

Dehoust, Jakob; Albrecht, Ernst; Balkhausen, Oliver

Article

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World Agricultural Commodity Markets in the Marketing Year 2021/22

Jakob Dehoust, Ernst Albrecht and Oliver Balkhausen
Archer Daniels Midland Company, Hamburg

1 Introduction

Agricultural commodity markets continued to be volatile in 2021 at an overall high price level. While the Covid-19 pandemic is still ongoing and affecting the working and social lives of most people, the impact on agriculture commodity markets remains limited. However, unlike in 2020, the pandemic in 2021 had an impact on the supply side. Measures to contain the spread of Covid-19 was causing a shortage of labor in Southeast Asia and thus reduced harvest in palm oil plantations. Fresh fruit bunches (FFB) that were ready to harvest rotted in the plantations, resulting in lower than expected palm oil production. Apart from this impact, demand for beer and thus malting barley continues to be negatively affected by the pandemic. Bio-fuels, both ethanol and biodiesel, were also affected, but to a much lesser extent than in 2020. For the rest of the market it remains true, that trade with agricultural raw material turned out to be very resilient against the global crisis of the pandemic.

Overall, the high price level of 2021 was the result of strong international demand, in which China was again an important factor, as well as supply problems for a number of commodities due to lower crops in several countries.

The Chinese hog herd further recovered after African Swine Fever (ASF) had reduced the herd by 46% in 2019. The US Department of Agriculture (USDA) forecasts 2022 pork production at 49.5 MMT (Million Metric Tons), which compares to 48.9 MMT last year and 36.3 MMT in 2020. The re-increase in feed demand continues to widen the gap between domestic grain and oilseed supply and demand. Consequently, Chinese import demand for grains remains very high and has a major impact on global markets. For soybeans, however, the growth of import demand seems to slow down and might even turn negative.

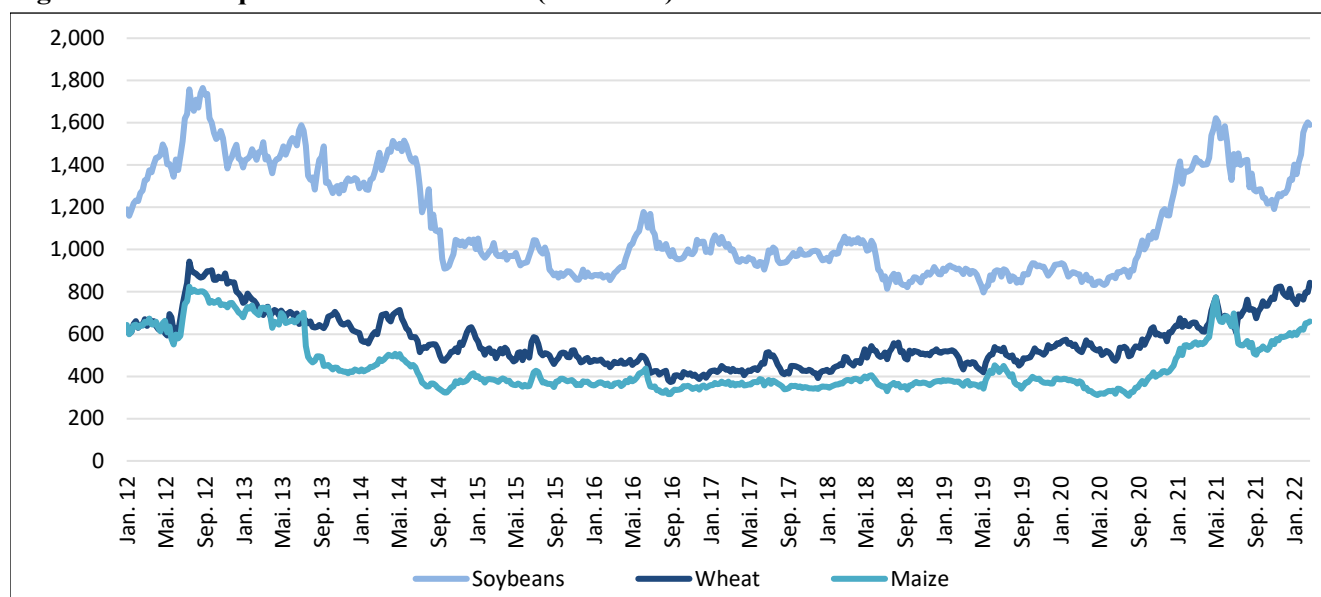
On the supply side, the Canadian Prairies and the Northern Plains in the USA faced a severe drought in spring and early summer of 2021, resulting in significantly lower wheat, barley and rapeseed crops. Some eastern growing regions of Russia as well as Kazakhstan were also hit by drought conditions and, there-

fore, both countries produced less wheat and barley. In South America, the La Niña weather phenomenon caused abnormal weather in late 2020 and in the first month of 2021, negatively impacting corn and soybean production in Argentina and corn production in Brazil. These production numbers still technically fall into the 20/21 crop year, but because they were harvested at the end of the crop year, they had a strong impact on the current marketing year. In addition, weather in late 2021 and early 2022 is also heavily influenced by another La Niña so that soybean and corn yields in Argentina and Brazil will again be negatively impacted.

In February 2022, a very different and for a long time unthinkable crisis entered the world stage. Russia attacked Ukraine which in addition to the suffering, destruction and loss of life, will have a major impact on global agricultural commodity markets. Exports from the Black Sea region will decline, at least in the short term, but at the time of writing, the full consequences are still very unclear.

All the above-mentioned factors led to a further increase of international prices of food commodities. In February 2022, the FAO Food Price Index rose to its all-time high in nominal terms and the highest value since 1974 in real terms. Between February 2021 and February 2022 food prices rose by 21% on average, in nominal terms. Thereof, the price index for cereals increased by 15% since February 2021, while the most remarkable increase of 37% was noted for vegetable oils. Quotations for the world's leading vegetable oil, crude palm oil, on the BMD (Bursa Malaysia) stood at 6,132 ringgit (~€1,320) per ton at the end of February 2022. This is even an increase of 70% compared to end of February 2021. At the CME (Chicago Mercantile exchange) (see Figure 1) maize was traded at \$6.98 per bushel on the last trading day of February, which is an increase of 26% compared to the quotation during February a year ago. The equivalent soybean quotation rose by 17% to \$16.44 per bushel. European wheat was traded at the Matif at €321.50 per ton (+31%) and rapeseed at €754.00 per ton (+54%). The exchange rate of the Euro against the US Dollar was quoted at 1.12 €/USD which reflects a

Figure 1. Cbot quotation - front month (US cts/bu)



Source: REUTERS (2022)

weaker European currency by 8% and partly increasing competitiveness of agricultural commodities in Euro terms, but also increasing import cost in Euro terms.

