3 Cereals

This chapter describes recent market developments and highlights medium-term projections for world cereal markets for the period 2021-30. Price, production, consumption and trade developments for maize, rice, wheat and other coarse grains are discussed. The chapter concludes with a discussion of important risks and uncertainties that might affect world cereal markets over the next ten marketing years.

3.1. Projection highlights

Cereal markets in the 2020/2021 marketing year were more dynamic than in previous years. While global stocks were high at the beginning of the season, lower harvests in some major producing countries combined with logistical bottlenecks, temporary export restrictions, and a substantial increase in feed grain demand by the People's Republic of China (hereafter "China") as its pork sector recovers from the outbreak of African Swine Fever (ASF), pushed cereal prices to levels not witnessed since 2013. *The OECD-FAO Agricultural* Outlook assumes this boost, largely driven by maize, will be a short-term phenomenon and that global supply and trade will return to past trends as of 2022.

Over the next ten years, a higher share of global cereal production will originate from yield growth as area expansion is expected to become more limited. Yield improvements are assumed to result from several factors: improved and more widely accessible seed varieties; efficiency gains in the use of inputs; and better agricultural practices. However, certain factors such as increased environmental concerns, limited access to new technologies, and a lack of investment could constrain output growth. Globally, average cereal yield growth is projected to be about 1% p.a.

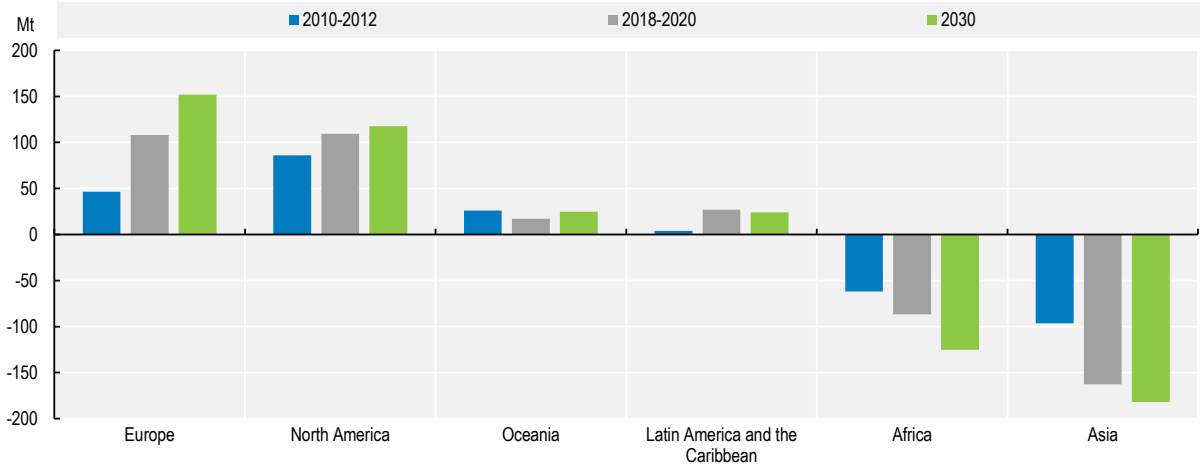
Over the next decade, cereal production is expected to increase by 336 Mt, reflecting gains made primarily in major grain-producing countries. More than 50% of the global production increase in wheat will come from India, the Russian Federation (hereafter "Russia"), and Ukraine. For maize, the United States, China, and Brazil will account for more than half of the expected production increase. For other coarse grains (barley, oats, rye, sorghum, millets, and other cereals), Russia, Ukraine, Ethiopia, and India are the key producers expected to increase production, while India, China, and Thailand are expected to be the main contributors to the global production increase in rice.

Over the medium term, cereal demand growth should be moderate compared to the previous decade for three reasons. First, growth in feed demand is projected to slow down; second, the increase in cereal demand for biofuels and other industrial uses is projected to level off over the coming decade; and third, direct human per capita consumption of most cereals has reached saturation levels in many countries. Nevertheless, population growth will increase global cereal food consumption in some regions; wheat and rice in particular are expected to remain important components of diets in Asia, while millet, sorghum and white maize will remain staple food commodities in Africa. Rice will play an increasingly important role in African diets.

Globally, about 17% of cereal production is traded internationally, with shares for single commodities ranging from 9% for rice to 25% for wheat. The share for total cereals is projected to increase to 18% by 2030, largely due to increased trade in rice. Rice will nevertheless remain a thinly traded commodity. In volume terms, net cereal surplus and deficits show a clear regional pattern (Figure 3.1). However, these patterns differ for single commodities. For example, Asian countries have a larger surplus in rice, and Latin America exports larger shares of maize but imports more wheat.

World cereal trade is projected to increase by 21% to reach 542 Mt by 2030. Russia surpassed the European Union in 2016 to become the largest wheat exporter and is expected to increase its lead throughout the outlook period, accounting for 22% of global exports by 2030. Concerning maize, the United States will remain the leading exporter, followed by Brazil, Ukraine, Argentina, and Russia. The European Union, Australia, and the Black Sea region are expected to continue to be the main exporters of other coarse grains. India, Viet Nam and Thailand will continue to lead global rice trade, but Cambodia and Myanmar are expected to play an increasingly important role in global rice exports, whilst exports by China will remain above the levels observed between 2010 and 2016.

Figure 3.1. Cereal net trade by continent



Note: Europe includes the Russia, Ukraine and Kazakhstan
Source: OECD/FAO (2021), "OECD-FAO Agricultural Outlook OECD Agriculture statistics (database)", http://dx.doi.org/10.1787/agr-outl-data-en.

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Under the current *Outlook* assumptions, all cereal prices are expected to decrease from current levels for the next two marketing years. Thereafter, they will resume their long-term trend, a decrease in real terms, over the outlook period. The responsiveness of cereal prices to recent trade disruptions, animal diseases, production variability, and economic crises has shown their potential for volatility and countries are preparing various strategies to prepare for future disruptions. For example, some are building stocks or regulating exports, which could alter the trajectory of prices over the next two years. China's feed demand will remain an important element for future cereal markets. While this *Outlook* assumes maize imports to return to levels defined by the tariff rate quota (TRQ) over the outlook period, any change in this assumption would shift grain markets. Grain prices could also become more volatile given the increasing participation in global grain markets of the Black Sea region, where production tends to be more volatile.

3.2. Recent market developments

Over the past seven years cereal prices have been relatively stable, but they increased significantly in 2020/2021. The impact of the COVID-19 pandemic, however, on cereal markets was relatively modest, as the few cases of restrictions placed on labour or the slowdown in transportation were outweighed by a generally resilient supply chain and an upswing of direct human consumption of staples.

Grain prices increased sharply towards the end of the 2020 calendar year and continued to rise during the marketing season. The main driver of this increase was the large maize import volumes by China which could reach record levels in 2020/2021 for several reasons: the gradual rebuilding of pig herds following the outbreak of ASF, improved trade relations with the United States, and stagnant domestic maize production.

This price increase was further accentuated as global production did not increase as much as in previous years. Wheat production in the European Union was, for example, the lowest in ten years and decreased in Argentina for the first time in five years.

The surge in grain prices contributed to higher food price inflation in many countries, especially those where the negative economic impacts of the pandemic were already more pronounced.

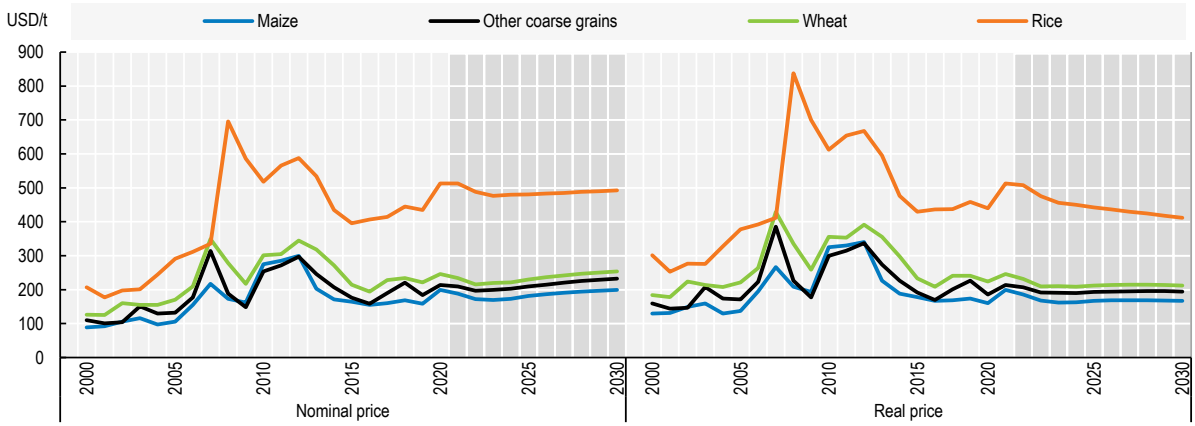
3.3. Prices

The world wheat price, as measured by the benchmark US wheat No. 2 Hard Red Winter (fob), was USD 245/t in 2020, the highest since 2014. Over the outlook period, wheat prices are projected to increase to USD 253/t by 2030 due to average harvest expectations and moderate growth in exports and food use.

The world maize price, as measured by the benchmark US maize No. 2 Yellow (fob), averaged USD 199/t in 2020, the highest level in six years; however prices are expected to revert back to trend over the next three years to USD 169/t by 2023. Over the medium term, declining stocks combined with strong global feed demand will support maize prices, reaching nearly USD 200/t by 2030 in nominal terms.

The average world market price for other coarse grains, as measured by the price for feed barley (fob. Rouen) was USD 214/t in 2020, slightly below the historical peak of 2018. By 2022, the world market price for other coarse grains should decrease to USD 197/t, thereafter recovering to reach USD 232/t by 2030. The medium term recovery is expected to be sustained by growing import demand, mainly from China.

Figure 3.2. World cereal prices



Note: Wheat: US wheat, No.2 Hard Red Winter, fob Gulf; maize: US Maize, No.2 Yellow, fob Gulf; other coarse grains: France, feed barley, fob Rouen; rice: Thailand, 2nd grade milled 100%, fob Bangkok. Real prices are nominal world prices deflated by the US GDP deflator (2020=1).
Source: OECD/FAO (2021), "OECD-FAO Agricultural Outlook OECD Agriculture statistics (database)", http://dx.doi.org/10.1787/agr-outl-data-en.

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The reference export price used for rice (milled, 100% B, fob Bangkok) in the 2020 calendar year was USD 512/t, the highest level since 2013. However, this upward trajectory could reverse and by 2023 the price could be USD 476/t. Over the medium term, growing demand from countries in Asia, Africa, and the Middle East will support an increase in nominal terms, although large supplies are expected to limit gains with prices at USD 492/t by 2030.

In real terms, prices for wheat, maize, other coarse grains and rice are expected to decline over the ten-year horizon.

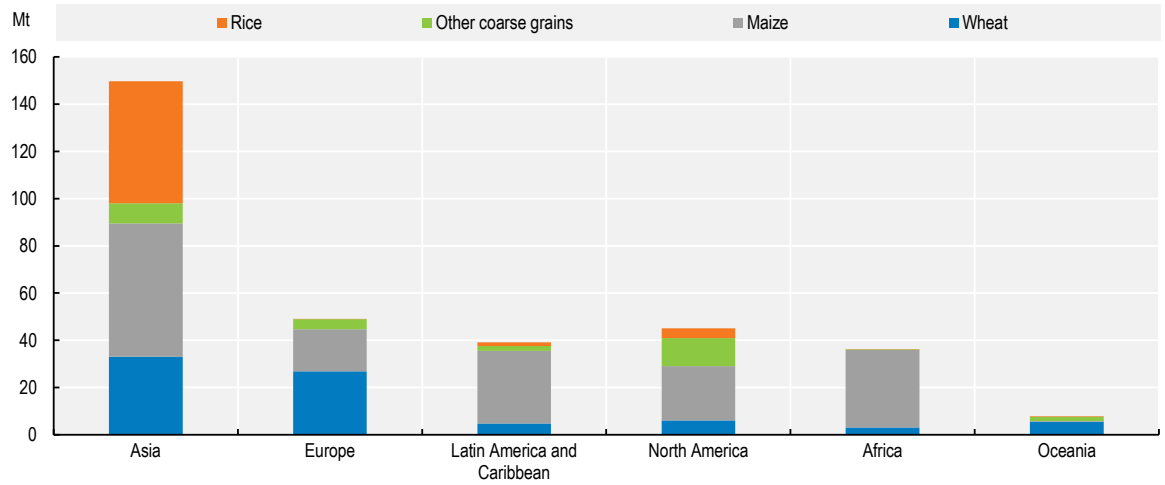
3.4. Production

The global area harvested to cereals is expected to grow by 14 Mha between the base period (2018-20) and 2030. Harvested area in developed countries is expected to increase by 4 Mha owing to gains in Russia, Ukraine, and Australia, and in developing countries by about 10 Mha, due mainly to gains in Asia and Latin America. Global wheat and maize areas are projected to increase by 3% and 4%, while other

coarse grains and rice areas are expected to remain stagnant. Decreasing harvested areas of rice in China, Viet Nam and Brazil will be offset by gains in African and Asian countries. With land expansion limited by restricted land availability as compared to the previous decade, the result of constraints placed on converting forest or pasture into arable land, as well as ongoing urbanisation, increased global production is expected to be largely driven by intensification. Growth in yields, due to improving technology and cultivation practices in developing countries in particular, is expected to sustain future cereals production. Global yields are expected to grow between the base period and 2030 by about 9% for wheat and other coarse grains, 10% for maize, and 12% for rice.

Global wheat production is expected to increase by 87 Mt to 840 Mt by 2030, a moderate pace in relative terms compared to the last decade. Developed countries are set to increase their production by 47 Mt by 2030, and developing countries are expected to add 40 Mt to global output, thus increasing their share of global production (Figure 3.3). India, the world's third largest wheat producer, is expected to provide the largest share of the additional wheat supply, increasing its wheat production by 18 Mt by 2030, driven by yield improvements and area expansion in response to national policies to improve self-sufficiency in wheat. There will be significant production increases in Russia (14.5 Mt), Ukraine (9.8 Mt), Australia (5.9 Mt), and Pakistan (5.1 Mt). In the Black Sea region, Russia, Ukraine, and Kazakhstan, additional areas planted with wheat will account for more than 60% of the global net area gains; although traditionally considered as a winter wheat production region, spring wheat is expected to also contribute to area expansion. As currently, China is projected to be the largest producer of wheat by 2030 (Figure 3.4)

Figure 3.3. Regional contribution of growth in cereal production, 2018-20 to 2030



Source: OECD/FAO (2021), "OECD-FAO Agricultural Outlook OECD Agriculture statistics (database)", http://dx.doi.org/10.1787/agr-outl-data-en.

