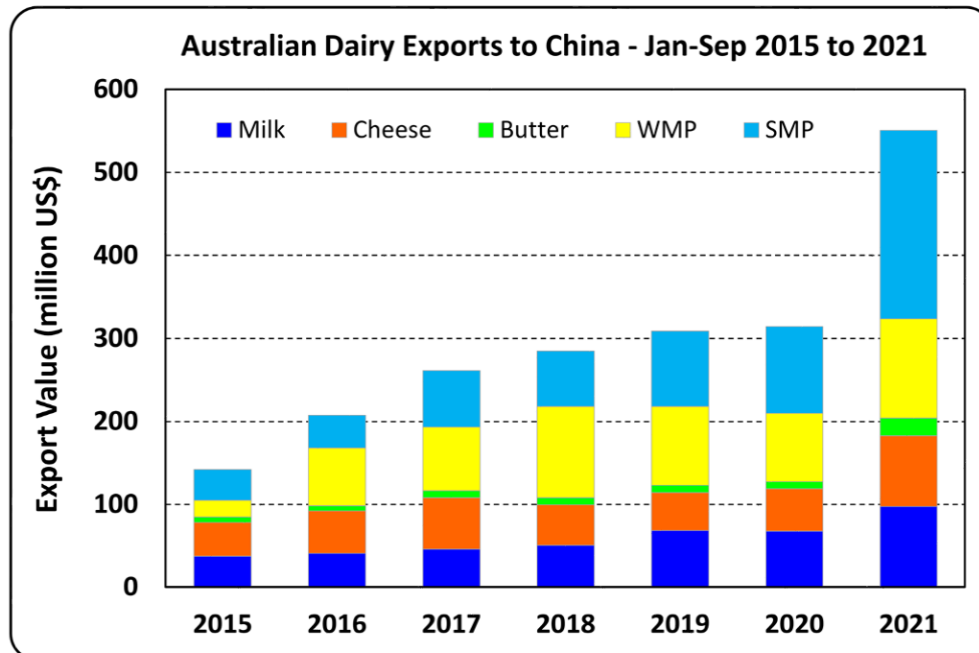
Table 1 - Dairy, Milk, Fluid

Dairy, Milk, Fluid Market Year Begins Australia	2020		2021		2022	
	Jan 2020		Jan 2021		Jan 2022	
	USDA Official	New Post	USDA Official	New Post	USDA Official	New Post
Cows In Milk (1000 HEAD)	1420	1420	1410	1410	0	1420
Cows Milk Production (1000 MT)	9099	9099	9225	9000	0	9100
Other Milk Production (1000 MT)	0	0	0	0	0	0
Total Production (1000 MT)	9099	9099	9225	9000	0	9100
Other Imports (1000 MT)	5	5	5	5	0	5
Total Imports (1000 MT)	5	5	5	5	0	5
Total Supply (1000 MT)	9104	9104	9230	9005	0	9105
Other Exports (1000 MT)	270	278	330	350	0	380
Total Exports (1000 MT)	270	278	330	350	0	380
Fluid Use Dom. Consum. (1000 MT)	2528	2528	2545	2470	0	2500
Factory Use Consum. (1000 MT)	6306	6298	6355	6185	0	6225
Feed Use Dom. Consum. (1000 MT)	0	0	0	0	0	0
Total Dom. Consumption (1000 MT)	8834	8826	8900	8655	0	8725
Total Distribution (1000 MT)	9104	9104	9230	9005	0	9105

THE RISE OF DAIRY EXPORTS TO CHINA

Despite a decline in milk production from 2020 to 2021, there has been a remarkable 75 percent growth in major dairy product exports from Australia to China in 2021 reaching US\$551 million in the first nine months (see Figure 11). Skim milk powder (SMP) shows the biggest growth of 117 percent, but milk, cheese, butter and WMP all had strong growth. With such insatiable demand from China, Australian dairy manufacturers adjusted their manufacturing product mix in 2021 to take advantage of this opportunity. Exports to China had been rising since 2015, but plateaued in 2019 and 2020, likely due to the Australian drought's impact on supplies.

Figure 11 – Australian Dairy Exports to China – Jan to Sep 2015 to 2021



Source: Australian Bureau of Statistics

POLICY

UK-AU FTA

After a relatively short 12-month period of negotiations between the United Kingdom (UK) and Australia the two nations signed an in-principle Free Trade Agreement (FTA) on June 15, 2021 during the G7 summit held in the UK. Once the FTA is finalized and implemented, the reduced barriers to trade, predominantly for Australian goods to the UK, is anticipated to improve trade between the two nations.

After the FTA is formalized, dairy tariffs will be eliminated over five years. During the transition period, Australia will have immediate access to a duty-free quota for cheese of 24,000 MT, rising in equal installments to 48,000 MT in year five. Immediate access will also be granted to Australia for 20,000 MT of non-cheese dairy products. Butter will also benefit with a duty-free quota of 5,500 MT transitioning to 11,500 MT in year five. Although welcomed by the Australian dairy industry as providing a further significant market access option, it is anticipated that Australia will continue to focus its trade to nearby Asian markets.

CHEESE

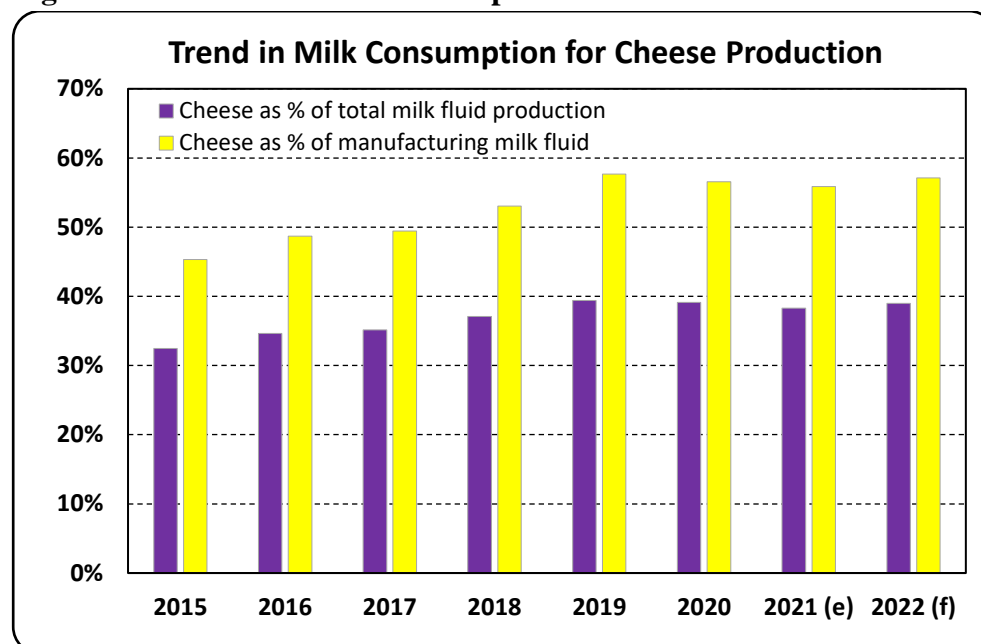
Production:

FAS/Canberra forecasts cheese production to reach 370,000 MT in 2022, a modest increase on the downward revised 2020 estimate of 360,000 MT. The primary reasons for this forecast increase is the anticipated one percent expanded milk production expected for 2022 and a shift back to cheese production from butter and powders.