In the following chapter 2 the most remarkable developments in the grain sector are outlined, while chapter 3 will describe the dynamics of oilseeds, vegetable oils as well as the feed sector. Chapter 4 will finally contain concluding remarks as well as an outlook.

2 Grain Production and Consumption

The USDA estimates **global grain production** during the marketing year 2021/22 (July/June) at 2.784 BMT (billion metric tons), which is an increase of 67.0 MMT compared to the previous year. World grain

consumption is seen at 2.790 BMT and thus exceeds, similar to 2020/21, the production. As a result, world grain ending stocks are expected to decline by another 6.0 to 791.5 MMT during the crop marketing year. This results in a stocks-to-use ratio of 28.4% (2020/21: 29.2%), the tightest ratio since 2014/15 (see Table 1).

According to the USDA, global production of **wheat** (including durum) is estimated at 776 (776) MMT remaining at last year's record level. Yields varied widely around the world. Production in the EU has recovered to 138.9 (126.9) MMT, a production very similar to 19/20 again. This includes 7.8 (7.5) MMT of durum. The production recovery in the EU has been a combination of a higher area and yields. The area in France and North-Western Germany was back to an average scale, after excessive rains in the fall of 2019 had limited plantings for the 20/21 crop year. Yields have been higher in several coun-

Table 1. World grain supply and demand (MMT)

	2012/2013	2013/2014	2014/2015	2015/2016	2016/2017	2017/2018	2018/2019	2019/2020	2020/2021	2021/2022
Beginning stocks	469	480	580	676	738	803	821	809	815	798
Production	2,296	2,512	2,560	2,519	2,668	2,619	2,631	2,678	2,717	2,784
Imports	309	355	371	391	402	424	416	436	475	492
Supply	3,074	3,347	3,511	3,586	3,809	3,846	3,869	3,923	4,007	4,074
Exports	299	374	395	378	437	422	435	448	484	511
Consumption	2,284	2,412	2,463	2,457	2,604	2,601	2,643	2,673	2,734	2,790
thereof feed	812	873	902	915	986	982	1,002	1,028	1,062	1,090
Ending stocks	480	580	676	738	803	821	809	815	798	792
Stocks-to-use-ratio	21.0%	24.0%	27.5%	30.1%	30.8%	31.6%	30.6%	30.5%	29.2%	28.4%

Source: USDA (2022)

tries, but in particular, Romania and Bulgaria stand out with yields exceeding previous records by far. The total harvested area in the EU is reported at 24.1 (23.0) million hectares, while yields are at 5.76 MT/HA (metric tons per hectare) and thus well above the 5-year average of 5.43 MT/HA. The quality of the 2021 crop in the EU was good in most countries, with the exception of France. Strong rains right before and at the harvest were bad for test weight and, moreover, resulting in below average protein values. In the UK the wheat production rebounded to 14.0 (9.7) MMT. Like in France and parts of Germany, the area was back to levels of 2019/20 at 1.8 (1.4) million hectares. Yields were also up to 7.8 (7.0) MT/HA.

In contrast to the EU farmers in Russia harvested wheat from a smaller area of 27.6 (28.7) million hectares than in the previous year. The national yield was also lower and reported at 2.74 (2.98) MT/HA. However, it is important to differentiate between the regions here: in Southern Russia, which is largely responsible for the country's export surplus, the production recovered from the drought-related losses a year before. In production areas in the Centre and East of Russia, which had very good weather and a record harvest 2020, the weather in 2021 was less exciting again and in some parts even too dry. Thus, farmers have collected average to below average yields and consequently the national yield decreased year over year. Total Russian wheat production is estimated by the USDA at 75.5 (85.4) MMT. In Ukraine the harvested area increased to 7.4 (6.8) million hectares, also because a mild winter has kept winterkill at an extremely low level. The weather in spring and summer was very favorable and thus wheat output is estimated at a record 33.0 (25.4) MMT.

The Canadian prairies were hit by a massive drought between March and July and consequently the Canadian wheat crop is down to 21.7 (35.2) MMT. Yields at 2.34 (3.52) MT/HA have been the lowest since 2007/08. The harvest of spring wheat in the USA was also very much affected by drought conditions and higher winter wheat production could not offset these losses. Total US wheat production is thus estimated at only 44.8 (49.8) MMT.

In the southern hemisphere, harvest has been concluded in early January. In Australia almost all major growing areas saw close to perfect conditions for grain crops over the entire growing cycle. For this reason in combination with attractive wheat prices farmers further expanded seeding and planted an area of 13.1 (12.9) million hectares. The USDA reports a

yield of 2.60 (2.58) MT/HA and thus the production is even exceeding last year's record at 34.0 (33.0) MMT. The weather in Argentina was also favorable for wheat crops and thus the production estimate is up year over year at 20.5 (17.6) MMT.

Global trade is driven by continued strong demand for milling wheat. Demand is particularly strong from MENA (Middle East and North Africa). Turkey, Iran and Iraq have been struggling with severe drought and are forecast to import 21.1 (12.5) MMT of wheat in order to fill the domestic supply gap. These volumes would represent a new record high. Morocco also needs to import large quantities of wheat to replenish domestic stocks after two disappointing crops. Last but not least, Pakistan will be a major wheat importer for the second year in a row at 2.2 (3.6) MMT, also trying to replenish domestic stocks after two disappointing crops in 2019 and 2020. In China, wheat imports are regulated by an annual import quota of 9.6 MMT, 10% of which is for private market participants and 90% for state-owned enterprises. Until two years ago, state-owned companies used only about one-third of the available import quota, while private market participants always used their quota in full for a successful arbitrage of high quality wheat from North America. Last year, China already fully utilized its import quota, and the same is expected for this marketing year. China's domestic grain reserves have been declining in recent years and the government is striving for a high degree of self-sufficiency and therefore wants to build strategic reserves.