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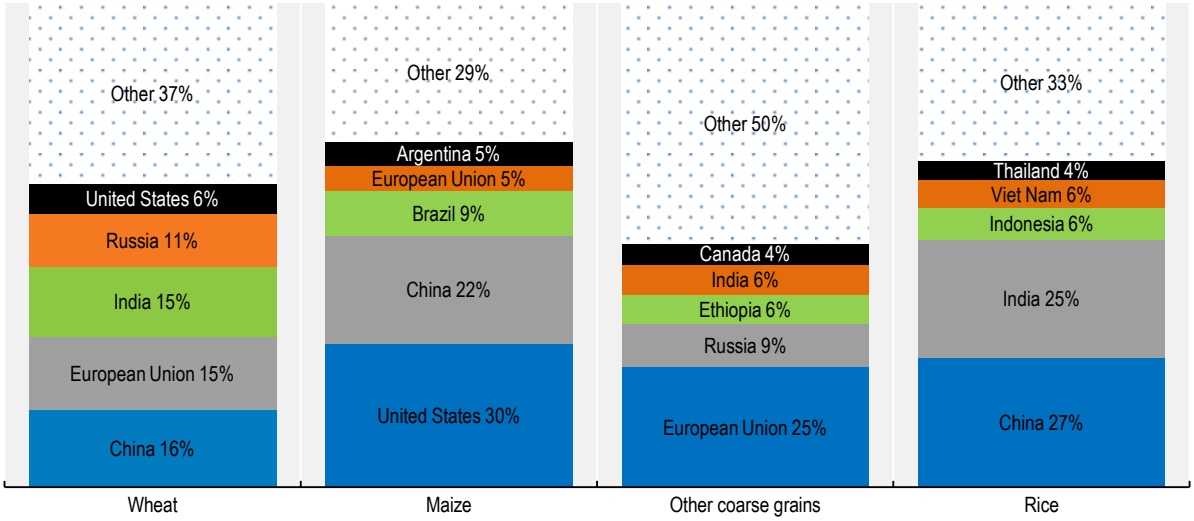
Figure 3.4. Global cereal production concentration in 2030



Note: Presented numbers refer to shares in world totals of the respective variable
Source: OECD/FAO (2021), "OECD-FAO Agricultural Outlook OECD Agriculture statistics (database)", http://dx.doi.org/10.1787/agr-outl-data-en.

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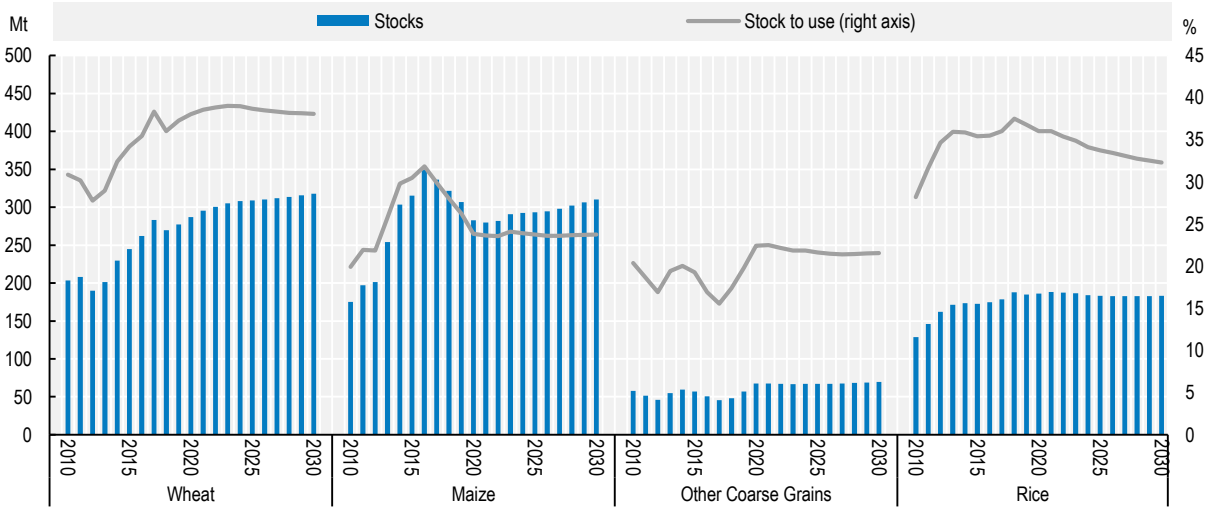
Global maize production is expected to grow by 160 Mt to 1.3 bln t over the next decade, with the largest increases in China (35 Mt), followed by the United States (32 Mt), Brazil (18 Mt), Ukraine (10 Mt), and Argentina (7 Mt). Increased production in Brazil will be driven by higher second-crop maize following the soybean harvest. Production growth in the United States is expected to slow to 0.6% p.a. over the next ten years, compared to 2% p.a. the previous decade, due to slower growth in domestic demand, particularly for ethanol. Slow production growth in the United States will be supported by higher yields as planted area is expected to decline because of area competition with soybeans. Production in Ukraine will continue to increase due to exceptional soil fertility conditions and increasing integration of maize into the crop rotation.

In Sub-Saharan Africa, total maize output is projected to increase by 22.5 Mt, of which white maize – a major staple crop in the region – will account for the largest share. Increases in maize production are expected to stem primarily from yield improvements.

Maize production in China decreased between 2015 and 2018 due to policy changes in 2016 which reduced price supports in order to end stock piling; these were replaced with market-oriented purchasing combined with direct subsidies to farmers. Production also fell because of the release of accumulated stocks. In 2015, the stock-to-use ratio of maize was estimated at almost 80%, falling to about 47% in 2020, which is very close to the ratio estimated for the period 2007 to 2009 before stocks started to pile up. This *Outlook* assumes no significant further decrease in stock levels in the coming years, to reach a stock-to-use ratio of 44%. It is assumed that Chinese farmers will have adapted to the new policy in place and as such feed demand is projected to strengthen at 3% p.a. over the next ten years; maize production should therefore gain in competitiveness in the years to come. Indeed, China is projected to contribute the most (33%) to increases in global maize output, mainly by expected increases in yields and from increased cultivation of maize.

Figure 3.5. World cereal stocks and stocks-to-use ratios



Source: OECD/FAO (2021), "OECD-FAO Agricultural Outlook OECD Agriculture statistics (database)", http://dx.doi.org/10.1787/agr-outl-data-en.

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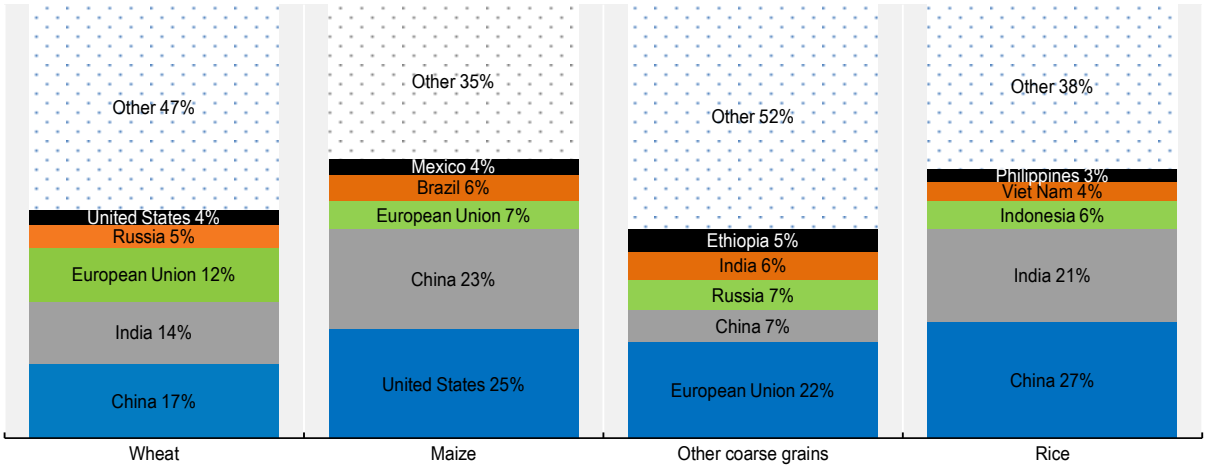
Global production of other coarse grains – sorghum, barley, millets, rye, and oats – is projected to reach 330 Mt by 2030, up 29 Mt from the base period. Developing countries will contribute the most, with 21 Mt from African countries. Africa has the fastest growing population and also relies on other coarse grains, such as millet and sorghum, mainly for food. Nearly half of the global production increase of other coarse grains is expected to come from African countries. Ethiopia will contribute the most, adding 6 Mt to reach 20 Mt by 2030. Output in most developed countries, however, will stagnate due to slower growth in feed demand and changes in feed composition in favour of maize as opposed to barley. In the United States, for example, production will remain stagnant over the outlook period. After historical harvests in 2020, other coarse grain production in the European Union is projected at 80 Mt in 2021 under normal weather expectations, and at 82 Mt by 2030 over the medium term. The Black Sea region will contribute one-fifth to the increase in global production, mainly via barley and oats, with higher production in Russia (+3.4 Mt) and Ukraine (+2 Mt).

Global rice production is expected to grow by 58 Mt to reach 567 Mt by 2030. While production in developed countries is projected to stagnate, production in developing countries, which account for the bulk of global rice output, is expected to be robust, increasing by nearly 59 Mt to 550 Mt by 2030. Asia contributes the majority of the additional global production, accounting for 52 Mt of the increase during the outlook period. The highest growth is expected in India (+20 Mt), followed by LDC Asian region (+13 Mt), China (+6 Mt), Viet Nam (+4.5 Mt), and Thailand (+2.5Mt). India will remain a major producer of Indica and basmati rice. Viet Nam is expected to increase production mainly through yield improvements, while harvested area is expected to decline, assuming government efforts to shift to alternative crops are effective. China, the world's largest rice producer, is expected to increase production at a slower pace than during the last ten years. Area planted to rice in China is expected to decline despite government policies to maintain production through its minimum purchase price. Production in developed markets, such as Korea, Japan, and the European Union, is projected to fall slightly below the base period's production level. Production in the United States and Australia will expand by about 0.8% and 2% p.a. respectively.

3.5. Consumption

Global consumption of cereals is less concentrated than production. Nonetheless, between 48% and 65% of global consumption occurs in the top 5 consumer countries of each commodity (Figure 3.6). Global use of cereals is projected to increase from 2.7 bln t in the base period to 3 bln t by 2030, driven mainly by higher feed use (+163 Mt), followed by food use (+146 Mt). Developing countries will account for almost 90% of the projected demand increase. Absolute growth in food use (+140 Mt) in developing countries will also exceed growth in feed use (+124 Mt).

Figure 3.6. Global cereal demand concentration in 2030



Note: Presented numbers refer to shares in world totals of the respective variable.
Source: OECD/FAO (2021), "OECD-FAO Agricultural Outlook OECD Agriculture statistics (database)", http://dx.doi.org/10.1787/agr-outl-data-en.

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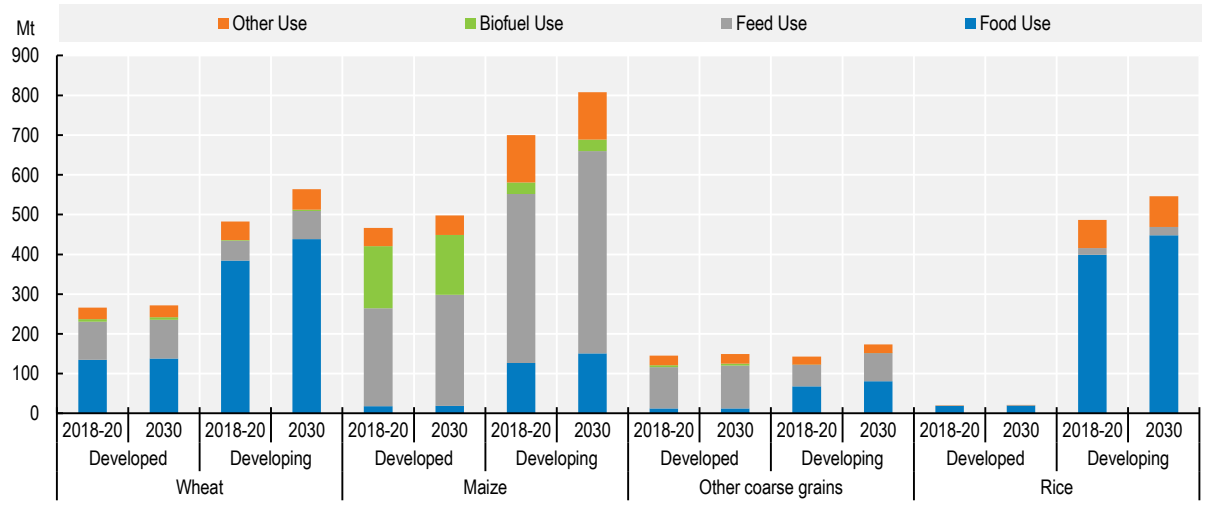
Global feed consumption of cereals is expected to increase the most for maize (1.4% p.a.), and more modestly for wheat (1.1% p.a.) and other coarse grains (0.8% p.a.) over the next ten years. Per capita consumption of cereals for food is expected to increase at a slower rate compared to the previous decade.

Wheat consumption is expected to increase by 12% by 2030 compared to the base period. Four countries account for nearly half of this increase: India (+18 Mt), China (+15 Mt), Pakistan (+6 Mt), and Egypt (+4 Mt). Global use of wheat for food is projected to increase by 58 Mt but to remain stable at about 70% of total consumption; growth will be slower compared to the previous decade as the world population increases at a more moderate pace. Feed use is expected to increase by 22 Mt compared to the base period (Figure 3.7).

Globally, the projected increase in wheat for food use is more than three times larger than the increase in feed use. Food use is expected to expand especially in Asia where there is increasing demand for processed cereal-food products, such as pastries and noodles. These products call for higher quality and higher protein wheat, which is produced in the United States, Canada, Australia, to a lesser extent in the European Union, and potentially in Russia and Ukraine. Countries in the Middle East, such as Egypt, Algeria, and the Islamic Republic of Iran, will remain major consumers of wheat with high levels of per capita consumption. Global production of wheat-based ethanol is not expected to increase significantly as changing biofuel policies in the European Union – the major user of wheat in ethanol processing – have led to reduced support to first generation biofuels.

Figure 3.7. Cereal use in developed and developing countries



Source: OECD/FAO (2021), "OECD-FAO Agricultural Outlook OECD Agriculture statistics (database)", http://dx.doi.org/10.1787/agr-outl-data-en.