Cheese production is forecast to account for 39 percent of total fluid milk production, and after accounting for forecast domestic fluid milk consumption and fluid milk exports, represents 57 percent of fluid milk available for manufacturing products (see Figure 12). Since 2015 there has been a clear trend of cheese production becoming of increasing focus by processors, and just five years ago cheese accounted for only 35 percent of national fluid milk production and 49 percent of fluid milk used for manufacturing products. However, there has been some shift away from cheese production in 2021 which is forecast to shift back towards trend in 2022. Cheese by far accounts for more milk usage in Australia than any other dairy product.

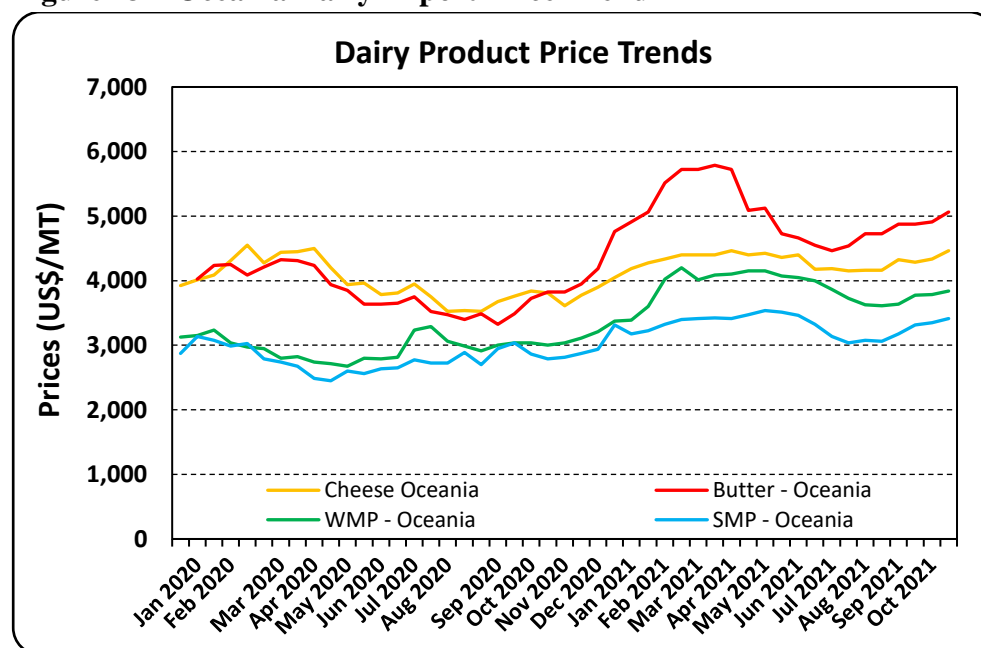
In 2021 there has been a short-term shift towards growth in WMP and butter production and away from cheese, driven by short term price advantages and demand from China. For the first 10 months of 2021, cheese prices from the Oceania region (which is predominantly New Zealand and Australia) have risen by nine percent, whereas butter and WMP have both increased by 30 percent, and SMP has increased by 19 percent (see Figure 13).

Figure 12 – Trend in Milk Consumption for Cheese Production



Source: Dairy Australia / Dairy Manufacturers and FAS/Canberra estimate/forecast

Figure 13 – Oceania Dairy Export Price Trend



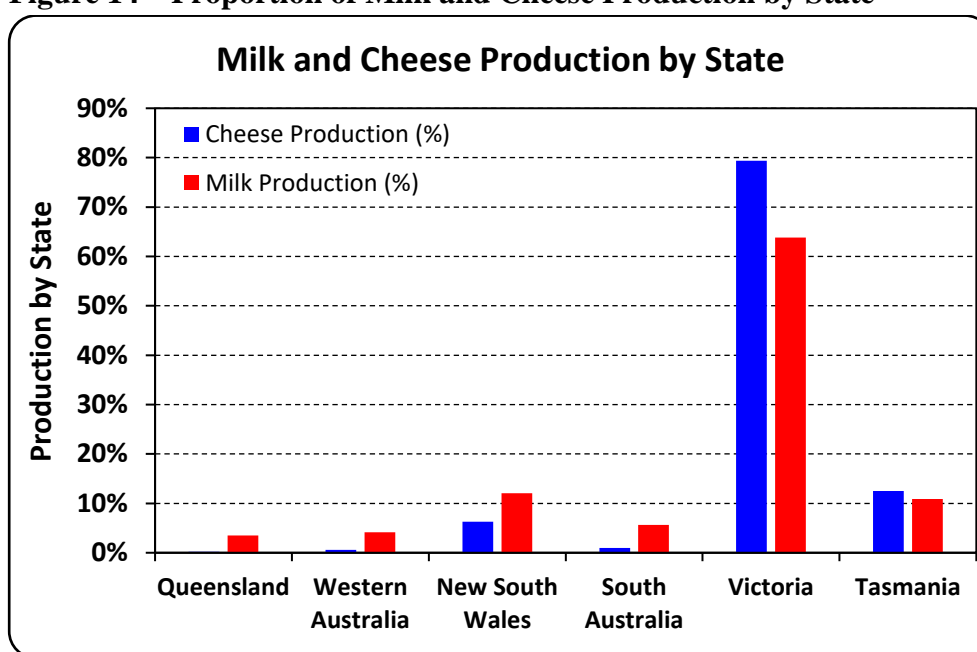
Source: USDA Agricultural Marketing Service

China has played a significant role in driving world demand for dairy products in 2021. Analysts consider that with growing domestic milk production in China and the build-up of dairy product stocks in 2021, import demand from China may diminish in 2022. With this there is an anticipation that

Australian dairy manufacturers in 2022 will revert back towards the trend over recent years of focusing on increased cheese production.