Given the fact that production losses in Canada and the USA were substantial, the USDA estimates both countries to export much less this season. Canada is forecast to export 15.2 (26.4) and the USA 22.0 (26.3) MMT only. Even with these reductions, ending stocks will fall quite significantly. For Canada the expected carry-out of 3.1 (5.7) MMT would in fact be the lowest level recorded in the USDA database, which is reaching back to 1960. Consequently, the international demand for Australian wheat is seen very strong for the second year in a row. Australian exports are estimated at 25.5 (23.8) MMT. With the crop recovering, also EU wheat is very competitive on the international markets. However, the USDA estimate of EU exports of 37.5 (29.7) MMT should be seen as the maximum export potential, which results in a minimum pipeline requirement of ending stocks of 9.9 (10.9) MMT only. The USDA was still forecasting Ukrainian exports for the whole marketing

year at 24.0 (16.9) MMT in February. Between July and February around 18.0 MMT left the country, but due to the war it is unclear, if and how much more wheat can be exported before the end of the marketing year. Most attention, also before the Russian assault on Ukraine, was and is given to Russia. Not only because Russia became the biggest wheat exporting country within the last decade, but because Russia continued the export duty scheme, introduced in early 2021, into the 2021/22 marketing year. A floating tax of 70% of the difference between the fob price per ton and \$200/MT is charged since June 1st. The USDA estimates total exports at 35.0 (39.1) MMT, of which roughly 75% were shipped by the end of February. Much like for the Ukraine it is unclear how much of the remaining around 9 MMT, to match the USDA forecast, will actually be exported until end of June. At the end of February and also in the beginning of March, Russian exports via the Black Sea were hampered due to the acts of war ongoing there and also shippers unwilling to send vessels in this region. Indian exports for 2021/22 are seen at 7.0 (2.6) MMT and are thus noteworthy. Large domestic crops, resulting in some stock building over the last couple of years, made Indian wheat competitive in several Asian destinations.

World wheat consumption is estimated at 788 (783) MMT. Thereof, Chinese feed use is estimated at 35 (40) MMT and thus almost twice as high as the average feed use between 2016/17 and 2019/20. On a global scale, the USDA estimates a further decrease of stocks to 278 (290) MMT. This is equivalent to a stocks-to-use ratio of 35.3 (37.0) %. In this context, it is worth to note that 60% of world stocks are located in China and India, where an annual decline in stocks of 4 MMT is expected by the USDA.

World **maize** production is estimated at 1.205 BMT and thus to be 82 MMT above the previous year's level. The better harvest in the USA accounts for a major share of the additional supply. US farmers had expanded the area to 34.6 (33.3) million hectares and the national yield of 11.1 (10.8) MT/HA was setting a new record. Hence, the maize production of 383.9 (358.4) MMT for the 21/22 marketing year is very close to the previous record volume, set in 2016/17. In Ukraine, the production is also much better than in the drought-impacted previous year and as well setting a new record of 42.0 (30.3) MMT. Nearly perfect growing conditions led to an increase in yield up to 7.9 (5.6) MT/HA. Heavy rains in late summer and autumn delayed the harvest, but this did not ap-

pear to have a major negative impact on yields. In the EU the maize harvest of 70.0 (67.1) MMT was up year over year.

Since the beginning of the year, the focus regarding crop production is on South America and similar to last year it is under the impression of the weather phenomenon La Niña. As a consequence, the weather in Argentina was too hot and dry in December and January. Since February, conditions improved but corn yields have most likely been affected negatively. For this reason, the USDA forecasts the Argentinian maize yield at a similar level as last year at 7.94 (7.92) MT/HA. However, Argentine farmers increased the maize area to 6.8 (6.5) million hectares and thus the output is seen higher compared to last year at 54.0 (51.5) MMT. For Brazil a crop forecast of 114 (87) MMT is anticipating a rebound after last year's crop failure. Besides the further increase of the maize area to 20.8 (19.9) million hectares, the USDA expects the yield to increase back to 5.48 (4.37) MT/HA, which is close to the 19/20 level. Last year's crop was severely impacted by the late harvest of the soybeans and the resulting delay in planting of the maize crop. This shifted the critical phases of crop growth to the drier months of May and June. In some parts of southern Brazil, frost in June was also impacting yields. This year, the soybean harvest as well as maize planting, is occurring in a much more favorable window of time, so the current USDA forecast seems not overly optimistic. Ultimately, however, the weather in March, April and May will decide.

The major part of the Brazilian maize crop will only be available at the end of July. For this reason, global trade mainly depends on the export supply of Argentina and the USA until then. Exports are estimated at 39.0 (40.2) MMT for Argentina and at 62.0 (69.9) MMT for the USA. In its February report, the USDA estimated Ukrainian exports for the marketing year at a record 33.5 (23.9) MMT. In light of recent events, it is clear that this figure will not be reached. By the end of February, close to 20.0 MMT had already left the country; that further volumes will be added before the end of the marketing year seems highly unlikely at the time of writing.

Domestic feed use in the USA is estimated to slightly increase to 143.5 (142.3) MMT, as livestock inventories are seen relatively stable and alternative feed grains such as barley or wheat are seen relatively scarce. The biggest impact of Covid-19 on the supply and demand of grains was observed on biofuel production. This is inherent with the collapse of the over-

all fuel demand, while the mandate to blend biofuel is kept stable. The beginning of the pandemic in 2020 had the strongest effect on fuel and thus biofuel demand, but also in the marketing year 2020/21 ethanol production did not completely recover to pre-pandemic levels. For the 2021/22 marketing year the USDA estimates a stronger recovery of maize use for ethanol to 135.3 (127.7) MMT. This compares with 136.6 MMT of maize used for ethanol production during the marketing year 2018/19. The above described estimates for production, exports and domestic use in the USA result in a carry-out of 39.1 (31.4) MMT. The USDA is forecasting stocks to grow again after last year's very low level, but this would be the second lowest stock in the past 8 years. With a potential increase of exports from the USA, due to the drop out of Ukraine as exporter, maize stocks in the USA might become as tight as in the previous year.