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Global maize consumption is projected to increase by 1.1% p.a. over the projection period, a slower pace compared to 3.2% p.a. in the previous decade. This increase is principally driven by higher incomes that translate into higher feed demand, which holds the largest share of total utilisation, rising from 58% in the base period to around 60% by 2030. Developing countries account for over three-quarters of the increase in feed consumption due to fast expanding livestock and poultry sectors. Feed demand is expected to rise by 116 Mt to 787 Mt, with the major countries accounting for the increase being the United States (+26 Mt), China (+24 Mt), Argentina (+6 Mt), Viet Nam (+5 Mt), India (+5 Mt), and Indonesia (+4 Mt). Production in South-East Asia in particular will increase due to its fast-expanding poultry industry.

The use of maize as food is expected to increase primarily in Sub-Saharan Africa where population growth is strong. Maize, white maize in particular, will remain an important staple, accounting for about a quarter of total caloric intake. Overall, growth in maize consumption as food is strongest in African countries amongst all developing countries at about 2.5% p.a.

Maize use for biofuel production more than doubled between 2007 and 2020. During the outlook period, however, biofuel consumption is expected to decrease by 0.5% annually as the international ethanol market is restrained by biofuel policies (Figure 3.7). Although maize-based ethanol use will increase in Brazil, bioethanol consumption will decrease given the decline in gasoline use in the United States.

World utilisation of other coarse grains is projected to increase by 35 Mt, or 0.8% p.a., over the next ten years, a faster pace than the 0.6% p.a. of the previous decade. This acceleration is driven by developing countries (+31 Mt) as consumption is expected to remain stable in developed countries. The food share of total consumption is projected to increase from about 28% in the base period to 29% by 2030 as a result of increased food demand in Africa (+10 Mt) and Asia (+2 Mt). Sub-Saharan African countries, Ethiopia in particular, rely heavily on millet as a source of calories.

Rice is primarily a foodstuff and continues to be a major food staple in Asia, Latin America and the Caribbean, and increasingly in Africa. World rice consumption is expected to increase by 0.9% p.a. over the next ten years, compared with 1.1% p.a. in the last decade. Asian countries account for 65% of the projected increase in global rice consumption, largely due to population increases rather than per capita gains (Table 3.1). On a per capita basis, food intake of rice is projected to make notable increases in Africa,

with all other regions seeing smaller gains or losses. At the global level, the average per capita food use of rice is projected to maintain a similar level as in the base period at around 55 kg per year.

Table 3.1. Rice per capita consumption

kg/person/year

	2018-20	2030	Growth rate (% p.a.)
Africa	27.4	31.5	1.2
Oceania	13.5	14.2	0.44
North America	6.3	6.6	0.42
Europe	20.7	25.6	-0.08
Latin America and Caribbean	28.0	28.1	-0.14
Asia	77.2	77.5	-0.15

Source: OECD/FAO (2021), "OECD-FAO Agricultural Outlook", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-outl-data-en.

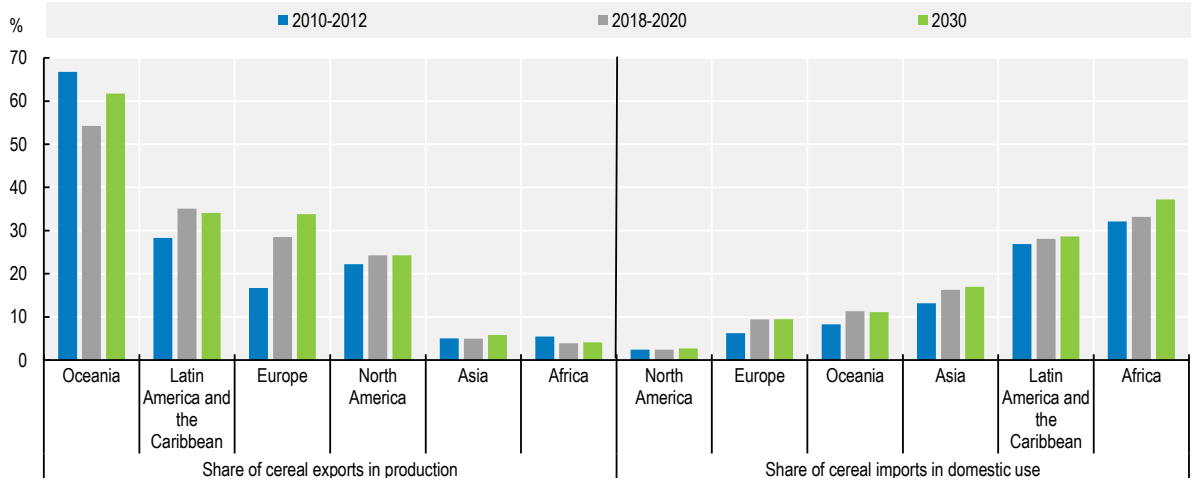
3.6. Trade

Trade in cereals presently accounts for about 17% of global consumption and is projected to reach 18% by 2030. It is an important source of food and feed for importing countries. Traditionally, the Americas and Europe supply cereal to Asia and Africa (Figure 3.1), where growing food demand from rising populations and higher feed demand from expanding livestock sectors means that demand will expand faster than domestic production. This situation is expected to continue over the next decade and exports of cereals should increase by 21% by 2030. Figure 3.8 illustrates how important cereal trade is relative to production and consumption. The absolute net trade of cereals shown in Figure 3.1 might be low for Latin America and the Caribbean and Oceania, but the share of cereal exports in domestic production is the highest among the regions. In Latin America and the Caribbean, cereal imports are as important as exports and will represent almost 30% of domestic consumption by 2030. Amongst all the continents, it is Africa where imports of cereals are the most important for domestic consumption and by 2030 almost 40% of domestic cereal use in Africa will originate from non-African countries.

Wheat exports are expected to grow by 36 Mt to 220 Mt by 2030. Russia surpassed the European Union as the top exporter in 2016 and it is expected to maintain this position, accounting for 22% of global wheat exports by 2030. Production in the major wheat-producing countries of the Black Sea region – Russia, Kazakhstan and Ukraine – has been volatile over the past decade (Table 3.2) due mainly to yield fluctuations. Nonetheless, recent production growth has on average outpaced consumption growth, so further increases of wheat exports are expected.

By 2030, the European Union, the second largest wheat exporter, will account for 14% of global trade, although wheat exports are projected to stay below the record volumes of 2019. The third largest exporter is expected to be Canada, followed by Ukraine; both are projected to surpass US exports, traditionally the third largest exporter (Figure 3.9). Although the traditional wheat exporters – the United States, Canada, and European Union – may lose their overall export share, they are expected to retain the higher quality and higher protein wheat markets, particularly in Asia. Russia and Ukraine may play a role in these higher quality markets, but will be more competitive in other soft wheat markets, such as the Middle East and Central Asia, for reasons of proximity. Wheat imports by the North African and the Middle East regions will maintain a stable share of 28% of total trade over the next ten-year horizon.

Figure 3.8. Trade as a percentage of production and consumption



Note: These estimates include intra-regional trade except for the European Union.
Source: OECD/FAO (2021), "OECD-FAO Agricultural Outlook OECD Agriculture statistics (database)", http://dx.doi.org/10.1787/agr-outl-data-en.

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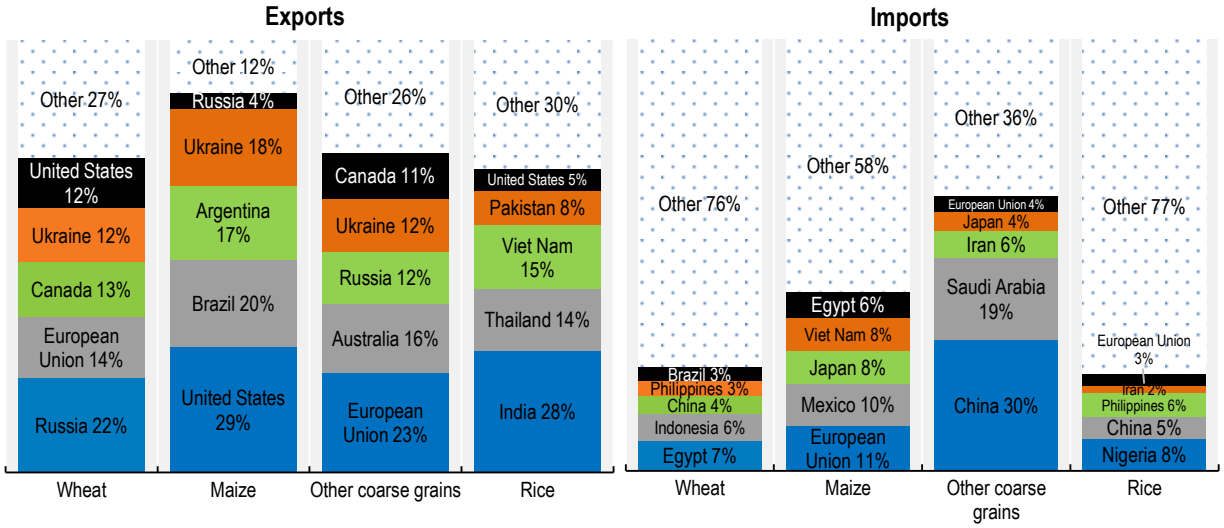
Maize exports are expected to grow by 29 Mt to 207 Mt by 2030. The export share of the top five exporters – the United States, Brazil, Ukraine, Argentina, and Russia – accounts for almost 90% of total trade over the projection period. The United States is projected to remain the top maize exporter, although exports should remain below the base year peak and the corresponding export share will drop one percentage point to 29%. Stable export shares are expected for Brazil (20%) as production of second-crop maize following soybeans increases. Ukraine and Russia will increase their export market shares from 16% and 2% in the base period, to 18% and 4% in 2030 respectively. Shipments from Argentina, which used to be the third largest exporter, will grow slower than in other countries; Ukraine will take third position by 2030. The LDC Sub-Saharan African region will continue to play a major role supplying white maize for food consumption in the region. South Africa will remain a regional supplier, but expansion will be limited as they produce GMO varieties that face restrictions in neighbouring countries.

The top five maize importers during the base period – the European Union, Japan, Mexico, Viet Nam, and Korea – account for 41% of world imports during the outlook period and this share is expected to remain stable in the coming decade. However, Egypt is expected to surpass Korea and become the fifth largest importer of maize by 2030 (Figure 3.9).

The international trade volume of other coarse grains, dominated by barley and sorghum, is much smaller than for maize or wheat. Other coarse grain exports are expected to increase by 10 Mt to 53 Mt by 2030. The top five exporters – the European Union, Australia, Russia, Ukraine, and Canada – had an export share of 73% of global trade during the base period, and this share is expected to increase to 74% by 2030 as lower export growth in Canada will be offset by stronger growth in Australia, Russia, and Ukraine. In contrast to maize and wheat markets, imports of other coarse grains are much less widespread among countries. The five major importers – China, Saudi Arabia, Japan, the Islamic Republic of Iran, and the European Union – absorb almost 65% of global trade, with China accounting for 30% by 2030.

Figure 3.9. Global cereal trade concentration in 2030



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As mentioned above, it is assumed that maize production in China will increase more dynamically than in the past decade so that the net-feed deficit of 2020/2021 will decrease over the medium term. Maize imports are assumed to return to the TRQ level (7.25 Mt), while imports of sorghum and barley are projected to increase to 14 Mt.

During the past ten years, rice trade grew at 1.5% p.a. This expansion is expected to speed up to about 2.6% p.a., with overall export volumes rising by 16 Mt to reach 62 Mt by 2030. The export share of the top five major rice exporters – India, Thailand, Viet Nam, Pakistan, and the United States – is expected to fall from 74% to 70%. Ongoing changes in the varietal make up of production and the increased focus in cultivating higher quality strains will certainly help Viet Nam to reduce its dependence on China. Thailand is projected to continue playing an important export role, but is expected to face more competition.

The group of the five largest exporters will lose market shares to countries in the less developed countries (LDC) in Asia, particularly Cambodia and Myanmar, as these countries becomes more competitive internationally. Shipments from the LDC Asia region will more than double from 4 Mt in the base period to 10 Mt by 2030, amid expectations that large exportable supplies will allow these countries to capture a greater share of Asian and African markets. Historically, Indica rice has accounted for the bulk of rice traded internationally; however, demand for other varieties is expected to continue to grow over the next ten years.

Imports by China, the largest importer of rice during the base period, are expected to grow by 1% p.a. Larger import growth will occur in African countries where demand growth is expected to outpace production growth. Nigeria is projected to become the largest importer of rice, increasing imports by 3 Mt, with imports accounting for 50% of domestic consumption by 2030. Overall, imports by African countries are expected to increase from 16 Mt in the base period to 33 Mt by 2030, increasing Africa's share of world imports from 36% to 50%. In addition to China and Nigeria, the group of five major importers in 2030 will include the Philippines, the Islamic Republic of Iran, and the European Union. This group is expected to account for 22% of global rice imports by 2030, compared to 23% in the base period.

3.7. Main issues and uncertainties

While normal assumptions for weather lead to positive production prospects for the main grain-producing regions, extreme weather events accentuated by climate change may cause higher volatility in cereal yields, thereby affecting global supplies and prices. Wheat and maize yields are particularly volatile in some large exporting countries such as Russia, Ukraine, Brazil, and Argentina, compared to Canada, the United States, and the European Union (Table 3.2).

Table 3.2. Historical yield volatility of wheat and maize for the top 5 exporters

	Wheat	Maize
Ukraine	13%	9%
Russia	9%	13%
Argentina		7%
Brazil		6%
Canada	6%	
European Union	4%	
United States	4%	4%

Note: Volatility is calculated based on the time period 2000-2020.
Source: OECD/FAO (2021), "OECD-FAO Agricultural Outlook", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-outl-data-en.

The increasing participation in global markets of regions – such as the Black Sea region – with larger yield fluctuations increases the probability of crop shortages due to harvest failures or of surpluses due to bumper crops. These factors could contribute to greater volatility in grain prices.

The macroeconomic environment is another source of uncertainty. Cereal prices could be affected by a potential slowdown in economic growth due to a decrease in investment, in particular in fast-growing economies. Global cereals markets remain uncertain due to inflationary pressure and real exchange rate movements, especially in exporting countries, which could stimulate or discourage production. Moreover, energy prices could directly affect input prices, e.g. fertilizers and agrochemicals.