Almost 80 percent of Australian cheese is produced in Victoria, where milk production is 64 percent of national production (see Figure 14). The only other state that produces a higher proportion of national cheese compared to their proportion of national milk production is Tasmania. In other dairy-producing states such as Queensland, Western Australia, South Australia and New South Wales, the vast majority of production is directed towards the domestic fluid milk sales, leaving significantly lower volumes of milk available for manufactured dairy products. This is a result of smaller production volumes, coupled with strong demand for fluid milk from population centers in these states.

Figure 14 – Proportion of Milk and Cheese Production by State

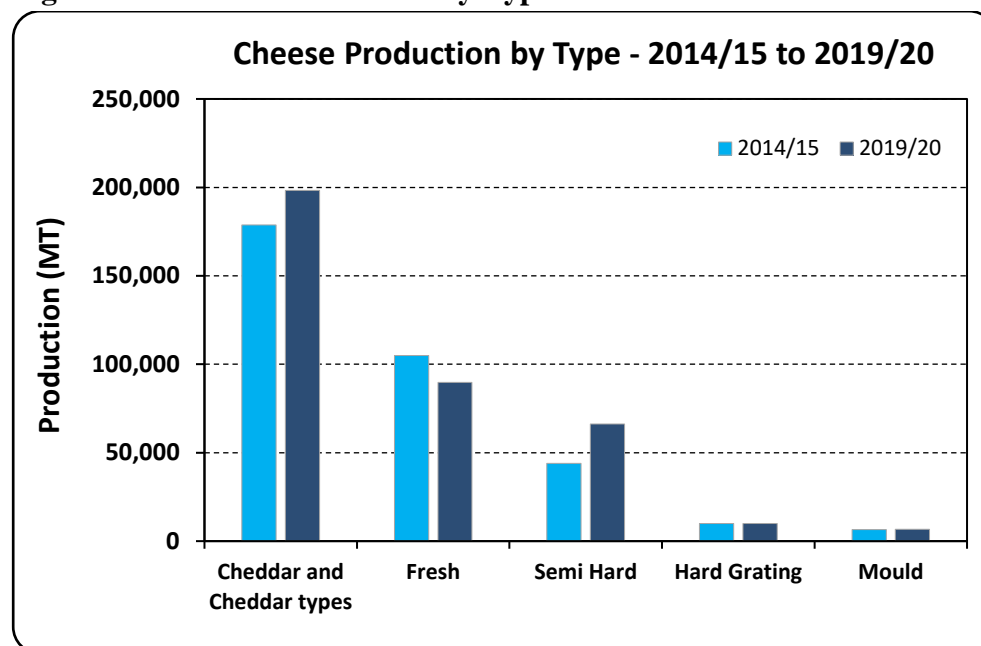


Source: Dairy Australia

Despite producing more cheese than is consumed, Australia still imports a significant amount of cheese. There has also been an increasing trend of soft cheese imports during this time as Australian manufacturers have shifted away from producing these cheese types. Instead, they have been increasing production of more specialized cheddar varieties and semi-hard cheeses, predominantly mozzarella (see Figure 15).

FAS/Canberra's cheese production estimate for 2021 is revised down to 360,000 MT from the official USDA estimate of 385,000 MT. The Dairy Australia January to June 2021 cheese production data shows an almost four percent decline compared to the same period in 2020 which supports the revised estimate for 2021.

Figure 15 – Cheese Production by Type - 2014/15 to 2019/20



Source: Dairy Australia / Dairy Manufacturers

Notes: (1) Includes vintage

(2) Includes Cheedam, Colby, Cheshire, Gloucester, Lancashire, Nimbin and semi processed cheddar

Consumption

FAS/Canberra forecasts a marginal increase in cheese consumption in 2022 to 310,000 MT, from the 2021 estimate of 305,000 MT, primarily due to the expectation that Australia will transition away from state based COVID-19 related lockdowns in 2022 and begin to allow entry of international travellers to Australia. In recent years overall growth in cheese consumption has slowed, primarily caused by international border closures related to the COVID-19 pandemic curtailing immigration and causing population growth to stagnate. In Australia there has also been a shift in consumer preferences from processed towards natural cheeses, and from cheddar to non-cheddar varieties.

Surprisingly, there appears to have been little overall impact on cheese consumption in Australia as a result of the lockdowns associated with the COVID-19 pandemic. The lockdowns have varied in degree and duration from state to state during 2020 and 2021. Consumption of cheese in the food service sector is strongly linked to the take-away (to go) trade, particularly for the likes of mozzarella on pizza. During the lockdown periods take-away stores were able to continue to operate for the most part and consumers increased at-home cooking and baking. This resulted in increased retail sales of cheeses, particularly cheddar and shredded types. It is anticipated that as Australia transitions away from lockdowns by the end of 2021 and consumers are able to frequent restaurants and cafes once again, patterns of sales of cheeses will revert back towards normal.

Trade

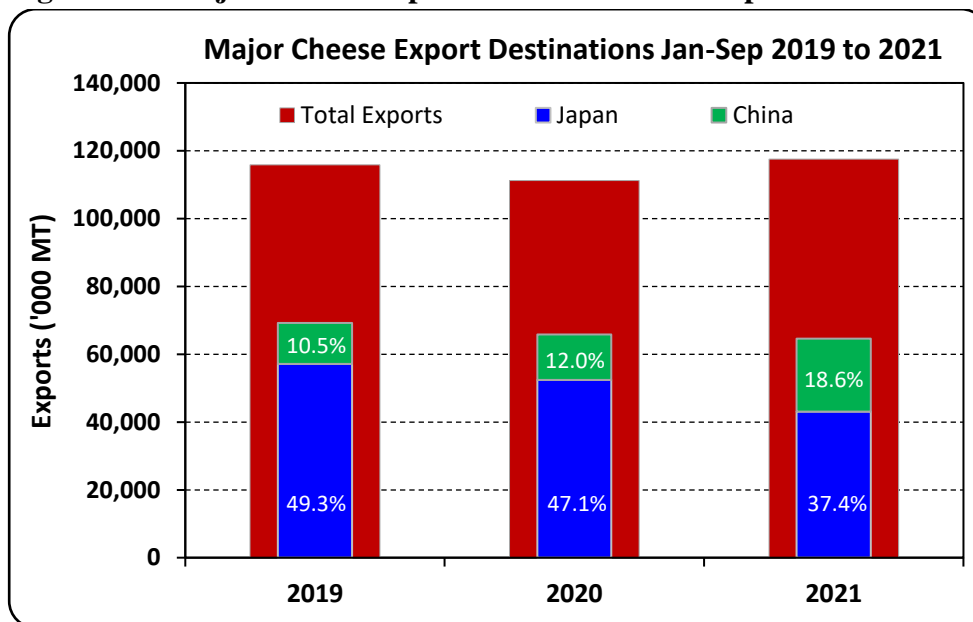
Exports

Cheese exports in 2022 are forecast by FAS/Canberra remain stable at 165,000 MT, the same as the downward revised 2021 estimate. Despite a forecast 5,000 MT increase in cheese production in 2022, exports are not anticipated to rise. In 2021, exports have actually been stronger than the previous year despite lower production. This high level of exports in 2021 relative to production is expected to result in a reduction in ending stocks and place limitations on the capacity to grow exports in 2022.