World maize trade continues to be strongly influenced by China's high import demand. Traditionally, the Chinese government regulated maize imports by a quota of 7.2 MMT. Thereof, not much more than the 2.88 MMT for private market participants has been used per annum during recent years. During the year 2020, the Chinese government obviously reacted to very high domestic maize prices of up to \$400/MT and opened the market for more imports. As a result, China imported a record 29.5 MMT of maize in 2020/21 and imports of 26.0 MMT are also expected in 2021/22. This suddenly makes China the largest maize importing country, importing nearly twice as much as the EU, Japan and Mexico, the previous top-3 importing countries. The USA benefits the most from China's elevated hunger for maize imports. Almost 75% of China's imports are expected to come from there. Most of the rest will come from Ukraine. However, exports from Ukraine to China will, of course, also be affected by the war. Between September and February between 5 to 6 MMT of maize shipments already left Ukraine with destination China. Besides this, import demand of other destinations, especially in South-East Asia, is also seen high.

World maize consumption is estimated at 1.195 (1.137) BMT. In contrast to wheat, world ending stocks for maize are forecast to slightly increase by 10 to 302 (292) MMT. However, due to the strong consumption increase this results in a stocks-to-use-ratio of 25.3 (25.7) %, the lowest since 2013/14.

Also sorghum and barley remain in the focus of Chinese buying activity. The USDA reckons with

imports of 10.3 (8.7) MMT of sorghum and 10.5 (12.0) MMT of barley. At the same time, because of significant production losses in Canada with a crop of only 6.9 (10.7) MMT, Russia with 17.5 (20.6) MMT, the USA with 2.6 (3.7) MMT and Kazakhstan with 2.4 (3.7) MMT, world barley production is down 14 to 146 (160) MMT year over year. Due to the relatively strong feed demand and a slow recovery of malt production after the pandemic related setback, global barley stocks are estimated at 16.7 (20.9) MMT, the lowest level since 1983/84!

3 World Market for Oilseeds, Vegetable Oils and Oilseed Meals

3.1 Oilseeds

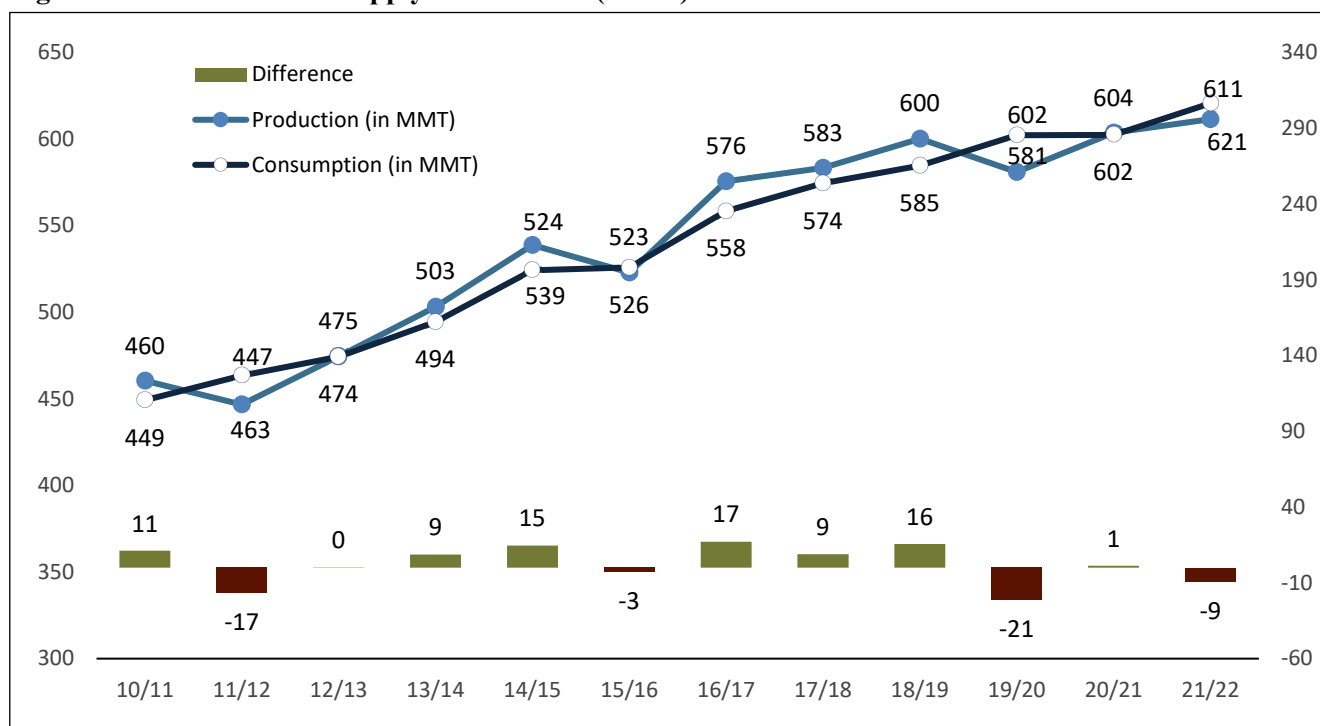
According to the USDA, the world production of the seven most important oilseeds (soybeans, rapeseed, sunflower seed, peanuts, cottonseed, palm kernels and copra) is expected to be around 611.5 MMT in the 2021/22 marketing year, 7.9 MMT above previous year's level of 603.6 MMT (see Figure 2). The reason for the higher production volume is an increase in cultivated area by remarkable 11 million ha compared to the previous year to 293.2 million ha. Yields are estimated at 2.09 MT/HA and thus slightly below last year's level of 2.12 MT/HA as well as the five-year average of 2.11 MT/HA.