The policy environment will be important. The reinforcement of food security and the focus on increased sustainability in coming reforms (e.g. in the European Union) as well as the design of biofuel policies (in the European Union, Brazil, and the United States) will impact the demand for cereals. China's domestic policies, which influence their import demand for feed, are also crucial for future developments in the cereal markets. Trade restrictions could provoke market reactions and changes in trade flows that are not reflected in the current projections. Russia, for example, has applied export taxes to grains in the past and planned to implement a new floating permanent tax in 2021 in order to avoid strong domestic food price inflation. However, when the *Outlook* was prepared, this policy was not yet official but its implementation would impact international grain – notably wheat – trade.

Crop pests, crop diseases, and animal diseases remain factors that could disrupt cereal supply and demand. On the supply side, this is relevant in regions with limited resources to mitigate the impacts of such events. Examples are the recent locust and fall army worm outbreaks, which have undermined food security in the affected regions. Animal diseases could affect feed demand negatively, as seen recently with the effects of the ASF outbreak on South East Asia.

Box 3.1. Contribution of agricultural investments to international Indica and Japonica rice price stability under climate change

Indica and Japonica are the two major types of rice traded on the global market. Despite their different market structures in terms of production zones, consumer preferences and policies, most agricultural models do not distinguish between the two varieties. This study projects future global Indica and Japonica rice markets over the medium and long term. To incorporate the impact of climate change, a new partial equilibrium model, the Rice Economy Climate Change (RECC), was developed. This model covers Indica and Japonica rice markets in 24 countries and regions (Thailand, Viet Nam, Indonesia, Malaysia, the Philippines, Cambodia, Lao PDR, Myanmar, China, Japan, Korea, India, United States, European Union including United Kingdom, Bangladesh, Sri Lanka, Nepal, Pakistan, Brazil, Côte d'Ivoire, Egypt, Madagascar, Nigeria, and the rest of the world), as well as the global rice market.

The results of the baseline projections and scenario simulations of the RECC model show that climate change is expected to impact Indica and Japonica production.[1] More specifically, the international Japonica rice price is projected to be more volatile than for Indica rice. The model also examined how future agricultural investments would impact world Indica and Japonica rice markets, including the stability of their prices on the international market, based on scenarios of future climate change over the mid- to long-term. The baseline is compared with six scenarios, which assume zero growth in a specific type of agricultural investments (agricultural knowledge and innovation system, or development and maintenance of infrastructure) in individual countries (Viet Nam, the Philippines, and China). Investment in agricultural knowledge and innovation system in Viet Nam (Scenario 1) and China (Scenario 5) will play a significant role in stabilising international Indica and Japonica rice prices, respectively, in the mid- to long-term, as rice production is increasingly affected by climate change (Table 3.3).

Table 3.3. Contribution of agricultural investments to international Indica and Japonica rice price stability under climate change

	Countries/ regions	Growth rate of agricultural investment during the projection period (2015/17 to 2040)		The coefficient of variation (CV) of international Indica rice price	The coefficient of variation (CV) of international Japonica rice price
		Agricultural knowledge and innovation system	Development and maintenance of infrastructure		
Baseline	24 countries and regions	Same as 2000-2017 annual growth rate	Same as 2000-2017 annual growth rate	0.1083	0.1776
Scenario 1	Viet Nam	0% p.a. (no growth)	Same as 2000-2017 annual growth rate	0.1339	0.1794
Scenario 2	Viet Nam	Same as 2000-2017 annual growth rate	0% p.a. (no growth)	0.1164	0.1783
Scenario 3	Philippines	0% p.a. (no growth)	Same as 2000-2017 annual growth rate	0.1091	0.1777
Scenario 4	Philippines	Same as 2000-2017 annual growth rate	0% p.a. (no growth)	0.1121	0.1780
Scenario 5	China	0% p.a. (no growth)	Same as 2000-2017 annual growth rate	0.1174	0.2215
Scenario 6	China	Same as 2000-2017 annual growth rate	0% p.a. (no growth)	0.1175	0.2079

1. The climate variables are based on the Model for Interdisciplinary Research on Climate (MIROC), a global climate model under the RCP 4.5 scenario.

Source: Koizumi, T., Gay. S.H, and Furuhashi. G. (2021) "Reviewing Indica and Japonica Rice Market Developments", *OECD Food, Agriculture and Fisheries Papers*, April 2021, No.154, https://www.oecd-ilibrary.org/agriculture-and-food/reviewing-indica-and-japonica-rice-market-developments_0c500e05-en.

ANNEX C

Table C.1. World cereal projections

Marketing year

		Average 2018-20est	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
WHEAT												
World												
Production	Mt	752.7	776.2	780.4	788.9	795.8	802.2	809.3	817.3	824.4	832.6	839.7
Area	Mha	218.1	223.2	222.5	223.1	223.3	223.5	223.6	224.0	224.1	224.4	224.4
Yield	t/ha	3.45	3.48	3.51	3.54	3.56	3.59	3.62	3.65	3.68	3.71	3.74
Consumption	Mt	748.7	765.4	773.1	781.7	790.5	798.8	805.8	813.2	820.5	827.9	835.1
Feed use	Mt	146.0	152.3	153.4	155.2	157.4	159.1	160.3	162.0	163.6	165.7	167.7
Food use	Mt	518.9	531.6	537.0	542.4	547.7	552.8	557.6	562.5	567.3	572.1	576.8
Biofuel use	Mt	8.7	8.6	8.6	8.7	8.7	8.9	9.2	9.4	9.5	9.7	9.8
Other use	Mt	75.1	73.0	74.1	75.4	76.6	78.0	78.7	79.4	80.0	80.5	80.8
Exports	Mt	181.2	193.2	196.2	199.0	201.6	204.4	208.2	211.3	214.0	217.0	219.8
Closing stocks	Mt	277.9	295.4	300.3	305.1	308.1	309.1	310.2	311.9	313.5	315.8	318.0
Price[1]	USD/t	233.6	234.4	215.4	219.5	221.8	230.3	236.6	241.8	247.1	250.6	253.6
Developed countries												
Production	Mt	384.9	399.5	402.2	406.2	410.4	412.9	416.7	420.6	424.3	428.5	432.3
Consumption	Mt	265.7	261.4	261.5	262.6	264.6	265.9	266.9	268.0	268.9	270.1	271.4
Net trade	Mt	126.3	137.5	140.4	142.6	144.3	146.4	150.0	152.6	155.0	157.4	159.8
Closing stocks	Mt	70.9	68.2	68.5	69.5	70.9	71.5	71.4	71.4	71.8	72.9	74.0
Developing countries												
Production	Mt	367.8	376.7	378.1	382.7	385.4	389.3	392.6	396.7	400.1	404.0	407.4
Consumption	Mt	482.9	504.0	511.6	519.2	525.8	533.0	538.9	545.3	551.6	557.9	563.7
Net trade	Mt	-123.5	-135.1	-138.1	-140.3	-142.0	-144.1	-147.6	-150.2	-152.6	-155.1	-157.4
Closing stocks	Mt	207.0	227.2	231.8	235.6	237.2	237.6	238.8	240.5	241.7	242.9	244.0
OECD[2]												
Production	Mt	274.0	279.2	280.7	282.6	284.5	285.2	287.0	288.8	290.4	292.5	294.3
Consumption	Mt	219.1	218.9	218.8	219.5	220.8	221.5	221.9	222.6	223.2	224.1	225.0
Net trade	Mt	58.8	60.1	62.0	62.6	63.0	63.8	65.2	66.1	66.8	67.6	68.3
Closing stocks	Mt	62.3	60.5	60.5	61.0	61.7	61.7	61.6	61.7	62.1	62.9	63.9
MAIZE												
World												
Production	Mt	1 151.4	1 183.4	1 201.4	1 218.9	1 227.2	1 239.0	1 253.3	1 268.8	1 284.2	1 298.1	1 312.2
Area	Mha	190.5	194.0	194.6	195.4	195.5	195.8	196.3	197.0	197.6	198.1	198.6
Yield	t/ha	6.04	6.10	6.17	6.24	6.28	6.33	6.38	6.44	6.50	6.55	6.61
Consumption	Mt	1 166.3	1 183.3	1 196.3	1 207.0	1 222.5	1 234.9	1 248.9	1 262.6	1 276.9	1 291.0	1 305.1
Feed use	Mt	671.0	696.1	705.7	719.2	726.3	735.9	745.6	755.7	766.5	776.8	787.2
Food use	Mt	145.4	148.6	151.3	153.8	156.2	158.5	160.8	163.2	165.6	167.9	170.3
Biofuel use	Mt	184.3	185.7	188.1	186.7	186.0	184.6	183.8	182.6	181.5	180.5	179.5
Other use	Mt	121.7	110.4	108.5	104.4	110.9	112.5	115.2	117.5	119.6	121.8	123.9
Exports	Mt	178.8	187.6	188.7	188.8	190.1	192.7	195.7	198.7	201.8	204.6	207.3
Closing stocks	Mt	303.7	279.8	281.9	290.7	292.4	293.5	294.8	297.9	302.2	306.3	310.3
Price[3]	USD/t	175.4	188.1	172.1	169.3	173.3	181.3	186.6	190.7	193.8	196.8	199.6
Developed countries												
Production	Mt	515.0	533.2	538.2	544.0	545.1	548.0	552.2	557.6	562.9	567.2	571.4
Consumption	Mt	466.4	464.8	470.1	474.1	477.9	481.5	484.8	487.6	490.9	494.1	497.5
Net trade	Mt	52.8	65.9	65.2	65.3	66.0	66.8	67.8	69.2	70.6	71.8	73.0
Closing stocks	Mt	89.8	81.3	84.2	88.9	90.0	89.7	89.3	90.1	91.5	92.7	93.7
Developing countries												
Production	Mt	636.4	650.1	663.2	674.9	682.2	691.0	701.1	711.2	721.4	731.0	740.8
Consumption	Mt	699.8	718.5	726.2	733.0	744.6	753.4	764.1	775.0	786.0	796.8	807.7
Net trade	Mt	-49.8	-62.8	-62.1	-62.2	-62.9	-63.7	-64.7	-66.1	-67.5	-68.8	-69.9
Closing stocks	Mt	213.9	198.6	197.7	201.9	202.4	203.7	205.4	207.8	210.6	213.5	216.6
OECD[2]												
Production	Mt	474.0	484.5	488.9	493.8	493.8	495.4	498.2	502.3	506.3	509.2	512.0
Consumption	Mt	500.6	499.0	504.2	508.5	512.8	516.8	520.5	523.8	527.5	531.3	535.1
Net trade	Mt	-20.9	-15.8	-17.2	-19.1	-20.7	-21.6	-21.9	-22.2	-22.6	-23.2	-24.0
Closing stocks	Mt	84.3	73.7	75.5	79.9	81.6	81.7	81.4	82.2	83.5	84.6	85.4

Table C.1. World cereal projections *(cont.)*

Marketing year

		Average 2018-20est	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
OTHER COARSE GRAINS												
World												
Production	Mt	301.0	305.4	308.7	311.1	313.9	316.0	318.9	321.6	324.5	327.1	329.9
Area	Mha	155.2	155.4	155.4	155.2	155.3	155.1	155.0	154.9	154.8	154.7	154.7
Yield	t/ha	1.94	1.96	1.99	2.00	2.02	2.04	2.06	2.08	2.10	2.11	2.13
Consumption	Mt	287.8	299.4	302.9	305.5	307.4	310.2	312.8	315.2	317.8	320.4	323.1
Feed use	Mt	157.4	165.5	167.7	169.2	170.9	172.4	173.6	174.8	176.0	177.1	178.5
Food use	Mt	80.9	82.8	84.7	85.8	87.1	88.2	89.3	90.4	91.5	92.6	93.6
Biofuel use	Mt	5.2	4.9	4.9	4.9	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Other use	Mt	44.2	46.2	45.6	45.6	44.7	44.7	45.0	45.2	45.6	45.9	46.3
Exports	Mt	42.9	46.3	47.4	47.8	48.4	49.1	50.1	50.9	51.7	52.3	53.0
Closing stocks	Mt	57.4	67.4	67.1	66.7	67.2	67.1	67.2	67.5	68.1	68.9	69.7
Price[4]	USD/t	206.2	209.3	196.8	199.7	202.7	209.7	215.1	220.4	225.3	229.4	232.8
Developed countries												
Production	Mt	181.0	180.0	181.4	182.1	183.0	183.6	184.7	185.7	186.8	187.7	188.8
Consumption	Mt	145.0	147.3	147.6	147.9	147.2	147.6	148.0	148.3	148.7	149.0	149.4
Net trade	Mt	31.0	34.1	35.0	35.4	35.7	36.2	36.9	37.6	38.2	38.7	39.2
Closing stocks	Mt	32.3	38.9	37.8	36.7	36.8	36.6	36.3	36.2	36.2	36.3	36.4
Developing countries												
Production	Mt	120.0	125.4	127.2	129.0	130.9	132.4	134.2	135.9	137.7	139.4	141.1
Consumption	Mt	142.8	152.1	155.3	157.6	160.2	162.6	164.7	167.0	169.2	171.4	173.6
Net trade	Mt	-25.0	-28.0	-29.0	-29.3	-29.7	-30.2	-30.9	-31.5	-32.1	-32.7	-33.2
Closing stocks	Mt	25.1	28.4	29.4	30.1	30.4	30.5	30.8	31.3	32.0	32.6	33.3
OECD[2]												
Production	Mt	148.8	146.8	147.5	147.9	148.3	148.5	149.1	149.6	150.1	150.5	151.0
Consumption	Mt	123.9	126.3	126.4	126.6	125.8	126.1	126.5	126.7	127.0	127.3	127.7
Net trade	Mt	19.3	22.0	22.5	22.6	22.4	22.5	22.8	23.0	23.2	23.2	23.2
Closing stocks	Mt	25.6	31.9	30.5	29.3	29.4	29.2	29.0	28.9	28.8	28.8	28.9
RICE												
World												
Production	Mt	509.3	525.1	529.2	532.7	537.1	542.0	546.7	551.8	556.9	562.0	567.3
Area	Mha	163.1	164.6	164.3	163.9	163.7	163.6	163.4	163.3	163.3	163.2	163.1
Yield	t/ha	3.12	3.19	3.22	3.25	3.28	3.31	3.35	3.38	3.41	3.44	3.48
Consumption	Mt	506.3	522.7	529.9	533.9	539.4	542.8	547.0	551.9	557.1	561.8	567.0
Feed use	Mt	17.6	18.4	18.8	19.1	19.4	19.8	20.2	20.6	20.9	21.3	21.7
Food use	Mt	417.4	432.0	438.1	441.3	445.9	448.4	451.6	455.6	459.7	463.5	467.6
Exports	Mt	45.9	49.3	50.7	52.1	52.8	53.9	55.6	57.4	58.9	60.6	62.3
Closing stocks	Mt	186.2	188.2	187.5	186.4	184.1	183.2	182.9	182.7	182.6	182.8	183.1
Price[5]	USD/t	464.1	513.4	488.0	476.3	479.4	480.4	483.5	485.1	488.3	490.0	492.4
Developed countries												
Production	Mt	17.7	17.6	17.8	17.7	17.6	17.6	17.6	17.6	17.6	17.5	17.5
Consumption	Mt	19.6	19.9	20.0	20.1	20.1	20.2	20.3	20.4	20.5	20.6	20.7
Net trade	Mt	-2.4	-2.7	-2.8	-2.9	-2.9	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0
Closing stocks	Mt	8.2	9.3	9.9	10.4	10.8	11.1	11.4	11.5	11.6	11.6	11.5
Developing countries												
Production	Mt	491.6	507.4	511.5	515.1	519.4	524.4	529.1	534.2	539.3	544.5	549.8
Consumption	Mt	486.7	502.9	510.0	513.8	519.2	522.6	526.7	531.5	536.6	541.3	546.3
Net trade	Mt	3.0	2.7	2.8	2.9	2.9	3.0	3.0	3.0	3.0	3.0	3.0
Closing stocks	Mt	178.0	178.9	177.6	176.0	173.3	172.1	171.5	171.2	171.0	171.2	171.6
OECD[2]												
Production	Mt	22.6	22.7	22.9	22.7	22.6	22.5	22.4	22.4	22.3	22.2	22.1
Consumption	Mt	24.9	25.4	25.5	25.5	25.5	25.6	25.6	25.7	25.8	25.8	25.9
Net trade	Mt	-2.8	-3.2	-3.2	-3.3	-3.3	-3.4	-3.4	-3.5	-3.6	-3.6	-3.7
Closing stocks	Mt	9.7	11.0	11.6	12.1	12.5	12.8	13.1	13.2	13.3	13.2	13.1

Note: Marketing year: See Glossary of Terms for definitions. Average 2018-20est: Data for 2020 are estimated. Prices are in nominal terms.