Australia is a net exporter of cheese, which is the largest dairy product exported. In 2020 around 42 percent of all cheese produced in Australia was exported. With the expectation of manufacturers favoring further gradual growth in cheese production and with limited scope to increase domestic consumption of cheese, any future increases in cheese production are likely to flow to the export market.

Japan has consistently been the largest market for Australian cheese over the last decade, typically accounting for at least half of all cheese exports. However, 2021 has seen a significant decline in exports to Japan. Over the last three years there has been a strong growth in exports to China, the second largest destination, increasing from around 11 percent to 19 percent of total Australian cheese exports during this period (see Figure 16).

Figure 16 – Major Cheese Export Destinations Jan-Sep 2019 and 2021



Source: Australian Bureau of Statistics

FAS/Canberra estimates cheese exports at 165,000 MT in 2021. As mentioned, these stronger exports are despite lower production. Exports for the January to September 2021 period are at 117,534 MT, around six percent above the same period in 2020. It is anticipated that exports for the remainder of the

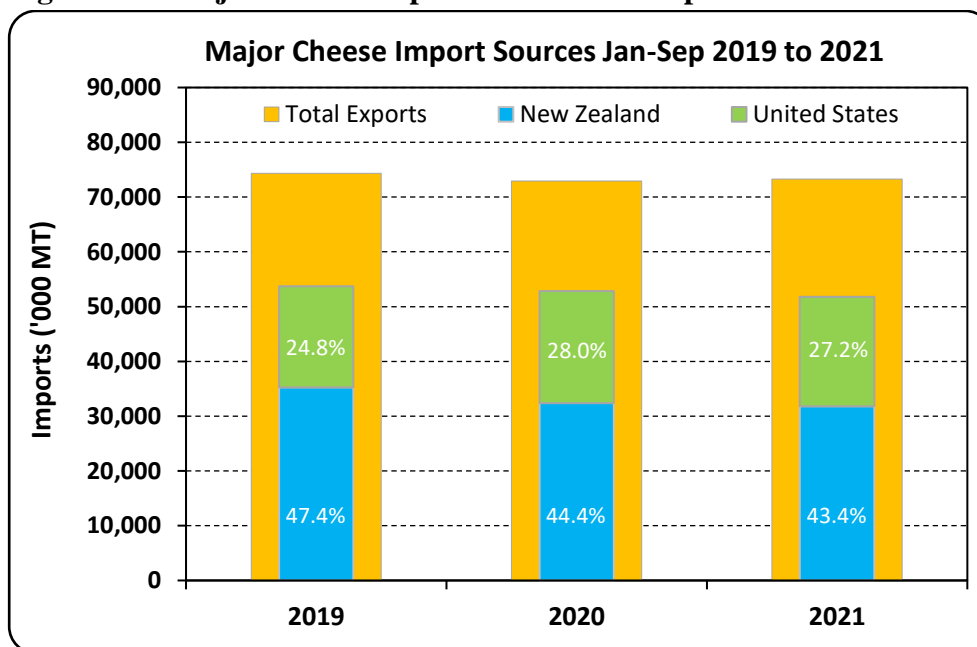
year will remain in line with trends in recent years which will achieve an overall export result of around 165,000 MT in 2021.

Imports

FAS/Canberra forecasts cheese imports in Australia reach to 100,000 MT in 2022, the same as the estimate for 2021. This is despite the forecast increase in cheese production. An anticipated increase in consumption, continued strong demand for cheese exports, and pressure on ending stocks is expected to maintain a high level of imports in 2022.

Almost one-half of all cheese imports are from New Zealand and around one-quarter from the United States. There has however been a noticeable increase from the United States at the expense of New Zealand over the last two years (see Figure 17). This is despite an increase in cheese production in New Zealand in 2021. Strong New Zealand exports to other markets in 2021 has had an influence on the lower supply of New Zealand cheese to Australia.

Figure 17 – Major Cheese Import Sources Jan-Sep 2019 and 2021



Source: Australian Bureau of Statistics

FAS/Canberra's import estimate for 2021 has been upward revised to 100,000 MT from the official USDA estimate at 95,000 MT. January to September 2021 imports are at 73,305 MT, a little higher than the same period in the prior year. With three months remaining, imports are on track to achieve the increased estimate for 2021.

Table 2 - Dairy, Cheese

Dairy, Cheese Market Year Begins Australia	2020		2021		2022	
	Jan 2020		Jan 2021		Jan 2022	
	USDA Official	New Post	USDA Official	New Post	USDA Official	New Post
Beginning Stocks (1000 MT)	54	54	67	67	0	57
Production (1000 MT)	373	373	385	360	0	370
Other Imports (1000 MT)	98	98	95	100	0	100
Total Imports (1000 MT)	98	98	95	100	0	100
Total Supply (1000 MT)	525	525	547	527	0	527
Other Exports (1000 MT)	153	153	170	165	0	165
Total Exports (1000 MT)	153	153	170	165	0	165
Human Dom. Consumption (1000 MT)	305	305	310	305	0	310
Other Use, Losses (1000 MT)	0	0	0	0	0	0
Total Dom. Consumption (1000 MT)	305	305	310	305	0	310
Total Use (1000 MT)	458	458	480	470	0	475
Ending Stocks (1000 MT)	67	67	67	57	0	52
Total Distribution (1000 MT)	525	525	547	527	0	527
(1000 MT)						

BUTTER

Production

FAS/Canberra forecasts butter production in 2022 to decline to 75,000 MT, from the 2021 estimate of 80,000 MT. This anticipated decline in butter production is despite a forecast one percent increase in milk production for 2022. This shift is based on the expectation that the very strong dairy product demand from China in 2021 will ease in 2022 and processors will shift their manufacturing product mix back towards the earlier trend of focusing on increasing cheese production. Butter production is estimated to have risen by around seven percent in 2021. Despite this slight rebound in butter production, it remains well below past levels which for almost three decades prior to 2018 were well in excess of 100,000 MT, peaking at 180,000 MT in 2000. This highlights that milk has been channelled away from butter production by processors.

FAS/Canberra estimates butter production in 2021 at 80,000 MT up 5,000 MT from 2020. This estimate is based on Dairy Australia reported production data for the January to June 2021 period, which has butter production for the first six months of 2021 higher than in the same period in the prior year. However, this is balanced up with the anticipated lower milk production in the second half of 2021.