Total oilseed consumption is expected to rise to a record 620.6 (602.4) MMT, of which 521.2 (508.3) MMT are processed in oil mills. This means that strong growth is estimated for consumption again, while last season was the first within well over 30 years for which no growth was noted. The growth rate is seen at 3.0% this marketing year, which is equivalent to the ten-year average. According to the USDA global ending stocks are expected to fall to 104.7 (113.9) MMT, the lowest level since 2015/16. The stocks-to-use-ratio would correspondingly fall to 16.9 (18.9) %, which is well below the 10-year average and a lower ratio was last seen in 2013/14.

The USDA estimates global production of **soybeans** in the 2021/22 marketing year at 363.9 (366.2) MMT. However, farmers in the USA produced a record crop of 120.7 (114.7) MMT in calendar year 2021. Soybeans were harvested on 34.9 (33.4) million hectares and the yield is reported at 3.46 (3.43) MT/HA.

The reason for the annual drop in global soybean production is the weather situation in South America, which was impacted by the weather phenomenon La

Figure 2. World oilseed supply and demand (MMT)



Source: USDA (2022)

Niña. Consequently, the weather has been extremely dry in southern Brazil, in major growing areas of Argentina and in Paraguay during crucial development stages from December 2021 until February 2022. The driest areas have received less than 20% of the historical average precipitation recorded during this time of the year. In Brazil, however, northern growing areas, such as Mato Grosso, have been favoured by a decent volume of precipitation. The USDA decreased its estimate of the Brazilian harvest from 139.0 to 134.0 (138.0) MMT in February and further downward revisions are likely. The area is seen at a record 40.4 (38.9) million hectares while the yield has been recently lowered to 3.32 (3.55) MT/HA and thus to a level, which is below the results of the previous five years. For Argentina, the USDA anticipates a relatively small area of 16.2 (16.5) million hectares only while the national yield is currently seen at 2.78 (2.81) MT/HA. This results in a lower production of 45.0 (46.2) MMT. In Paraguay, soybean production is expected at 6.3 (9.9) MMT. Harvesting activities in parts of Brazil have started at the end of January. In Argentina, the harvest will only begin in early April.

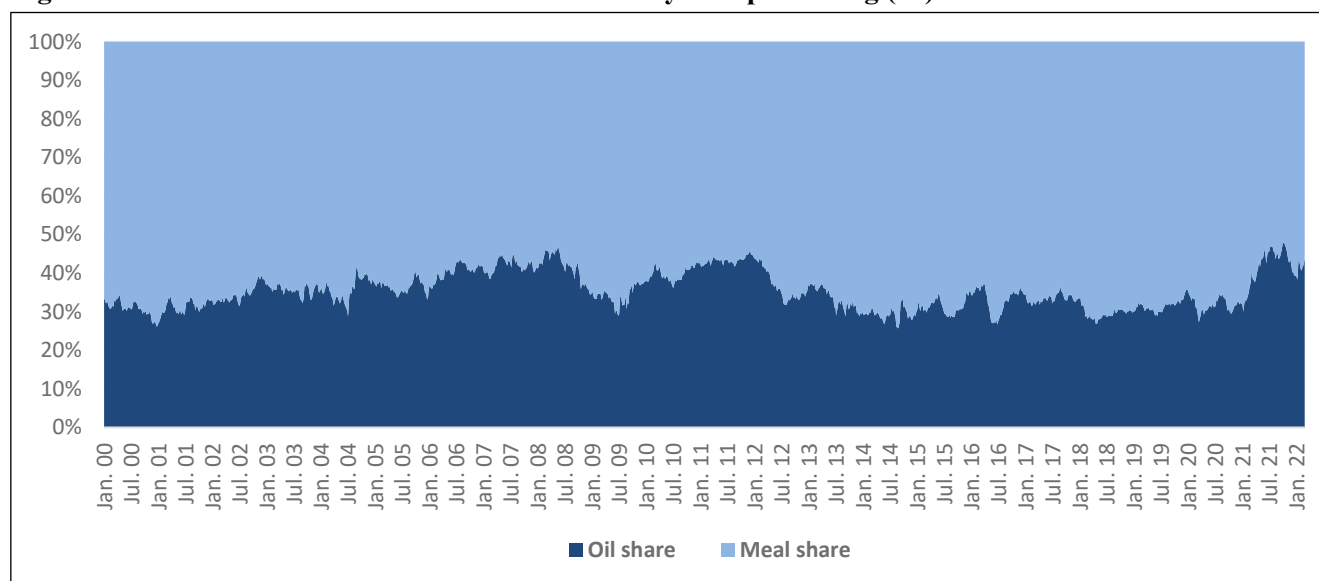
Worldwide soybean crush is expected to be at 320.2 (315.3) MMT. Taking into account the soybeans that are used either directly in feed or as food, global consumption of soybeans is expected to increase to 369.2 (362.7) MMT.

One of the main reasons for the significant increase in demand is the strong outlook for soybean crush in the USA. The USDA estimates an increase of 2.0 MMT to a record 60.3 (58.3) MMT. Major drivers for soybean processing are the demand for its products meal and oil, which will be enlightened in chapter 3.2 and 3.3. In Brazil and Argentina soybean crush is seen stable at 46.9 (46.8) MMT and 40 (40.2) MMT, respectively. 29.4 (29.5) % of worldwide soybean processing is observed to take place in China. Actual crush is estimated at 94.0 (93.0) MMT. This marks the smallest annual growth since the beginning of the century. Correspondingly, import demand is seen at 97.0 (99.8) MMT and means a decline on-year for the first time since the marketing year 2003/04.

However, the import demand from China is not expected to ease the tight supply and demand situation in major exporting nations. According to the USDA, Brazil will have the largest export programme of all time in the current marketing year, amounting to 90.5 (81.6) MMT. Exports of the USA are currently estimated at 55.8 (61.5) MMT. The latter only results in a negligible recovery of soybean ending stocks in the USA to 8.8 (7.0) MMT, while in South America ending stocks will likely decline substantially within this marketing year.

Consequently, global ending stocks are likely to fall to 92.8 (100.4) MMT, with the stocks-to-use ratio

Figure 3. Oil and Meal share of the revenues of soybean processing (%)



Source: REUTERS (2022)

falling to 25.0 (27.8) %, a level well below the five-year average of 29.1%.