1. No.2 hard red winter wheat, ordinary protein, United States FOB Gulf Ports (June/May).
2. Excludes Iceland and Costa Rica but includes all EU member countries.
3. No.2 yellow corn, United States FOB Gulf Ports (September/August).
4. Feed barley, Europe, FOB Rouen (July/June).
5. Milled 100%, grade b, nominal price quote, FOB Bangkok (January/December).

Source: OECD/FAO (2021), "OECD-FAO Agricultural Outlook", *OECD Agriculture statistics* (database). dx.doi.org/10.1787/agr-outl-data-en

Table C.13.1. Wheat projections: Production and trade

Marketing year

	PRODUCTION (kt)		Growth (%)[4]		IMPORTS (kt)		Growth (%)[4]		EXPORTS (kt)		Growth (%)[4]	
	Average 2018-20est	2030	2011-20	2021-30	Average 2018-20est	2030	2011-20	2021-30	Average 2018-20est	2030	2011-20	2021-30
WORLD	**752 703**	**839 661**	**1.28**	**0.89**	**178 477**	**217 459**	**2.65**	**1.47**	**181 239**	**219 820**	**2.81**	**1.46**
NORTH AMERICA	84 597	91 429	-0.30	0.68	3 440	3 699	-0.52	0.79	50 990	53 836	0.72	0.79
Canada	33 403	37 844	2.29	1.06	174	136	11.11	1.08	24 721	28 036	2.90	0.78
United States	51 193	53 584	-1.71	0.43	3 266	3 563	-0.94	0.79	26 269	25 800	-0.93	0.80
LATIN AMERICA	31 412	36 658	3.58	1.38	24 443	27 532	1.33	0.75	15 239	18 743	6.25	1.81
Argentina	18 803	22 426	8.01	1.43	3	3	0.00	0.00	12 973	15 839	15.29	1.93
Brazil	5 646	6 903	1.09	1.95	6 873	7 152	-1.10	0.02	449	563	-16.59	0.00
Chile	1 310	1 329	-0.46	0.19	1 168	991	5.35	-1.50	1	0	..	..
Colombia	4	6	-18.28	2.76	1 895	2 317	3.83	1.34	15	18	22.92	-1.32
Mexico	3 051	3 232	-1.59	0.63	5 163	6 279	3.02	1.53	970	1 200	2.32	3.15
Paraguay	1 304	1 236	-1.04	0.47	0	1	-52.82	0.48	397	566	-7.68	1.03
Peru	186	248	-2.60	2.70	2 061	2 460	2.64	1.45	3	3	-6.22	-0.38
EUROPE	251 637	280 811	2.29	0.81	10 332	9 155	-0.64	-0.41	85 149	109 517	8.08	1.70
European Union[1]	128 199	128 286	0.27	0.07	5 444	5 978	-2.00	0.57	29 598	31 112	2.90	0.58
United Kingdom	13 323	16 878	-1.25	1.27	2 259	869	4.66	-4.44	598	1 188	-12.56	4.22
Russia	76 530	91 103	6.98	1.19	243	358	28.13	3.31	35 927	48 161	14.09	1.43
Ukraine	26 011	35 858	3.63	2.43	15	15	-12.88	0.36	17 679	27 247	13.95	3.38
AFRICA	27 141	30 445	0.42	0.79	49 182	63 617	2.22	2.26	1 578	1 274	1.83	-1.39
Egypt	8 783	10 470	-0.10	1.84	12 967	15 523	3.36	1.23	598	523	34.12	-1.20
Ethiopia	5 068	5 654	5.80	1.01	1 350	2 578	5.66	6.91	0	0	..	..
Nigeria	65	71	-7.50	1.02	4 733	6 060	1.89	2.20	600	475	3.73	-2.15
South Africa	1 850	1 511	-0.60	-3.36	1 610	2 507	0.06	5.10	89	65	-15.49	6.10
ASIA	336 190	372 583	1.11	0.92	90 177	112 456	3.92	1.42	15 409	18 223	-2.73	1.62
China[2]	133 096	133 534	1.31	0.26	4 951	9 636	6.02	1.80	306	210	-2.91	-0.69
India	103 687	121 843	1.84	1.26	2	1	-4.22	0.05	657	1 032	-19.62	0.05
Indonesia	0	0	..	..	10 889	13 317	6.95	1.84	78	71	3.51	-1.81
Iran	14 333	14 737	6.95	0.50	1 189	3 083	-16.26	2.67	67	49	8.80	-0.29
Japan	946	885	2.42	0.25	5 434	5 447	-2.01	-0.28	0	0	..	..
Kazakhstan	13 218	16 735	-1.60	1.81	633	78	188.17	-2.51	7 460	9 633	-1.21	2.57
Korea	23	29	-3.88	0.57	3 838	5 599	-2.85	2.52	50	55	0.00	0.80
Malaysia	0	0	..	..	1 685	2 031	2.39	1.07	148	133	8.10	-1.06
Pakistan	24 895	29 996	0.33	1.70	945	2 283	-14.75	1.96	365	49	-20.19	-0.88
Philippines	0	0	..	..	6 506	7 271	7.50	1.94	43	34	499.80	-1.90
Saudi Arabia	429	283	-17.30	-2.15	3 150	3 963	2.51	1.31	0	0	..	..
Thailand	1	0	-0.82	..	3 145	3 816	4.01	1.28	15	13	5.21	-1.26
Turkey	19 833	23 409	-0.70	1.40	8 964	7 865	12.46	-1.40	4 683	5 714	6.78	1.42
Viet Nam	0	0	..	..	3 263	4 160	7.17	2.19	48	40	-13.97	-2.14
OCEANIA	21 726	27 735	-2.56	1.65	902	1 001	2.47	1.11	12 874	18 226	-6.17	1.77
Australia	21 309	27 185	-2.59	1.66	28	28	7.96	-0.04	12 874	18 226	-6.17	1.77
New Zealand	417	550	-1.22	1.31	534	545	2.93	0.68	0	0	..	..
DEVELOPED COUNTRIES	**384 878**	**432 294**	**1.10**	**0.89**	**30 844**	**31 975**	**-0.09**	**0.49**	**157 110**	**191 771**	**3.04**	**1.48**
DEVELOPING COUNTRIES	**367 825**	**407 367**	**1.47**	**0.90**	**147 633**	**185 485**	**3.31**	**1.65**	**24 129**	**28 049**	**1.66**	**1.31**
LEAST DEVELOPED COUNTRIES (LDC)	8 793	10 324	0.81	1.04	17 973	25 828	6.15	2.97	108	86	-5.68	-1.60
OECD[3]	**274 023**	**294 306**	**-0.27**	**0.58**	**41 086**	**43 146**	**1.68**	**0.37**	**99 895**	**111 466**	**0.19**	**0.97**
BRICS	**320 809**	**354 893**	**2.62**	**0.84**	**13 679**	**19 654**	**1.72**	**1.44**	**37 429**	**50 030**	**7.86**	**1.37**

.. Not available

Note: Marketing year: See Glossary of Terms for definitions. Average 2018-20est: Data for 2020 are estimated.

1. Refers to all current European Union member States (excludes the United Kingdom)
2. Refers to mainland only. The economies of Chinese Taipei, Hong Kong (China) and Macau (China) are included in the Asia aggregate.
3. Excludes Iceland and Costa Rica but includes all EU member countries.
4. Least-squares growth rate (see glossary).

Source: OECD/FAO (2021), "OECD-FAO Agricultural Outlook", *OECD Agriculture statistics* (database). dx.doi.org/10.1787/agr-outl-data-en

Table C.13.2. Wheat projections: Consumption, food

Marketing year

	CONSUMPTION (kt)		Growth (%)[4]		FOOD (kt)		Growth (%)[4]		FOOD (kg/cap)		Growth (%)[4]	
	Average 2018-20est	2030	2011-20	2021-30	Average 2018-20est	2030	2011-20	2021-30	Average 2018-20est	2030	2011-20	2021-30
WORLD	**748 656**	**835 099**	**1.17**	**0.97**	**518 905**	**576 819**	**1.28**	**0.91**	**67.6**	**67.8**	**0.14**	**-0.01**
NORTH AMERICA	39 497	41 022	-1.21	0.42	29 176	30 482	0.34	0.38	79.6	78.1	-0.36	-0.19
Canada	8 834	9 886	-0.01	1.38	3 030	3 288	1.40	0.69	81.0	80.5	0.41	-0.10
United States	30 663	31 136	-1.53	0.13	26 146	27 194	0.22	0.34	79.5	77.8	-0.45	-0.20
LATIN AMERICA	40 638	45 348	1.69	0.98	36 037	40 414	1.35	0.99	55.8	57.4	0.35	0.23
Argentina	5 917	6 580	1.36	0.93	5 316	5 972	1.12	1.01	118.7	121.7	0.12	0.20
Brazil	12 070	13 459	1.33	0.96	11 417	12 796	1.18	1.00	54.1	57.2	0.35	0.50
Chile	2 662	2 318	2.49	-0.34	2 001	1 874	1.01	-0.75	105.7	96.3	-0.20	-0.87
Colombia	1 938	2 302	3.81	1.44	1 773	2 137	3.19	1.38	35.2	40.0	1.91	0.92
Mexico	7 311	8 323	1.09	1.06	6 486	7 402	1.85	1.17	50.8	52.5	0.63	0.29
Paraguay	515	632	1.04	1.80	364	437	1.51	1.61	51.7	55.0	0.17	0.53
Peru	2 276	2 700	2.40	1.60	2 136	2 522	2.59	1.56	65.7	70.0	1.20	0.70
EUROPE	181 380	179 891	0.21	0.28	79 820	79 643	0.13	-0.06	106.7	107.3	-0.03	0.04
European Union[1]	106 696	102 988	-0.15	-0.06	49 426	49 844	0.23	0.05	111.1	112.8	0.10	0.14
United Kingdom	14 815	16 215	0.63	0.36	6 281	6 823	0.04	0.55	93.0	96.8	-0.61	0.19
Russia	42 624	43 270	2.48	1.16	14 682	14 004	0.31	-0.47	100.7	97.7	0.13	-0.27
Ukraine	8 795	8 623	-5.04	-0.08	4 692	4 273	-1.14	-0.88	106.7	104.5	-0.67	-0.20
AFRICA	76 115	92 371	2.21	1.86	65 423	80 996	2.52	1.92	50.5	48.4	-0.07	-0.39
Egypt	21 270	25 393	1.54	1.53	18 937	22 761	2.24	1.55	188.6	188.4	0.08	-0.09
Ethiopia	6 451	8 199	5.38	2.54	5 384	7 109	5.31	2.58	48.0	49.0	2.50	0.25
Nigeria	4 205	5 648	1.43	2.67	4 012	5 421	2.71	2.74	20.0	20.6	0.05	0.27
South Africa	3 428	3 948	0.85	1.09	3 286	3 715	1.00	1.10	56.1	56.3	-0.47	0.05
ASIA	401 470	466 028	1.61	1.14	305 603	341 989	1.43	0.95	66.8	69.1	0.46	0.27
China[2]	128 314	143 730	0.50	0.59	93 233	96 474	0.65	0.20	65.0	65.9	0.15	0.04
India	101 698	120 126	2.59	1.26	82 428	93 498	1.48	1.10	60.3	62.2	0.38	0.25
Indonesia	10 877	13 217	7.16	1.92	6 877	8 569	2.35	1.97	25.4	28.6	1.11	1.07
Iran	15 750	17 653	1.95	1.08	13 983	15 952	1.37	1.14	168.7	172.1	0.04	0.18
Japan	6 398	6 336	-1.02	-0.18	5 241	5 076	0.03	-0.30	41.3	42.0	0.21	0.18
Kazakhstan	6 269	7 099	-1.66	1.26	2 645	2 929	1.19	0.87	142.6	141.9	-0.27	-0.05
Korea	3 777	5 565	-3.30	2.41	2 443	2 526	0.62	0.30	47.7	49.4	0.30	0.33
Malaysia	1 554	1 891	3.19	1.32	1 114	1 370	3.11	1.23	34.9	38.0	1.73	0.15
Pakistan	26 309	32 185	1.52	1.75	25 498	31 038	2.04	1.73	117.7	118.0	-0.05	-0.01
Philippines	6 496	7 214	7.58	1.95	2 613	3 250	2.38	2.05	24.2	26.3	0.84	0.84
Saudi Arabia	3 647	4 194	0.54	1.24	3 360	3 860	2.27	1.21	98.1	98.2	-0.06	0.02
Thailand	3 197	3 776	4.50	1.37	1 149	1 297	1.67	1.03	16.5	18.4	1.29	0.97
Turkey	23 006	25 405	0.97	0.82	17 611	19 154	1.69	0.57	211.2	214.8	0.10	0.06
Viet Nam	3 387	4 101	6.74	2.28	1 634	2 055	3.51	2.18	16.9	19.7	2.46	1.50
OCEANIA	9 556	10 438	3.00	0.83	2 847	3 295	1.50	1.33	69.0	70.1	0.04	0.16
Australia	8 268	8 926	3.42	0.76	2 107	2 399	1.51	1.17	83.6	85.2	0.13	0.18
New Zealand	952	1 093	0.27	0.98	420	495	1.28	1.50	87.9	95.6	0.30	0.80
DEVELOPED COUNTRIES	**265 748**	**271 416**	**0.01**	**0.44**	**134 564**	**138 150**	**0.35**	**0.20**	**94.2**	**94.4**	**-0.08**	**0.00**
DEVELOPING COUNTRIES	**482 909**	**563 682**	**1.86**	**1.24**	**384 341**	**438 669**	**1.63**	**1.14**	**61.6**	**62.3**	**0.31**	**0.07**
LEAST DEVELOPED COUNTRIES (LDC)	27 492	35 882	4.30	2.43	23 444	30 952	4.09	2.59	27.0	28.0	1.70	0.40
OECD[3]	**219 146**	**224 983**	**-0.05**	**0.32**	**125 212**	**130 849**	**0.61**	**0.34**	**90.1**	**91.1**	**0.05**	**0.07**
BRICS	**288 133**	**324 533**	**1.54**	**0.93**	**205 045**	**220 487**	**0.99**	**0.59**	**63.8**	**64.8**	**0.21**	**0.11**

Note: Marketing year: See Glossary of Terms for definitions. Average 2018-20est: Data for 2020 are estimated.