Consumption

FAS/Canberra forecasts butter consumption to remain stable in 2022 at 105,000 MT, the same as the 2021 estimate.

Butter volume includes butteroil and anhydrous milk fat in butter equivalent terms. Anhydrous milk fat is essentially dehydrated butter which is used in food manufacturing such as bakery and confectionary products. Although butter is also used in food manufacturing it is primarily sold through retail channels and used by the food service sector.

Dairy Australia reports that the impacts of COVID-19 on the food service sector had no negative impact on overall butter consumption in Australia. During periods of lockdowns and restricted movement there was a noticeable increase in home baking and cooking which resulted in an increase in butter sales through supermarkets, which countered the drop in butter demand from the food service sector.

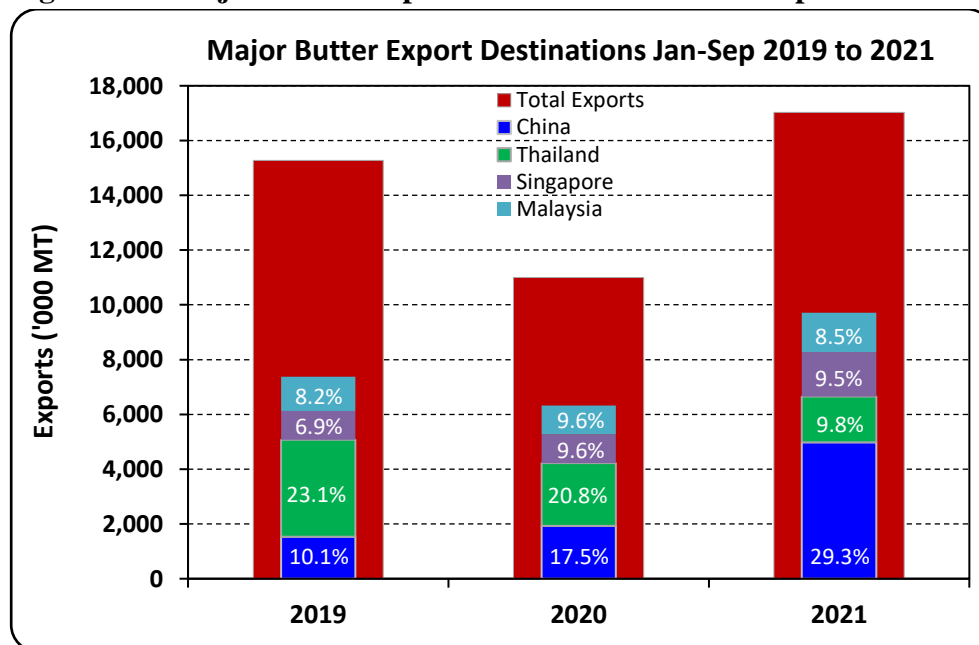
Trade

Exports

Butter exports are forecast by FAS/Canberra to decline to 20,000 MT in 2022, a 5,000 MT fall from the 2021 estimate of 25,000 MT. Australia is a net importer of butter, consuming far more butter than it produces. 2021 has seen a jump in butter exports, up 56 percent in the January to September 2021 period. This rise has been triggered by the strong export demand particularly from China. The forecast decline in exports in 2022 is back towards more typical levels for the past few years.

In recent years, Thailand had been the major export destination for around a quarter of Australian butter, but this has transitioned across 2020 and 2021 with China now accounting for 29 percent of butter exports from Australia (see Figure 18). Singapore and Malaysia are also significant export destinations, providing diversity of markets, each at around nine percent of overall butter exports.

Figure 18 – Major Butter Export Destinations – Jan to Sep 2019 and 2021



Source: Australian Bureau of Statistics

Imports

FAS/Canberra forecasts butter imports to remain stable at 40,000 MT in 2022 as per the 2021 estimate. Since 2017, Australia has been a net importer of butter and this is forecast to continue into 2022 as a result of ongoing very low butter production.

Butter imports for the January to September 2021 period are at 29,339 MT slightly lower than the result for the same period in 2020 which had a final outcome of 42,838 MT for the year. With three months remaining in 2021, full year exports are on track to reach the estimated 40,000 MT.

The dominant source of butter imports is from New Zealand, representing over 85 percent of total imports from 2017 to 2020, and the trend is continuing in 2021 with January to September 2021 imports from New Zealand at 83 percent of overall imports.

Table 3 - Dairy, Butter

Dairy, Butter Market Year Begins Australia	2020		2021		2022	
	Jan 2020		Jan 2021		Jan 2022	
	USDA Official	New Post	USDA Official	New Post	USDA Official	New Post
Beginning Stocks (1000 MT)	81	81	78	78	0	68
Production (1000 MT)	75	75	83	80	0	75
Other Imports (1000 MT)	43	43	40	40	0	40
Total Imports (1000 MT)	43	43	40	40	0	40
Total Supply (1000 MT)	199	199	201	198	0	183
Other Exports (1000 MT)	16	16	25	25	0	20
Total Exports (1000 MT)	16	16	25	25	0	20
Domestic Consumption (1000 MT)	105	105	105	105	0	105
Total Use (1000 MT)	121	121	130	130	0	125
Ending Stocks (1000 MT)	78	78	71	68	0	58
Total Distribution (1000 MT)	199	199	201	198	0	183
(1000 MT)						