Global **rapeseed** production is estimated to fall in the 2021/22 marketing year to 70.6 (73.2) MMT. The losses were mainly recorded in Canada as a result of the drought. Farmers had expanded the rapeseed area to 9.0 (8.3) million hectares. However, the yield is only estimated at 1.4 (2.3) MT/HA, which is equivalent to 60% of the five-year average. The production is thus reported at 12.6 (19.5) MMT, which reflects losses of more than 8 MMT compared to initial expectations. In contrast to the situation in Canada, farmers in the EU were able to harvest more rapeseed than a year earlier. The area has been expanded to 5.4 (5.2) million hectares and the yield of all member states combined is reported at 3.23 (3.15) MT/HA. This is the best yield since 2015. The crop is estimated at 17.4 (16.3) MMT. Thereof, the production in major growing areas in the north-west of the continent is described as stable, while the main increase in production was achieved in Romania, where the crop recovered from a failure the year before.

The USDA estimates EU crush down on-year at 21.2 (22.2) MMT. This depression of EU rapeseed processing is caused by limited supplies and not a decline of demand for the two products, oil and meal. Because of the lack of Canadian seed supply, EU imports since the beginning of the marketing year were only reported by the European Commission at 3.2 (same time as of last year: 4.4) MMT, as of 20th February 2022. Thereof, only 502,000 MT are from

Canadian origin and most likely still some left-overs of the 2020 crop, while no more shipments are expected to arrive. According to the USDA the EU imports 5.0 (5.8) MMT during marketing year 2021/22. This is only possible because the two other major origins of EU seed imports partly compensate the North American losses. Ukraine produced 3.1 (2020/21: 2.8) MMT of rapeseed and exports 2.7 (2.4) MMT, thereof at least 1.6 MMT to the EU. The vast majority of the rapeseed exports from Ukraine are executed between July and December so that the 2021/22 export program is not affected by the recent Russian invasion. In Australia, where harvesting has been finished in January 2022, rapeseed has been favoured by outstanding growing conditions. The USDA estimates production at 5.5 (4.5) MMT, while the Australian Agriculture Ministry (ABARES) forecasts this year's crop on 1st March already at 6.4 MMT and is usually used as the final benchmark for the USDA. However, exports of 4.4 (3.8) MMT are not seen up on-year by the same volume. This is because of the observation of very strong wheat export demand at the same time and logistical export capacity limits, which can be considered as a bottleneck in this context.

Not only the EU is dependent on rapeseed imports, but also China. Meanwhile it looks like the trade dispute with Canada is easing so that technically importers are able to purchase seeds in Canada again. However, according to the USDA, Canadian export potential is limited to only 5.3 (10.5) MMT. At the

same time a trade dispute with Australia has not been resolved yet so that the USDA estimates Chinese imports at only 1.9 (2.8) MMT. This is estimated to allow for a crush of 8.5 (10.4) MMT only.

Globally, rapeseed consumption is estimated at 72.3 (75.4) MMT. This results in very low ending stocks of 3.9 (5.6) MMT with an unusual high share located in Australia.

Global 2021/22 **sunflower** seed production is estimated at 57.3 (49.2) MMT and, thus, sharply up on-year. This is particularly due to very favorable growing conditions in the Black Sea Region where crops suffered from a drought the year before. In Ukraine farmers harvested sunflower seed on 6.9 (7.0) million hectares with a yield of 2.54 (2.01) MT/HA while in Russia the area is reported at 9.6 (8.3) million hectares and the national yield is estimated at 1.62 (1.59) MT/HA. The production is, thus, reported at 17.5 (14.1) MMT for Ukraine and 15.5 (13.3) MMT for Russia. For the EU the USDA is assuming a crop of 10.4 (8.9) MMT. And last but not least, a stable harvest of 3.4 (3.4) MMT can be expected in Argentina. The described harvest results allow for a significant expansion of sunflower seed processing in the major origins. Globally, the USDA estimates sunflower seed consumption at 57.0 (49.9) MMT. This would result in a slight recovery of ending stocks to 2.4 (2.1) MMT. Against the background of the most recent dramatic changes, crush capacity in the Ukraine is unlikely to be used as normal. Thus, much more seed availability by the end of the marketing year is a likely consequence.

The next two chapters give attention to the two products of oilseed processing. Following the price evolution described in the introduction, a relatively high oil share of the revenues when processing soybeans can be observed. In October 2021, the weekly oil share reached its highest value of 47.9 % in this century. Consequently, the meal contribution to the revenues of soybean crush was noted at a low of 52.1 %.

3.2 Vegetable Oils

The USDA estimates production of the nine major oils (soybean, rapeseed, sunflower, cottonseed, peanut, palm, palm kernel, coconut and olive oils) at 213.2 (206.4) MMT in the 2021/22 marketing year (October/September). Additionally eight vegetable as well as animal oils and fats (sesame oil, maize oil, castor oil, linseed oil, butterfat, lard, tallow and fish oil), are not included in the USDA forecast, account for an

additional production volume of around 36.6 (36.3) MMT, Oil World estimates.

Global consumption of the nine major vegetable oils will be about 210.3 MMT, according to the USDA, with a year-on-year increase of 4.9 MMT. This marks an annual growth of 2.5 %, which is higher than last year's growth of 1.7 % and the year before of 1.8 % but smaller than the average of 3.7 % recorded during the past 10 years. Thereof, the demand for use in food accounts for 74 % and industrial demand - consisting of consumption by biodiesel producers and the oleo-chemical industry - for 25 %. For the latter, almost no growth was generated during the last two years. The main reason is reduced mobility and, thus, no increase in demand of oils for biodiesel production. In 2021/22, the USDA expects an increase in demand of 1.6 MMT to 53.4 MMT. Although the demand of oil use for food was hit by Covid-19 as well, an ongoing growth has been noted during the last two years. For 2021/22, the USDA estimates global food use at 155.8 (152.3) MMT. This is equivalent to a growth rate of 2.3%, which compares to an annual 2.2% generated during the last two years, while the ten-year average is estimated at 3.3%. Overall, the demand growth is limited by the availability of oil supply, which is reflected in the steep increase of prices since the middle of the calendar year 2020. Depressed growth rates of food demand also indicate price elasticity of the food demand for vegetable oils. Regarding the described relatively high oil share of soybean processing the question arises if this should be seen as a short-term development, or if it can be expected to indicate a new trend. In this context, it is worth to note that airlines start to use so called Sustainable Aviation Fuel in order to reduce the carbon footprint of flying. The major feedstock is vegetable oil.