1. Refers to all current European Union member States (excludes the United Kingdom)
2. Refers to mainland only. The economies of Chinese Taipei, Hong Kong (China) and Macau (China) are included in the Asia aggregate.
3. Excludes Iceland and Costa Rica but includes all EU member countries.
4. Least-squares growth rate (see glossary).

Source: OECD/FAO (2021), "OECD-FAO Agricultural Outlook", *OECD Agriculture statistics* (database). dx.doi.org/10.1787/agr-outl-data-en

Table C.14.1. Maize projections: Production and trade

Marketing year

	PRODUCTION (kt)		Growth (%)[4]		IMPORTS (kt)		Growth (%)[4]		EXPORTS (kt)		Growth (%)[4]	
	Average 2018-20est	2030	2011-20	2021-30	Average 2018-20est	2030	2011-20	2021-30	Average 2018-20est	2030	2011-20	2021-30
WORLD	**1 151 427**	**1 312 195**	**2.58**	**1.12**	**175 725**	**204 238**	**7.08**	**1.21**	**178 789**	**207 303**	**6.89**	**1.19**
NORTH AMERICA	370 448	403 226	1.97	0.59	3 054	3 503	3.52	1.33	55 329	61 794	7.33	0.01
Canada	13 617	14 379	1.38	1.37	2 116	2 460	14.56	1.85	1 198	1 372	3.61	3.53
United States	356 830	388 847	2.00	0.56	938	1 042	-4.37	0.20	54 132	60 422	7.62	-0.06
LATIN AMERICA	206 702	237 392	5.14	1.62	39 239	48 882	7.17	2.01	74 708	81 671	8.85	1.65
Argentina	58 585	65 577	11.06	1.57	4	4	1.62	0.00	35 557	35 653	14.81	0.71
Brazil	102 483	120 452	3.85	1.90	1 065	851	3.21	0.02	35 920	41 845	5.70	2.25
Chile	720	676	-9.76	1.33	2 678	3 071	13.42	1.35	22	19	-14.72	-0.84
Colombia	1 493	1 745	-2.61	1.37	5 834	7 906	8.48	2.63	1	1	-5.45	-0.20
Mexico	27 332	29 905	4.38	0.64	16 271	19 974	8.91	1.86	935	1 318	31.08	3.16
Paraguay	5 807	7 701	7.18	2.44	12	10	-1.56	-0.45	2 199	2 763	-2.80	5.77
Peru	1 510	2 037	-1.27	2.84	4 024	5 955	9.95	3.49	10	10	4.66	-0.44
EUROPE	126 512	144 228	1.95	1.05	22 727	23 978	10.52	0.90	39 444	53 433	7.19	2.12
European Union[1]	67 377	67 963	-0.08	0.44	20 009	21 795	11.68	1.03	4 361	4 011	0.50	1.98
United Kingdom	0	0	..	..	1 736	1 433	6.16	-0.44	0	0	..	..
Russia	13 234	18 811	10.07	2.63	37	102	1.16	4.82	3 693	7 746	8.75	4.36
Ukraine	33 988	44 009	4.20	1.54	38	39	-2.23	0.32	27 997	36 903	8.03	1.82
AFRICA	88 084	111 093	3.05	1.96	24 250	33 220	5.84	2.70	4 378	5 927	-0.99	2.48
Egypt	7 417	7 907	-0.03	0.80	10 137	12 629	6.71	1.94	0	0	..	..
Ethiopia	9 443	12 276	5.75	2.79	0	0	-82.04	..	783	827	0.93	0.42
Nigeria	12 587	13 553	4.14	0.75	400	1 902	10.80	23.61	150	64	0.88	-9.88
South Africa	14 739	19 841	2.59	1.90	170	0	-70.64	..	2 138	3 832	2.79	6.05
ASIA	359 236	415 652	2.08	1.20	86 317	94 594	6.91	0.43	4 889	4 411	-2.77	-1.69
China[2]	259 539	294 690	1.87	1.01	10 702	7 202	12.37	-5.38	22	19	-10.92	10.74
India	28 284	35 035	3.40	1.77	192	33	44.89	0.47	1 134	1 168	-18.58	-2.83
Indonesia	22 739	27 459	2.53	1.70	996	1 155	-13.65	2.93	13	15	-6.55	-0.26
Iran	1 238	1 254	-5.67	0.42	9 328	9 761	12.69	0.67	0	0	..	..
Japan	0	0	..	..	15 797	15 853	0.81	0.08	0	0	..	..
Kazakhstan	905	1 145	7.94	1.67	5	4	137.21	1.20	67	151	23.68	5.38
Korea	74	65	-0.92	-1.15	10 706	11 520	3.20	0.37	0	0	..	..
Malaysia	85	107	2.32	2.14	3 860	4 993	3.36	2.14	9	8	6.94	-2.09
Pakistan	6 670	8 621	5.89	2.17	25	57	14.87	9.46	40	8	66.87	-11.30
Philippines	7 956	9 574	1.32	1.58	655	631	19.51	2.60	0	0	..	..
Saudi Arabia	87	66	-0.69	-2.54	4 076	5 357	9.89	2.26	0	0	..	..
Thailand	4 781	4 905	-0.44	0.95	1 117	2 239	27.79	2.46	124	73	-10.18	-1.21
Turkey	5 910	7 538	3.03	1.49	3 748	3 730	16.98	1.00	567	469	43.58	-0.98
Viet Nam	4 746	5 375	-0.68	1.25	10 895	16 004	27.84	2.84	450	431	54.93	-2.76
OCEANIA	445	605	-5.93	1.03	139	63	53.54	0.22	42	67	-11.14	-0.95
Australia	245	372	-8.73	0.78	0	0	..	..	39	63	-11.19	-1.00
New Zealand	190	220	-1.67	1.43	137	62	70.39	0.31	3	4	-9.81	0.00
DEVELOPED COUNTRIES	**514 991**	**571 385**	**1.99**	**0.75**	**44 182**	**46 301**	**5.15**	**0.69**	**97 020**	**119 278**	**7.13**	**1.07**
DEVELOPING COUNTRIES	**636 435**	**740 811**	**3.11**	**1.42**	**131 543**	**157 938**	**7.79**	**1.36**	**81 769**	**88 025**	**7.11**	**1.35**
LEAST DEVELOPED COUNTRIES (LDC)	43 891	56 695	3.66	2.15	3 332	4 274	11.45	1.74	3 495	3 021	4.29	-1.78
OECD[3]	**474 016**	**511 970**	**1.73**	**0.59**	**82 246**	**91 759**	**6.37**	**1.09**	**61 301**	**67 724**	**7.02**	**0.16**
BRICS	**418 279**	**488 829**	**2.63**	**1.37**	**12 166**	**8 189**	**10.94**	**-4.87**	**42 906**	**54 610**	**4.08**	**2.60**

.. Not available

Note: Marketing year: See Glossary of Terms for definitions. Average 2018-20est: Data for 2020 are estimated.

1. Refers to all current European Union member States (excludes the United Kingdom)
2. Refers to mainland only. The economies of Chinese Taipei, Hong Kong (China) and Macau (China) are included in the Asia aggregate.
3. Excludes Iceland and Costa Rica but includes all EU member countries.
4. Least-squares growth rate (see glossary).

Source: OECD/FAO (2021), "OECD-FAO Agricultural Outlook", *OECD Agriculture statistics* (database). dx.doi.org/10.1787/agr-outl-data-en

Table C.14.2. Maize projections: Consumption, feed, food

Marketing year

	CONSUMPTION (kt)		Growth (%)[4]		FEED (kt)		Growth (%)[4]		FOOD (kg/cap)		Growth (%)[4]	
	Average 2018-20est	2030	2011-20	2021-30	Average 2018-20est	2030	2011-20	2021-30	Average 2018-20est	2030	2011-20	2021-30
WORLD	**1 166 255**	**1 305 125**	**3.23**	**1.10**	**671 024**	**787 208**	**3.78**	**1.36**	**18.9**	**20.0**	**0.82**	**0.59**
NORTH AMERICA	323 190	344 380	1.53	0.75	136 930	163 326	1.46	1.28	17.6	17.3	-0.59	-0.20
Canada	14 575	15 430	2.65	1.15	9 082	9 440	4.24	1.42	31.2	28.1	-3.77	-0.78
United States	308 615	328 950	1.48	0.73	127 848	153 886	1.28	1.27	16.1	16.0	-0.02	-0.10
LATIN AMERICA	171 102	203 901	4.56	1.70	113 790	137 222	5.18	1.82	50.5	51.9	0.16	0.34
Argentina	22 751	29 812	8.11	2.69	16 850	23 101	10.57	3.13	36.3	37.3	1.60	0.20
Brazil	67 145	79 101	3.31	1.62	46 506	53 884	2.37	1.50	24.6	25.0	0.32	0.13
Chile	3 431	3 720	4.34	1.47	2 961	3 228	5.17	1.64	20.6	20.8	-0.09	0.15
Colombia	7 360	9 639	5.26	2.43	6 372	8 538	5.76	2.68	18.2	18.5	0.97	0.15
Mexico	42 868	48 483	5.53	1.07	23 999	27 095	9.80	1.00	136.0	141.1	0.10	0.36
Paraguay	3 755	4 859	16.66	1.82	907	1 243	10.56	2.93	54.2	55.0	-0.51	0.15
Peru	5 566	7 973	5.99	3.35	4 843	7 191	6.57	3.65	16.2	16.5	1.87	0.15
EUROPE	109 649	114 518	1.79	0.63	87 283	91 169	2.06	0.54	8.4	8.6	0.11	0.27
European Union[1]	83 394	85 527	1.71	0.52	66 491	68 433	1.95	0.41	10.6	10.9	0.09	0.31
United Kingdom	1 821	1 495	8.70	-0.04	1 249	948	12.86	0.21	4.8	4.6	1.55	-0.36
Russia	9 377	11 152	12.40	1.55	7 645	9 216	16.61	1.56	1.4	1.5	3.17	0.94
Ukraine	6 709	7 134	-2.86	0.44	4 982	5 185	-3.06	0.24	10.7	11.2	-0.35	0.40
AFRICA	107 270	137 649	3.87	2.22	36 108	46 572	4.27	2.23	43.9	44.1	0.71	0.18
Egypt	17 503	20 500	3.43	1.51	12 703	15 184	4.04	1.72	41.8	38.8	-0.51	-0.63
Ethiopia	8 410	11 380	6.19	3.11	1 617	2 225	10.81	3.69	48.1	52.3	1.85	0.99
Nigeria	12 604	15 323	4.54	2.18	2 000	2 016	6.79	-0.10	40.1	41.2	1.92	0.40
South Africa	12 620	15 934	2.33	1.42	5 357	6 788	0.55	2.46	89.0	84.5	-0.14	-0.48
ASIA	454 502	504 077	4.31	0.93	296 531	348 493	4.99	1.33	9.4	9.5	0.51	0.06
China[2]	284 445	300 490	4.31	0.51	179 000	203 402	4.43	0.96	10.0	9.9	0.81	0.01
India	27 400	33 841	5.92	2.01	13 430	18 037	7.88	3.01	6.2	6.4	-0.02	0.01
Indonesia	23 803	28 551	1.22	1.80	12 291	16 104	8.76	2.46	29.4	29.9	0.17	0.15
Iran	10 257	10 990	8.16	0.79	10 032	10 746	8.38	0.80	0.9	0.9	-1.32	0.03
Japan	15 671	15 866	0.79	-0.02	12 042	11 935	1.24	-0.01	0.8	0.9	0.31	0.48
Kazakhstan	803	992	6.88	1.68	693	860	6.77	1.73	0.5	0.6	-1.44	0.98
Korea	10 970	11 582	3.29	0.33	8 767	9 383	4.07	0.41	2.0	2.0	1.13	0.02
Malaysia	3 940	5 086	3.06	2.19	3 676	4 798	2.82	2.28	2.0	1.9	3.07	-0.27
Pakistan	6 638	8 637	6.81	2.27	3 849	5 282	11.42	2.79	7.9	8.1	1.44	0.48
Philippines	8 600	10 181	2.13	1.70	5 666	6 689	1.42	1.97	18.8	18.6	1.00	-0.04
Saudi Arabia	4 130	5 413	9.56	2.25	3 924	5 173	9.26	2.30	0.2	0.2	-2.28	-0.99
Thailand	5 708	7 058	2.82	1.51	5 353	6 696	3.19	1.56	1.2	1.3	-0.37	0.60
Turkey	8 925	10 753	6.00	1.66	7 004	8 701	7.87	1.93	15.8	16.3	-0.12	0.40
Viet Nam	15 450	20 931	12.00	2.58	11 821	16 830	11.02	2.98	8.1	7.5	3.56	-0.29
OCEANIA	543	601	-1.81	1.18	383	425	0.06	1.73	2.3	2.0	-0.93	-1.20
Australia	206	309	-8.14	1.18	70	159	-14.40	2.59	3.1	2.7	-0.92	-1.23
New Zealand	324	278	4.68	1.19	310	263	4.83	1.24	1.5	1.5	-0.97	0.07
DEVELOPED COUNTRIES	**466 424**	**497 451**	**1.61**	**0.73**	**246 218**	**279 201**	**1.69**	**1.02**	**12.8**	**13.0**	**0.09**	**0.16**
DEVELOPING COUNTRIES	**699 831**	**807 674**	**4.43**	**1.33**	**424 807**	**508 006**	**5.17**	**1.55**	**20.3**	**21.5**	**0.87**	**0.59**
LEAST DEVELOPED COUNTRIES (LDC)	44 077	57 662	4.14	2.47	10 749	14 855	7.40	2.68	29.1	30.0	0.50	0.62
OECD[3]	**500 582**	**535 147**	**2.03**	**0.76**	**268 465**	**304 956**	**2.54**	**1.03**	**22.9**	**24.4**	**0.36**	**0.58**
BRICS	**400 987**	**440 519**	**4.26**	**0.87**	**251 938**	**291 327**	**4.23**	**1.23**	**10.4**	**10.4**	**0.46**	**0.01**

Note: Marketing year: See Glossary of Terms for definitions. Average 2018-20est: Data for 2020 are estimated.