SKIM MILK POWDER

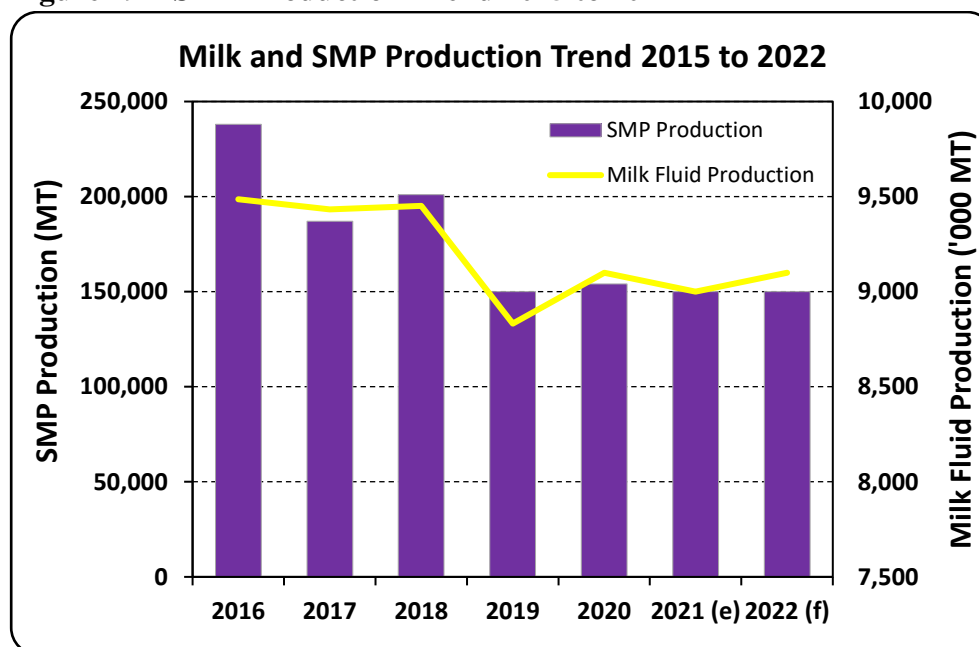
Production

FAS/Canberra forecasts skim milk powder (SMP) production in 2022 to remain stable at 150,000 MT, and in line with the downward revised estimate for 2021. Even though SMP and butter are typically produced as part of the same manufacturing process, SMP production is forecast to remain stable, but butter production is forecast to decline somewhat in 2022 allowing scope for alternate butterfat based products such as cream to increase.

The fat content of milk is initially reduced and then dried to produce SMP. Of the extracted milk fat from the production of SMP, according to industry reports, approximately one-quarter is used to produce cream and three-quarters is further processed to produce butter, the mix of which can readily be altered by manufacturers.

Similarly to butter, SMP production is now well below past levels which for almost a decade prior to 2018 were well in excess of 150,000 MT, peaking at 266,000 MT in 2015. The industry has in recent years had a focus on channelling milk towards cheese production. SMP production had dropped in 2019 in part due to lower milk production and has remained relatively stable since then and is expected to continue in the future (see Figure 19).

Figure 19 – SMP Production Trend 2015 to 2022



Source: FAS/Canberra

FAS/Canberra estimates SMP production in 2021 at 150,000 MT, similar to 2020. This estimate is based on Dairy Australia-reported SMP production data for the January to June 2021 period being almost identical to the same period in 2020, which had an overall production of 154,000 MT. With an expectation that overall milk production in 2021 will be lower than in 2020, SMP production is also estimated to be slightly lower in 2021.

Consumption

SMP consumption in 2022 is forecast by FAS/Canberra at 40,000 MT, in line with a downward revised 2021 estimate.

Skim milk powder has a wide range of uses in the food manufacturing sector as additive products such as:

- breads, cakes and biscuits (improving volume and binding capacity, browning, freshness extension);
- beverages, confectionary (such as milk chocolate to add a milky texture and flavour);
- dry mixes and infant products (assists with adding a dairy flavor, texture and aroma to foods);

- prepared foods such as processed meats and seafoods, seasoning and flavors (adding texture and flavor and acting as a flavor carrier);
- snacks;
- animal feeds.

SMP can also be reconstituted to produce yoghurts, dairy desserts and ice creams, and skim milk, particularly in countries without adequate refrigerated food chain networks.

A great majority of the end products containing SMP are sold through retail and supermarket stores and to a lesser extent the food service sector. Accordingly, it is unsurprising that the impact of the COVID-19 pandemic and associated lockdowns in Australia has had only a modest impact on overall consumption. Consequently, little change has been forecast for 2022 as Australia progresses its COVID-19 pandemic management beyond the need for large scale lockdowns.

FAS/Canberra estimates SMP consumption in 2021 at 40,000 MT. Heightened demand for SMP exports in 2021 have limited any growth in domestic consumption.

Trade

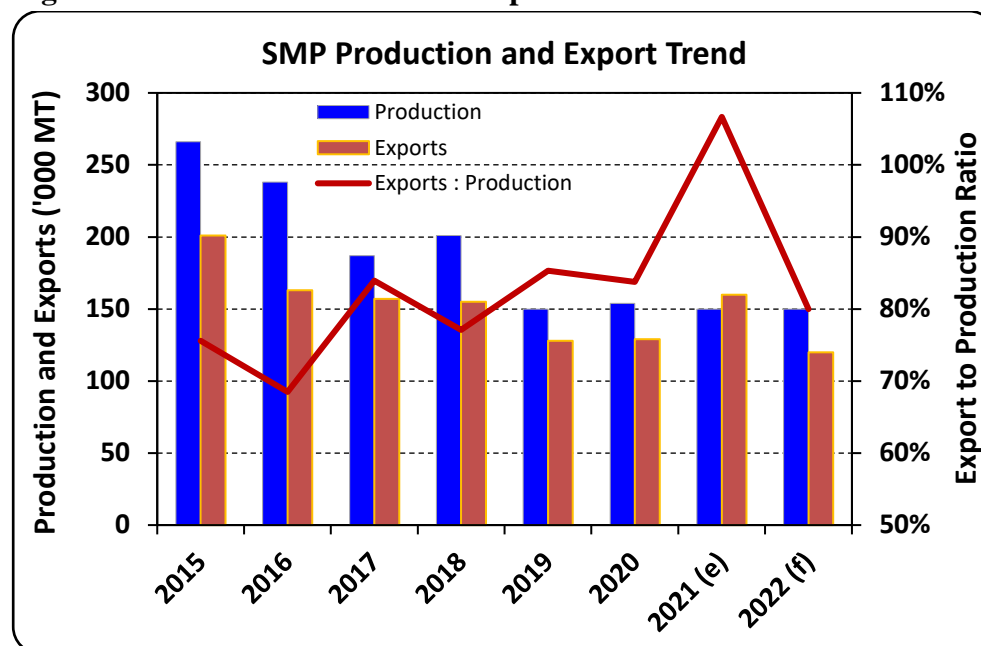
Exports

FAS/Canberra forecasts exports of SMP in 2022 at 120,000 MT, which is 40,000 MT lower than the revised 2021 estimate of 160,000 MT. The lower forecast is related to very strong exports in 2021, as processors took advantage of attractive world market prices, placing pressure on stocks.

In 2019 and 2020 SMP production fell significantly and has remained relatively stable with around 85 percent of production exported (see Figure 20). 2021 exports for the January to September 2021 period have been very strong at 112,929 MT, 18 percent higher than the same period in 2020. This strong shipment pace has pushed estimated exports to be at 107 percent of Australia's production with manufacturers depleting stocks to meet the strong world demand. These lower stocks are likely to curtail exports in 2022.