Among others, China is responsible for the rising demand, as it remains the world's largest consumer of vegetable oils with a total demand of 41.9 (40.7) MMT. The EU remains in second place in terms of total global consumption with consumption of 25.8 (25.7) MMT slightly above the previous year. India, the world's third largest consumer and largest importer of vegetable oils, recorded annual growth rates in consumption of more than 5% until 2015/16 and thus stronger increases than China. Since then, however, growth rates have stagnated. For the marketing year 2019/20 the USDA even reports a very slight decline of oil consumption to 22.0 (22.1) MMT. In 2020/21, 22.2 MMT were consumed in India, while 22.5 MMT are currently seen as likely consumption in 2021/22.

In contrast to China and the EU, a drop of per-capita edible oil consumption in India during the pandemic can be noted. The three largest consumers mentioned above account for a total of 90.2 (88.7) MMT or 43% of global consumption.

Palm oil continues to account for the largest share of global production of the nine most important oils, and the USDA estimates production in 2021/22 at 75.5 (73.0) MMT. However, this includes some hope that production will recover in Indonesia and Malaysia within the calendar year 2022. In 2021, harvesting activities suffered because of labor shortage and flooding, especially in Malaysia. Labor mobility was restricted because of Covid-19. For this reason, Indonesian workers could not return to Malaysian plantations after Ramadan festivities in Indonesia. In the end of 2021 flooding avoided access to plantations. Both led to a situation in which mature fruit bunches fell-down from the palm trees and rotted. For Malaysia, it is expected that there will no longer be any significant growth in production area. Production is estimated at 18.7 (17.9) MMT and thus expected to recover from the drought hit harvest of the previous year. However, it seems as if yields per hectare have reached a peak in the middle of last decade and are on a down trend since then. In Indonesia, production is expected to rise from 43.5 MMT to 44.5 MMT, mainly due to a further increase in area - although this would also be a below-average increase. The world's two largest producers are estimated to account for 83.7 (84) % of global production. This means that smaller producing countries along the equator in Asia, Africa and South America gain market share.

International demand for palm oil is expected to rise only slightly after the Covid-19 related dips in the previous two years. For India and China, imports are actually estimated below last year's relatively low level at 7.8 (8.4) MMT and 6.7 (6.8) MMT respectively. EU imports are estimated at 6.2 (6.0) MMT in marketing year 2021/22. The major driver for the relatively weak demand for palm oil is the extremely high price, mentioned in the introduction. Within the oil complex, palm oil is quoted at unusually high prices compared to soybean oil as well as sunflowerseed oil.

High palm oil prices are driven by the described production issues and strong domestic demand in the major origin not clear. USDA estimates that the domestic use increases to 16.0 (15.3) MMT in Indonesia, thereof food use to 6.6 (6.2) MMT and the usage for

industrial purposes to 9.1 (8.8) MMT. The latter is due to an improving fulfillment of the mandate to blend 30% biodiesel to diesel. The official goal of the government is to implement "B40". However, it does not look like those plans will be implemented within 2022 due to the very high palm oil prices. In Malaysia, the blending obligation is at 20% in 2022. USDA forecast Malaysian palm oil consumption stable at 3.4 (3.4) MMT, thereof 2.6 (2.6) MMT for industrial purposes.

The USDA estimates global demand for palm oil in the current marketing year at 75.6 (73.1) MMT. This should result in stable world ending stocks at 13.6 (13.5) MMT and a decline in stocks in Indonesia and Malaysia from a total of 6.0 MMT to 5.5 MMT. Due to soaring food inflation Indonesia implemented a new export policy, called Domestic Market Obligation. According to Reuters, each exporter is obliged to sell 20% of the export volume to the domestic food sector. Otherwise, the government does not grant any export license.

For **soybean oil**, the USDA expects an increase in worldwide production to 60.3 (59.2) MMT in the 2021/22 marketing year. Of the major soybean processing countries, only in the USA significant growth in oil production is expected. However, even the forecast increase in production to 11.9 (11.4) MMT is unlikely to result in any oversupply. Soybean oil use for industrial purposes is assumed to increase notably, reaching 4.9 (4.0) MMT. This is not only due to traditional biodiesel production, but also because renewable diesel production may increase substantially in 2022. Renewable diesel production capacity is even expected to exceed the esterification plant capacity of 1.7 billion gallons per year. This will create additional feedstock demand in the coming years. Soybean oil is likely to benefit most from this additional demand as the plants coming online in the next two years are located inland and thus in close proximity to soybean growing areas. Domestic use will leave less oil supply for exports so that although exports are only estimated at 646,000 (782,000) MT ending stocks are likely to decline to 942,000 (967,000) MT.

In South America reduced soybean oil supply is likely. The USDA, however, estimates soybean oil production in Argentina at 7.9 (7.9) MMT and in Brazil at 9.0 (9.0) MMT. In Brazil, the biodiesel mandate was gradually increased to 13% over the last years. Initially, the government intended to raise the blending requirement to 14% in March 2022. However, the Brazilian supply of soybean oil became so tight that the mandate had been reduced to 10% again this win-

ter. Exports are seen at 1.5 (1.3) MMT so that ending stocks would consequently be at 504,000 (529,000) MT only. Argentinian exports of 5.8 (6.1) MMT result in ending stocks of only 270,000 (270,000) MT.

Chinese soybean crush results in an oil production of 16.8 (16.7) MMT. Domestic consumption is estimated at 18.0 (17.8) MMT. In spite of a continuation of strong soybean oil imports of 1.1 (1.2) MMT Chinese soybean oil stocks are expected to become extremely tight at 500,000 (700,000) MT.

Global soybean oil consumption of 60.2 (58.9) MMT is expected to result in substantially lower reserves of 3.7 (4.4) MMT at the end of the 2021/22.