1. Refers to all current European Union member States (excludes the United Kingdom)
2. Refers to mainland only. The economies of Chinese Taipei, Hong Kong (China) and Macau (China) are included in the Asia aggregate.
3. Excludes Iceland and Costa Rica but includes all EU member countries.
4. Least-squares growth rate (see glossary).

Source: OECD/FAO (2021), "OECD-FAO Agricultural Outlook", *OECD Agriculture statistics* (database). dx.doi.org/10.1787/agr-outl-data-en

Table C.15.1. Other coarse grain projections: Production and trade

Marketing year

	PRODUCTION (kt)		Growth (%)[4]		IMPORTS (kt)		Growth (%)[4]		EXPORTS (kt)		Growth (%)[4]	
	Average 2018-20est	2030	2011-20	2021-30	Average 2018-20est	2030	2011-20	2021-30	Average 2018-20est	2030	2011-20	2021-30
WORLD	**301 018**	**329 918**	**1.06**	**0.85**	**36 893**	**47 009**	**1.89**	**1.73**	**42 920**	**53 036**	**2.22**	**1.51**
NORTH AMERICA	28 001	28 256	2.14	0.12	1 534	1 798	-3.23	0.72	9 528	9 804	3.16	0.42
Canada	14 476	14 446	2.83	0.34	68	75	8.24	0.16	5 983	5 775	3.95	0.74
United States	13 525	13 810	1.57	-0.11	1 466	1 723	-3.52	0.74	3 545	4 029	3.36	-0.01
LATIN AMERICA	19 772	21 955	-1.87	0.87	1 728	1 973	-10.40	1.42	3 192	3 317	-7.26	0.87
Argentina	6 911	7 493	-3.85	1.02	1	1	0.00	0.00	3 052	3 148	-7.46	1.01
Brazil	3 661	4 208	3.77	1.46	604	751	5.35	2.25	3	3	-13.88	-0.25
Chile	804	853	1.55	0.10	73	103	-24.63	10.35	29	18	-16.24	-7.02
Colombia	22	26	-12.70	1.85	342	360	-10.49	0.66	0	0	..	..
Mexico	5 689	6 249	-3.90	0.44	407	442	-16.30	0.09	2	2	32.31	-0.79
Paraguay	108	122	-1.89	1.27	0	0	..	..	5	0	-3.30	..
Peru	259	318	-0.05	1.89	169	180	5.42	0.41	0	0	..	..
EUROPE	132 742	137 090	0.65	0.53	2 627	2 797	1.91	1.72	21 220	26 869	5.71	1.99
European Union[1]	83 551	82 140	0.72	0.29	1 778	1 788	6.04	3.86	10 073	12 279	3.56	1.67
United Kingdom	8 314	7 902	2.79	-0.22	168	298	-4.84	2.44	1 514	1 616	9.29	-1.22
Russia	25 922	29 448	1.27	0.83	48	58	-23.31	0.31	5 062	6 484	8.45	2.18
Ukraine	9 599	11 662	-0.61	1.87	17	17	-7.57	0.18	4 429	6 408	6.95	3.47
AFRICA	57 821	69 622	3.30	1.79	4 290	6 913	5.95	4.91	1 288	2 431	-1.86	4.74
Egypt	1 038	1 187	0.44	1.82	95	126	-2.05	-1.15	0	0	..	..
Ethiopia	13 896	19 970	4.42	3.31	0	0	-79.27	..	495	2 025	5.06	12.58
Nigeria	8 646	9 612	2.55	1.01	20	21	0.00	1.95	100	92	0.00	-4.19
South Africa	625	648	2.43	-0.75	144	378	1.46	3.14	7	9	-15.74	-0.57
ASIA	49 981	58 438	0.56	0.88	26 605	33 388	3.33	1.24	1 728	2 213	5.11	0.87
China[2]	9 054	9 586	0.17	0.42	9 831	14 247	13.86	0.83	85	93	-3.82	2.45
India	17 470	20 566	-1.56	1.11	189	158	98.98	-5.66	151	248	-15.61	4.92
Indonesia	0	0	..	..	73	87	-5.91	1.67	0	0	..	..
Iran	2 948	3 431	1.43	1.66	3 116	2 955	14.82	-0.25	0	0	..	..
Japan	237	229	1.49	-0.36	2 183	1 970	-4.61	-1.17	0	0	..	..
Kazakhstan	4 229	5 015	7.69	0.92	39	31	16.20	2.03	1 399	1 776	17.50	0.49
Korea	117	118	4.92	0.15	112	123	-0.17	0.85	0	0	..	..
Malaysia	0	0	..	..	13	16	234.31	2.06	0	0	..	..
Pakistan	520	593	0.60	1.20	134	192	28.36	5.20	0	0	..	..
Philippines	1	1	0.19	1.66	41	47	1.40	1.92	0	0	..	..
Saudi Arabia	182	131	3.93	-2.57	6 699	8 985	-3.52	2.24	0	0	..	..
Thailand	183	121	0.48	-1.21	569	1 114	54.63	1.50	2	2	0.07	-0.26
Turkey	8 364	9 679	0.54	0.61	621	1 212	23.26	10.76	85	87	19.00	-1.81
Viet Nam	3	4	9.89	1.93	100	115	5.67	1.25	0	0	..	..
OCEANIA	12 703	14 558	0.96	0.85	109	141	2.18	2.82	5 965	8 402	-0.78	1.01
Australia	12 286	14 102	1.05	0.85	0	0	..	..	5 964	8 401	-0.78	1.01
New Zealand	413	455	-1.63	1.06	24	31	1.03	2.98	0	0	..	..
DEVELOPED COUNTRIES	**180 999**	**188 794**	**1.09**	**0.51**	**7 133**	**7 661**	**-1.70**	**0.77**	**38 118**	**46 859**	**3.96**	**1.41**
DEVELOPING COUNTRIES	**120 020**	**141 124**	**1.00**	**1.31**	**29 760**	**39 348**	**2.92**	**1.92**	**4 802**	**6 177**	**-6.39**	**2.36**
LEAST DEVELOPED COUNTRIES (LDC)	28 101	32 072	3.91	1.32	677	1 616	0.95	14.11	666	286	-5.20	-11.16
OECD[3]	**148 839**	**151 009**	**0.87**	**0.30**	**7 943**	**8 963**	**-3.93**	**1.92**	**27 198**	**32 211**	**2.49**	**0.93**
BRICS	**56 732**	**64 456**	**0.31**	**0.88**	**10 816**	**15 592**	**11.52**	**0.84**	**5 307**	**6 836**	**6.00**	**2.27**

.. Not available

Note: Marketing year: See Glossary of Terms for definitions. Average 2018-20est: Data for 2020 are estimated.

1. Refers to all current European Union member States (excludes the United Kingdom)
2. Refers to mainland only. The economies of Chinese Taipei, Hong Kong (China) and Macau (China) are included in the Asia aggregate.
3. Excludes Iceland and Costa Rica but includes all EU member countries.
4. Least-squares growth rate (see glossary).

Source: OECD/FAO (2021), "OECD-FAO Agricultural Outlook", *OECD Agriculture statistics* (database). dx.doi.org/10.1787/agr-outl-data-en

Table C.15.2. Other coarse grain projections: Consumption, feed, food

Marketing year

	CONSUMPTION (kt)		Growth (%)[4]		FEED (kt)		Growth (%)[4]		FOOD (kg/cap)		Growth (%)[4]	
	Average 2018-20est	2030	2011-20	2021-30	Average 2018-20est	2030	2011-20	2021-30	Average 2018-20est	2030	2011-20	2021-30
WORLD	**287 761**	**323 088**	**0.61**	**0.83**	**157 435**	**178 462**	**0.35**	**0.81**	**10.5**	**11.0**	**-0.01**	**0.40**
NORTH AMERICA	20 098	20 230	1.18	0.10	13 685	13 923	2.37	0.16	4.4	4.4	0.70	-0.20
Canada	8 649	8 734	2.08	0.20	7 786	8 107	1.84	0.22	8.1	7.6	-0.23	-0.85
United States	11 449	11 495	0.50	0.02	5 899	5 816	3.12	0.08	4.0	4.1	0.91	-0.07
LATIN AMERICA	18 204	20 583	-1.93	0.89	12 158	13 685	-3.76	0.76	3.5	3.6	-1.45	0.22
Argentina	3 839	4 334	0.87	0.96	2 273	2 610	0.30	0.96	14.5	13.7	-4.11	-0.45
Brazil	4 263	4 952	4.21	1.57	2 733	3 009	3.99	1.10	1.8	2.1	1.66	2.02
Chile	853	938	-3.84	1.08	517	574	-7.31	1.33	3.9	4.3	1.87	0.99
Colombia	365	385	-10.67	0.75	35	29	-35.19	2.76	0.5	0.4	-11.83	-1.05
Mexico	5 993	6 681	-6.33	0.36	5 264	5 885	-7.11	0.30	5.7	5.6	0.97	-0.13
Paraguay	102	122	-1.87	1.36	88	100	-3.04	1.22	0.0	0.0	-2.27	-1.24
Peru	429	497	1.75	1.34	25	35	-0.51	3.50	6.6	7.4	0.73	0.74
EUROPE	110 647	112 998	-0.45	0.07	80 080	82 575	-0.31	0.33	13.7	13.4	-1.03	-0.14
European Union[1]	71 099	71 719	-0.27	-0.11	53 362	54 480	-0.27	0.25	10.3	10.5	-0.36	0.16
United Kingdom	6 970	6 590	1.83	0.11	3 428	2 932	2.83	-0.55	35.4	35.0	-0.17	-0.06
Russia	21 218	22 952	-0.13	0.45	15 091	16 656	0.50	0.66	12.4	10.7	-3.44	-1.30
Ukraine	5 117	5 258	-4.82	0.31	3 396	3 459	-5.26	0.29	16.9	15.9	-2.64	-0.56
AFRICA	59 627	73 619	2.82	2.02	8 854	11 213	2.90	2.46	32.8	31.7	0.20	-0.18
Egypt	1 133	1 311	0.77	1.47	778	921	1.06	1.68	2.9	2.7	-1.93	-0.63
Ethiopia	13 191	17 750	4.33	2.74	593	861	2.15	4.13	93.4	98.7	1.25	0.50
Nigeria	8 549	9 535	0.82	1.11	273	283	-5.80	0.09	38.9	33.1	-1.18	-1.30
South Africa	777	1 014	3.56	0.72	106	134	-2.70	2.12	2.6	2.3	-1.35	-0.98
ASIA	73 625	89 396	1.31	1.07	38 988	52 643	2.57	1.46	5.2	5.3	-1.37	-0.16
China[2]	18 838	23 761	5.41	0.65	7 728	13 423	19.46	1.08	3.2	3.0	-0.03	-0.62
India	17 544	20 475	-1.13	1.00	913	1 649	2.11	3.82	11.8	12.1	-1.87	-0.11
Indonesia	73	87	-5.91	1.67	0	0	0.00	0.00	0.3	0.3	-7.07	0.78
Iran	5 798	6 366	6.20	0.78	5 621	6 180	6.45	0.79	0.3	0.3	-1.32	-0.92
Japan	2 406	2 211	-4.67	-1.17	1 449	1 414	-8.72	-0.51	4.0	4.2	1.70	0.40
Kazakhstan	2 747	3 259	4.68	1.33	1 715	1 987	3.44	1.52	2.5	2.2	-1.44	-1.02
Korea	230	241	2.12	0.50	59	59	0.14	0.20	3.3	3.6	2.58	0.63
Malaysia	13	16	217.37	2.16	12	15	256.56	2.20	0.0	0.0	170.73	1.00
Pakistan	654	786	3.12	2.05	198	264	0.18	3.50	1.9	1.8	3.03	-0.28
Philippines	42	48	1.36	1.91	30	33	-0.33	1.90	0.0	0.1	1.60	1.20
Saudi Arabia	7 248	9 071	-1.54	2.18	7 052	8 865	-1.58	2.23	2.6	2.3	-2.28	-0.99
Thailand	741	1 233	19.76	1.21	292	641	22.35	1.58	1.4	1.6	-0.38	0.99
Turkey	8 630	10 749	0.71	1.55	7 577	9 607	0.91	1.67	3.5	3.2	-1.56	-0.91
Viet Nam	103	119	5.77	1.27	0	0	0.00	0.00	0.0	0.0	4.34	1.20
OCEANIA	5 560	6 262	-0.34	0.53	3 670	4 423	-1.76	0.95	6.3	6.7	-1.92	0.20
Australia	5 035	5 668	-0.29	0.44	3 272	3 977	-1.79	0.90	7.3	7.7	-2.73	-0.14
New Zealand	437	485	-1.51	1.18	379	427	-1.74	1.35	1.7	1.5	-0.97	-0.68
DEVELOPED COUNTRIES	**144 983**	**149 448**	**-0.14**	**0.15**	**103 133**	**107 584**	**-0.06**	**0.40**	**9.0**	**8.7**	**-0.92**	**-0.33**
DEVELOPING COUNTRIES	**142 778**	**173 640**	**1.43**	**1.45**	**54 303**	**70 878**	**1.20**	**1.47**	**10.9**	**11.5**	**0.16**	**0.50**
LEAST DEVELOPED COUNTRIES (LDC)	27 216	33 171	3.02	1.95	1 617	1 819	5.71	1.78	24.3	23.9	0.66	0.05
OECD[3]	**123 865**	**127 730**	**-0.44**	**0.12**	**90 504**	**94 911**	**-0.65**	**0.38**	**7.7**	**7.7**	**-0.15**	**-0.04**
BRICS	**62 639**	**73 156**	**1.21**	**0.74**	**26 572**	**34 871**	**3.81**	**0.99**	**7.2**	**7.3**	**-1.49**	**-0.09**

Note: Marketing year: See Glossary of Terms for definitions. Average 2018-20est: Data for 2020 are estimated.