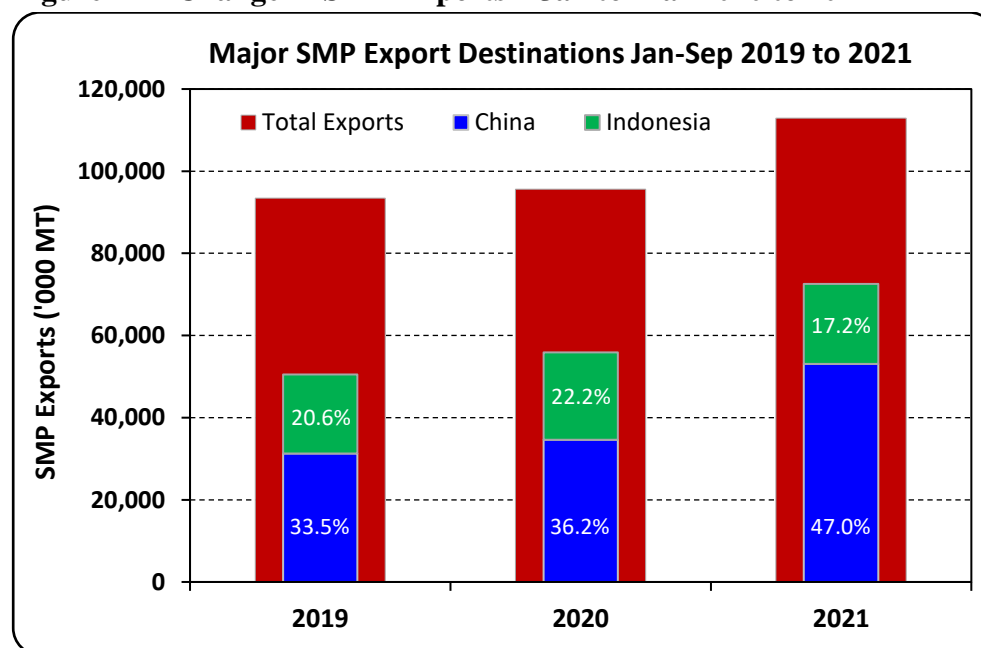
Prior to 2018, Indonesia was the major destination for Australian SMP exports. From 2018 to 2020, however, China took over as the main export destination and gradually increased its share. In 2021 exports to China have surged, and in January to September, China accounted for 47 percent of Australia's total SMP exports (see Figure 21). Australia exports to a further 20 or more countries and their volumes have all generally declined over recent years with China's share increasing.

Figure 20 – SMP Production and Export Trend



Source: PSD / FAS/Canberra

Figure 21 – Change in SMP Exports – Jan to Mar 2020 to 2021



Source: Australian Bureau of Statistics

Imports

FAS/Canberra forecasts SMP imports to remain stable at 15,000 MT in 2022, the same as the 2021 estimate. Imports of SMP are very low and as a result of being a large net exporter, variances of imports from year to year are minimal.

SMP imports in the January to September period in 2021 are 11,208 MT and with imports typically relatively stable from month to month, overall imports are tracking to reach the estimated 15,000 MT for the full year.

By far the primary source of SMP imports over many years have been from New Zealand, with lower volumes from Germany and Austria. In the January to September 2021 period imports from Germany and Austria have declined resulting in the share of imports from New Zealand now reaching three-quarters of overall imports.

Table 4 - Dairy, Milk, Nonfat Dry

Dairy, Milk, Nonfat Dry Market Year Begins Australia	2020		2021		2022	
	Jan 2020		Jan 2021		Jan 2022	
	USDA Official	New Post	USDA Official	New Post	USDA Official	New Post
Beginning Stocks (1000 MT)	55	55	54	53	0	18
Production (1000 MT)	155	154	165	150	0	150
Other Imports (1000 MT)	16	16	15	15	0	15
Total Imports (1000 MT)	16	16	15	15	0	15
Total Supply (1000 MT)	226	225	234	218	0	183
Other Exports (1000 MT)	129	129	150	160	0	120
Total Exports (1000 MT)	129	129	150	160	0	120
Human Dom. Consumption (1000 MT)	43	43	45	40	0	40
Other Use, Losses (1000 MT)	0	0	0	0	0	0
Total Dom. Consumption (1000 MT)	43	43	45	40	0	40
Total Use (1000 MT)	172	172	195	200	0	160
Ending Stocks (1000 MT)	54	53	39	18	0	23
Total Distribution (1000 MT)	226	225	234	218	0	183
(1000 MT)						

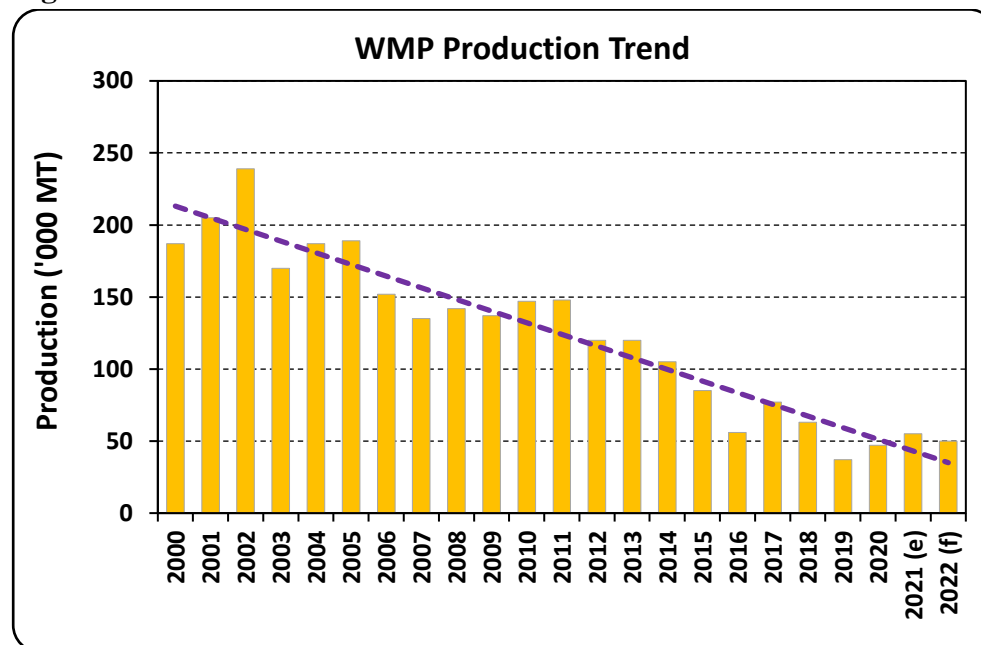
WHOLE MILK POWDER

Production

FAS/Canberra forecasts 2022 WMP production to decline to 50,000 MT from the 2021 estimate of 55,000 MT. This is despite the moderate increase in forecast milk production in Australia for 2022 as it is anticipated that manufacturers will focus on their longer-term trend of increasing cheese production.