The global **rapeseed oil** production in the 2021/22 marketing year is estimated to fall to 28.3 (29.2) MMT. The main reason is a sharp decline in Canada to 3.5 (4.5) MMT. This is due to the drought related crop failure, which also had an impact on the availability of seeds in the European Union so that oil production of 8.9 (9.3) MMT is also seen smaller there. Chinese production is expected to remain unchanged at 6.2 (6.2) MMT. However, oil imports – mainly from Canada – are seen below last year at 1.6 (2.4) MMT. The three countries mentioned are the largest producers accounting for around 66% of global production.

In the EU, the USDA sees consumption in the biodiesel industry stable at 6.7 (6.7) MMT. In the spring of 2020, biodiesel consumption briefly plummeted by up to 50%, significantly easing the relatively tight EU rapeseed oil balance at that time. However, the biodiesel sector recovered since then in the EU.

The relatively strong global rapeseed oil consumption of 28.9 (28.4) MMT results in significantly declining global ending stocks of 2.6 (3.3) MMT only.

In contrast to rapeseed oil the USDA February report had forecast a strong recovery of global **sunflower oil** production in 2021/22. As a result of the very good harvest described in the oilseed section (chapter 3.1.) of this article the USDA estimated production at 22.0 (19.1) MMT and thus almost 3 MMT above the previous year. Worldwide consumption was seen at 20.5 (18.5) MMT, while exports were estimated at 6.7 (5.3) MMT for Ukraine and 3.8 (3.2) MMT for Russia. The combination of Ukrainian and Russian exports account for 78% of global sunflower oil trade. However, the Russian invasion of Ukraine on 24 February has a dramatic impact not only on Ukraine but also on global consumption of sunflower oil. Ukrainian crushing plants came to a stand-still as well as all export activities. Monthly sunflower oil production in

Ukraine was forecasted at more than 700,000 MT per months during March, April and May. From October until February, Ukraine had exported 2.9 MMT of the above-mentioned USDA expectation of 6.7 MMT published in February, before the Russian outbreak of the war. Imports of the major destinations were estimated at 2.7 (2.0) MMT for India, 2.2 (1.6) MMT for China and 2.1 (1.6) MMT for the EU. Sunflower oil was the cheapest oil compared to the prices for other vegetable oils and is expected to substitute these, above all rapeseed oil.

3.3 Oilseed Meals

According to the USDA, global production of the seven most important oilseed meals (soybean, rapeseed, sunflower, peanut, palm kernel, cotton and copra) is expected to rise in 2021/22 to 351.1 (343.7) MMT. This is mainly driven by USDA's expectation of a growth in global meat production of around 14 MMT to 266.4 MMT. The typical ongoing growth in global meat production and consumption was interrupted during the previous two years because of the outbreak of ASF in China. However, the hog herd recovered. Consequently, 12.3 MMT of the above-mentioned worldwide growth is seen in China.

Most of the increase is due to the rise in soy meal production, the most important oil meal. Soy meal production is expected to increase by 3.3 MMT to 247.5 MMT, **sunflower meal** by 1.9 MMT to 22.7 MMT while **rapeseed meal** production is seen down on-year by 800,000 MT to 40.3 MMT.

4 Outlook

This article describes that major grain and oilseed related markets continue to be tight in the marketing year 21/22. According to the USDA, an increase in production can be noted for both commodity groups, however consumption is expected to exceed production for grains as well as oilseeds. The stocks-to-use ratio for major grains declines to the lowest level since 2014/15 and for oilseeds since 2013/14. When considering the world supply and demand situation only with Chinese import demand and without stocks located in China, the situation appears even tighter in terms of food security.

Until the end of 2021, the usual uncertainty on weather related production changes, possible demand rationing due the high prices and also the impact of high energy prices and thus high input cost for agri-

culture production were the main focus for the upcoming marketing year. However, in the first weeks of 2022 the tension in the Black Sea area and the build-up of Russian troops along the Ukrainian border became more and more a concern, not only for agricultural commodity markets, of course. Since February 24th, 2022 the Black Sea region came into the market focus for all the wrong reasons. Russia started a war on Ukraine. Both countries are major exporters of wheat and sunflower oil and Ukraine also is an important corn exporter, the war has a tremendous impact on agricultural commodity markets. As already mentioned in the chapters before, at the time of writing the medium to long term consequences are still very unclear. With March exports from the Ukraine basically not existent and also Russian exports for the month significantly below previous levels, it becomes less likely that the USDA export predictions will be reached.

With regards to the upcoming crop year, any forecast at this stage is even more uncertain than it would be in normal times. It remains unclear how the current acts of war impact spring planting in the Ukraine, with spring barley planting usually starting in March and planting of corn and sunflower taking place in April and May. There is a high chance, that less area will be planted and less fertilizer and pesticides will be applied, but to what extent exactly will be determined very much by actions not known at the time of writing. If Ukraine would not be able to harvest their wheat, corn and sunflower crops, this would leave a considerable gap in the global markets for these products. Prices have reacted to this fear in the past weeks and are as high as in 2012/13 or even higher.

Usually high prices are the best solution for high prices. This means that high prices can lead to demand rationing and are an incentive for farmers to plant as

much as possible and also use marginal land, which has not been used during recent years. In the EU as well as in the USA winter wheat plantings have been further increased during last autumn. In spring, a strong competition between major grains and oilseeds for arable land is expected. However, if Ukrainian farmers will not be able to plant or harvest on a huge share of their land, the gap in supplies can probably not be offset by production increases in other regions alone.

Demand rationing would have to play a role as well. The amount of staple foods like wheat/wheat flour etc. produced in the rest of the world should be enough to meet global demand, but redirection of trade flows and thus price increases are likely. However, demand from the livestock sector probably needs to be curbed and thus less meat consumption in many regions of the world becomes likely. While the EU faced an overall trend of less livestock production even before the recent price hikes. Now the livestock sector in Asia and maybe also the Americas might also face more difficulties and a reduction there might be needed to balance global supply and demand of feedstuffs. To minimize the needed rationing of consumption, favorable weather and thus large crops in the major growing areas (besides Ukraine) will be very crucial during the vegetation period ahead.

Kontaktautor:

JAKOB DEHOUST

Archer Daniels Midland Company

Ferdinandstr. 5, 20095 Hamburg

e-mail: jakob.dehoust@adm.com