The peak WMP production in Australia was in 2002 at 239,000 MT and has gradually declined to an estimated 55,000 MT in 2021 (see Figure 22). With Australian manufacturers channelling greater volumes of milk towards cheese production, the reduced volumes of WMP have been focused towards producing more specialized higher value powders such as infant milk formula.

Figure 22 – WMP Production Trend 2001 to 2022



Source: FAS/Canberra and PSD/Online

According to Dairy Australia data, production of WMP for the January to June 2021 period is significantly higher than for the same period in 2020. Taking account of seasonality of production, WMP production is on track to reach the 2021 estimate of 55,000 MT. WMP production in 2021 increased because of attractive prices and strong demand from China.

Consumption

FAS/Canberra forecasts WMP domestic consumption in 2022 to remain at 40,000 MT in line with the 2021 estimate. Due to the nature of the use of WMP in manufactured products, there has been no significant impact on consumption caused by the COVID-19 pandemic and there is no significant change in forecast consumption.

WMP is an important ingredient for a wide range of manufactured food products and it can be reconstituted to produce milk drinks, yoghurts and ice cream. In the food manufacture sector, it is used similarly to SMP in baking products, such as breads, cakes and biscuits, beverages, confectionaries, dry mixes and prepared foods. Of significant importance and differentiation from SMP, WMP is also used in the production of infant milk formula.

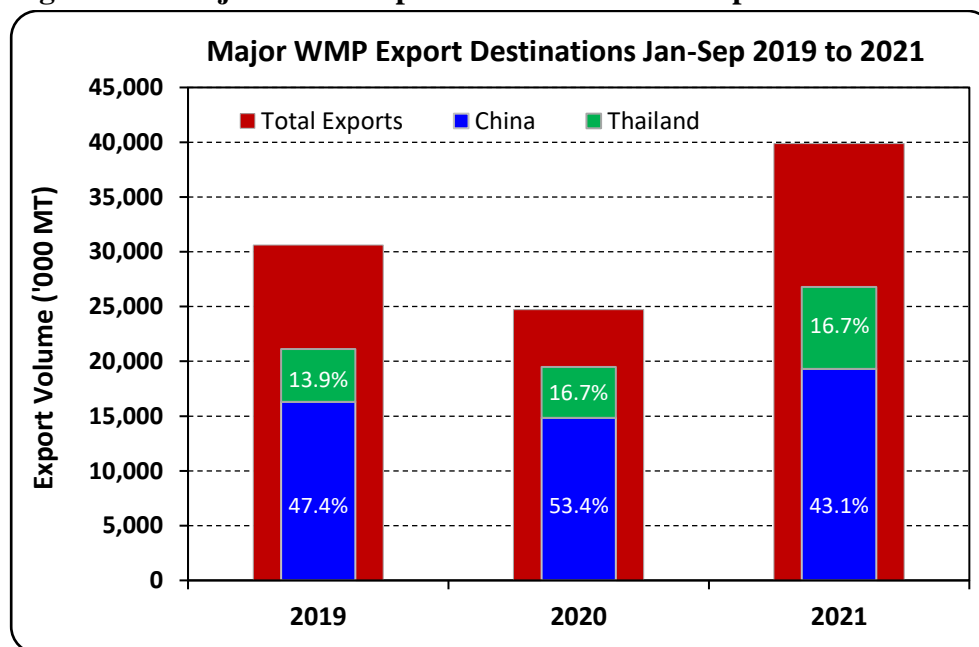
Trade

Exports

Exports of WMP in 2022 are forecast by FAS/Canberra at 55,000 MT, some 5,000 MT lower than the 2021 estimate. Similar to SMP, the lower forecast is not related to any significant change in forecast milk production but rather that exports in 2021 were particularly high as processors took advantage of high world market prices. WMP exports have spiked in 2021, and in the first nine months are up 61 percent compared to the corresponding period in 2020. This shifted Australia to become a net exporter of WMP. However, with relatively low WMP production, Australian manufacturers focus on producing higher value WMP predominantly for export, while imported product is primarily used as an ingredient in manufactured products.

In 2019 and 2020, when WMP production was the lowest on record, China accounted for around half of all exports for the January to September period (see Figure 23). In 2021, with an increase in WMP production the export volume to China, in the January to September period, have increased by 30 percent (around 3,000 MT). Thailand, the next largest export destination, has also increased by around 2,500 MT in 2021. Notably, exports to Bangladesh, Singapore, Malaysia and Indonesia have also increased considerably in January to September 2021 from the same period in the prior year.

Figure 23 – Major WMP Export Destinations Jan-Sep 2019 and 2021



Source: Australian Bureau of Statistics

WMP exports for the January to September 2021 period are at 39,868 MT and in the last three months exports typically accelerate following the spring calving milk production peak. This along with anticipated strong demand and high world prices for the final three months is expected to result in overall exports reaching the estimated 60,000 MT.

Imports

FAS/Canberra forecasts WMP imports of 40,000 MT in 2022 in line with the upward revised estimate for 2021. The majority of WMP imports to Australia are from New Zealand, the volume and proportion of which have crept up in recent years to now being in excess of 90 percent. Imports from New Zealand for the January to September 2021 period are at 96 percent of the total imports for that period.

The FAS/Canberra import estimate of WMP in 2021 is 40,000 MT, an upward revision. This is on the basis of the high import rate in the first nine months of 2021 with the result for the January to September period already at 28,252 MT. Similarly to exports, the rate of imports in the last three months of the year are typically at a higher rate due to the majority of imports being from New Zealand and this period being on the back of their spring milk production peak period.

Table 5 - Dairy, Dry Whole Milk Powder

Dairy, Dry Whole Milk Powder Market Year Begins Australia	2020		2021		2022	
	Jan 2020		Jan 2021		Jan 2022	
	USDA Official	New Post	USDA Official	New Post	USDA Official	New Post
Beginning Stocks (1000 MT)	24	24	37	37	0	32
Production (1000 MT)	47	47	55	55	0	50
Other Imports (1000 MT)	43	43	30	40	0	40
Total Imports (1000 MT)	43	43	30	40	0	40
Total Supply (1000 MT)	114	114	122	132	0	122
Other Exports (1000 MT)	37	37	60	60	0	55
Total Exports (1000 MT)	37	37	60	60	0	55
Human Dom. Consumption (1000 MT)	40	40	40	40	0	40
Other Use, Losses (1000 MT)	0	0	0	0	0	0
Total Dom. Consumption (1000 MT)	40	40	40	40	0	40
Total Use (1000 MT)	77	77	100	100	0	95
Ending Stocks (1000 MT)	37	37	22	32	0	27
Total Distribution (1000 MT)	114	114	122	132	0	122
(1000 MT)						

Attachments:

No Attachments