1. Refers to all current European Union member States (excludes the United Kingdom)
2. Refers to mainland only. The economies of Chinese Taipei, Hong Kong (China) and Macau (China) are included in the Asia aggregate.
3. Excludes Iceland and Costa Rica but includes all EU member countries.
4. Least-squares growth rate (see glossary).

Source: OECD/FAO (2021), "OECD-FAO Agricultural Outlook", *OECD Agriculture statistics* (database). dx.doi.org/10.1787/agr-outl-data-en

Table C.16.1. Rice projections: Production and trade

Marketing year

	PRODUCTION (kt)		Growth (%)[4]		IMPORTS (kt)		Growth (%)[4]		EXPORTS (kt)		Growth (%)[4]	
	Average 2018-20est	2030	2011-20	2021-30	Average 2018-20est	2030	2011-20	2021-30	Average 2018-20est	2030	2011-20	2021-30
WORLD	**509 290**	**567 270**	**0.69**	**0.87**	**45 333**	**62 261**	**2.37**	**2.61**	**45 906**	**62 261**	**1.51**	**2.61**
NORTH AMERICA	6 549	6 711	0.65	0.85	1 468	1 955	5.00	2.08	2 965	3 122	-1.03	0.68
Canada	0	0	..	..	390	469	0.89	1.76	0	0	..	..
United States	6 549	6 711	0.65	0.85	1 079	1 486	6.89	2.19	2 965	3 122	-1.03	0.68
LATIN AMERICA	18 618	20 080	-0.02	0.63	4 537	5 037	3.13	0.29	3 834	3 913	1.07	0.17
Argentina	852	889	-3.93	0.26	7	7	1.25	0.00	398	241	-5.79	-3.17
Brazil	7 646	7 307	-1.50	-0.37	713	920	2.49	0.65	1 086	995	-0.76	-1.46
Chile	122	134	3.44	0.72	172	191	6.11	0.38	2	1	54.01	-0.12
Colombia	1 857	2 081	5.08	0.37	178	249	-2.27	1.88	3	5	105.84	-0.15
Mexico	308	226	7.87	-2.93	740	947	2.15	2.20	83	63	85.30	0.00
Paraguay	737	1 069	11.97	2.46	1	1	0.31	0.01	712	991	15.06	2.64
Peru	2 279	2 558	2.04	1.29	293	371	5.75	-0.33	84	89	57.42	0.25
EUROPE	2 830	2 935	-0.41	0.42	2 678	3 056	3.16	1.23	707	1 052	1.07	3.33
European Union[1]	1 684	1 645	-0.65	-0.26	1 444	1 764	5.33	1.97	445	655	2.55	3.57
United Kingdom	0	0	..	..	675	684	0.38	0.12	42	23	1.39	-5.00
Russia	1 093	1 230	0.80	1.36	224	238	1.24	0.41	209	370	-0.93	3.84
Ukraine	40	45	-11.50	1.20	94	108	6.94	0.82	4	2	-17.73	-0.81
AFRICA	24 269	28 444	3.70	1.01	16 491	31 226	2.55	5.77	455	228	-3.91	-4.29
Egypt	3 965	4 701	-1.13	0.84	427	882	18.90	8.15	10	0	-77.68	..
Ethiopia	113	157	7.72	2.82	633	1 168	25.15	4.89	0	0	..	..
Nigeria	5 002	6 430	6.62	2.20	2 210	4 701	-5.10	6.21	0	0	..	..
South Africa	2	2	0.00	-2.97	924	1 171	-0.61	1.98	0	0	..	..
ASIA	456 845	508 621	0.61	0.87	19 432	20 135	1.62	-0.21	37 806	53 849	2.06	2.96
China[2]	145 731	151 599	0.53	0.22	2 855	3 066	11.36	0.53	2 379	2 850	27.83	2.08
India	119 450	139 249	1.80	1.25	5	1	15.47	0.22	12 702	17 566	2.87	1.21
Indonesia	36 057	36 733	-0.47	0.21	1 051	51	-12.75	-33.50	1	0	-0.12	..
Iran	2 457	2 908	8.36	1.69	1 145	976	-4.29	-0.41	2	1	2.24	0.03
Japan	7 407	6 463	-0.77	-1.60	763	776	-0.68	0.06	113	161	-1.24	1.27
Kazakhstan	356	433	6.30	1.59	12	9	-9.63	-0.88	101	102	9.85	0.89
Korea	3 915	3 653	-0.84	-1.00	402	429	-0.68	-0.14	52	50	61.24	0.40
Malaysia	1 565	1 699	-1.20	0.74	1 145	1 526	1.57	1.51	34	53	40.53	-0.61
Pakistan	7 598	9 442	3.13	0.79	6	4	-31.43	0.16	4 275	5 068	2.42	0.03
Philippines	12 481	14 738	1.04	1.56	2 732	3 549	10.68	1.08	0	0	-15.92	..
Saudi Arabia	0	0	..	..	1 313	1 521	0.97	1.32	0	0	..	..
Thailand	19 858	22 372	-2.86	1.20	310	357	-5.52	7.66	7 274	8 946	-0.90	2.68
Turkey	584	703	1.29	0.82	235	297	1.42	2.64	23	28	-7.60	-2.01
Viet Nam	28 221	32 824	-0.10	1.69	532	737	0.26	4.03	6 854	9 121	-2.42	4.44
OCEANIA	178	480	-21.14	2.03	725	853	6.55	0.69	139	97	-19.72	2.53
Australia	167	465	-22.14	2.03	221	216	6.12	-2.04	138	97	-19.76	2.54
New Zealand	0	0	..	..	55	63	4.02	1.50	0	0	..	..
DEVELOPED COUNTRIES	**17 687**	**17 485**	**-0.54**	**-0.14**	**6 458**	**7 583**	**2.44**	**1.23**	**4 025**	**4 534**	**-1.79**	**1.30**
DEVELOPING COUNTRIES	**491 603**	**549 785**	**0.74**	**0.90**	**38 874**	**54 678**	**2.35**	**2.81**	**41 881**	**57 727**	**1.88**	**2.72**
LEAST DEVELOPED COUNTRIES (LDC)	77 690	92 843	1.13	1.46	9 830	18 068	4.79	5.79	4 287	9 832	7.29	8.01
OECD[3]	**22 593**	**22 080**	**-0.23**	**-0.38**	**6 625**	**7 889**	**2.53**	**1.34**	**3 870**	**4 205**	**-1.59**	**1.06**
BRICS	**273 921**	**299 387**	**1.00**	**0.68**	**4 721**	**5 395**	**5.63**	**0.84**	**16 376**	**21 780**	**4.17**	**1.22**

.. Not available

Note: Marketing year: See Glossary of Terms for definitions. Average 2018-20est: Data for 2020 are estimated.

1. Refers to all current European Union member States (excludes the United Kingdom)
2. Refers to mainland only. The economies of Chinese Taipei, Hong Kong (China) and Macau (China) are included in the Asia aggregate.
3. Excludes Iceland and Costa Rica but includes all EU member countries.
4. Least-squares growth rate (see glossary).

Source: OECD/FAO (2021), "OECD-FAO Agricultural Outlook", *OECD Agriculture statistics* (database). dx.doi.org/10.1787/agr-outl-data-en

Table C.16.2. Rice projections: Consumption, food

Marketing year

	CONSUMPTION (kt)		Growth (%)[4]		FOOD (kg/cap)		Growth (%)[4]	
	Average 2018-20est	2030	2011-20	2021-30	Average 2018-20est	2030	2011-20	2021-30
WORLD	**506 290**	**566 985**	**1.12**	**0.87**	**54.4**	**55.0**	**0.00**	**-0.07**
NORTH AMERICA	4 957	5 529	2.75	1.01	13.5	14.2	2.03	0.44
Canada	390	469	0.89	1.76	10.4	11.5	-0.10	0.97
United States	4 567	5 059	2.93	0.94	13.9	14.5	2.24	0.40
LATIN AMERICA	19 367	21 179	0.33	0.65	28.0	28.1	-0.74	-0.14
Argentina	512	653	1.20	1.90	10.0	11.1	1.25	0.99
Brazil	7 300	7 233	-1.60	-0.08	34.6	32.3	-2.40	-0.57
Chile	280	323	4.49	0.77	12.3	13.6	3.26	0.55
Colombia	1 995	2 316	3.60	0.85	36.3	39.0	1.69	0.32
Mexico	854	1 110	0.53	0.05	6.7	7.9	-0.68	-0.82
Paraguay	81	80	3.31	0.69	6.1	5.5	0.46	-0.84
Peru	2 503	2 835	2.20	1.16	68.2	71.0	0.65	0.31
EUROPE	4 792	4 938	1.25	0.34	6.3	6.6	1.15	0.42
European Union[1]	2 694	2 757	1.72	0.28	6.1	6.2	1.59	0.37
United Kingdom	633	661	0.35	0.35	9.4	9.4	-0.30	-0.01
Russia	1 091	1 095	1.04	0.39	7.5	7.6	0.86	0.60
Ukraine	132	151	-0.96	0.96	2.9	3.6	-0.21	1.64
AFRICA	40 778	59 186	3.80	3.33	27.4	31.5	1.31	1.24
Egypt	4 549	5 570	1.84	1.63	41.4	42.3	-0.10	0.04
Ethiopia	776	1 317	21.79	4.64	6.4	8.6	18.35	2.44
Nigeria	7 372	11 100	2.82	3.77	31.7	37.6	0.11	1.49
South Africa	930	1 169	0.29	2.14	15.5	17.4	-0.72	1.10
ASIA	435 508	474 919	0.91	0.61	77.2	77.5	-0.06	-0.15
China[2]	147 174	152 475	1.29	0.21	76.5	76.5	0.09	-0.01
India	102 886	121 354	1.25	1.02	69.9	74.4	0.24	0.11
Indonesia	37 674	36 708	-0.27	-0.14	126.1	111.1	-0.62	-1.31
Iran	3 593	3 875	3.43	1.14	37.4	36.0	1.34	0.25
Japan	7 523	7 217	-1.65	-0.27	53.0	53.8	-0.92	0.28
Kazakhstan	264	338	3.33	1.92	12.6	14.7	1.41	1.04
Korea	4 513	4 031	0.25	-0.79	61.1	53.2	-1.82	-1.29
Malaysia	2 699	3 168	0.15	1.21	78.6	82.9	-0.60	0.12
Pakistan	3 310	4 360	3.56	1.85	12.5	13.3	0.82	0.19
Philippines	15 232	18 249	2.05	1.52	120.3	129.0	0.49	0.29
Saudi Arabia	1 280	1 516	-0.06	1.50	36.9	38.1	-2.25	0.32
Thailand	12 321	13 736	-1.02	0.73	100.0	101.4	0.12	0.00
Turkey	807	970	1.42	1.55	9.1	10.2	-0.01	1.03
Viet Nam	21 973	24 379	0.80	0.96	152.6	152.0	-0.63	-0.07
OCEANIA	888	1 233	1.69	1.08	20.7	25.6	-0.10	-0.08
Australia	357	583	-4.32	0.26	14.1	20.7	-5.62	-0.72
New Zealand	55	63	4.02	1.50	11.5	12.2	3.02	0.80
DEVELOPED COUNTRIES	**19 622**	**20 651**	**0.37**	**0.43**	**13.1**	**13.5**	**0.30**	**0.27**
DEVELOPING COUNTRIES	**486 668**	**546 333**	**1.15**	**0.89**	**63.9**	**63.6**	**-0.15**	**-0.21**
LEAST DEVELOPED COUNTRIES (LDC)	83 451	100 746	1.41	1.63	75.8	73.6	-0.30	-0.38
OECD[3]	**24 947**	**25 880**	**0.52**	**0.20**	**16.1**	**16.3**	**-0.07**	**-0.07**
BRICS	**259 380**	**283 325**	**1.18**	**0.55**	**66.7**	**68.6**	**0.07**	**0.05**

Note: Marketing year: See Glossary of Terms for definitions. Average 2018-20est: Data for 2020 are estimated.

1. Refers to all current European Union member States (excludes the United Kingdom)
2. Refers to mainland only. The economies of Chinese Taipei, Hong Kong (China) and Macau (China) are included in the Asia aggregate.
3. Excludes Iceland and Costa Rica but includes all EU member countries.
4. Least-squares growth rate (see glossary).

Source: OECD/FAO (2021), "OECD-FAO Agricultural Outlook", *OECD Agriculture statistics* (database). dx.doi.org/10.1787/agr-outl-data-en

Table C.17. Main policy assumptions for cereal markets

Marketing year

		Average 2018-20est	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
ARGENTINA												
Crops export tax	%	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Rice export tax	%	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
CANADA												
Tariff-quotas[1]												
Wheat	kt	350.0	350.0	350.0	350.0	350.0	350.0	350.0	350.0	350.0	350.0	350.0
In-quota tariff	%	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Out-of-quota tariff	%	61.7	61.7	61.7	61.7	61.7	61.7	61.7	61.7	61.7	61.7	61.7
Barley	kt	399.0	399.0	399.0	399.0	399.0	399.0	399.0	399.0	399.0	399.0	399.0
In-quota tariff	%	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Out-of-quota tariff	%	58.0	58.0	58.0	58.0	58.0	58.0	58.0	58.0	58.0	58.0	58.0
EUROPEAN UNION[2,3]												
Voluntary coupled support												
Wheat[4]	mln EUR	89.7	89.7	89.7	89.7	89.7	89.7	89.7	89.7	89.7	89.7	89.7
Rice[5]	mln EUR	55.7	55.6	55.6	55.6	55.6	55.6	55.6	55.6	55.6	55.6	55.6
Cereal reference price[6]	EUR/t	101.3	101.3	101.3	101.3	101.3	101.3	101.3	101.3	101.3	101.3	101.3
Direct payments ceilings[7]	bln EUR	41.8	42.3	42.3	42.3	42.3	42.3	42.3	42.3	42.3	42.3	42.3
Rice reference price[8]	EUR/t	150.0	150.0	150.0	150.0	150.0	150.0	150.0	150.0	150.0	150.0	150.0
Wheat tariff-quota[1]	kt	4 519.8	4 523.2	4 523.2	4 523.2	4 523.2	4 523.2	4 523.2	4 523.2	4 523.2	4 523.2	4 523.2
Coarse grain tariff-quota[1]	kt	4 450.5	4 470.8	4 470.8	4 470.8	4 470.8	4 470.8	4 470.8	4 470.8	4 470.8	4 470.8	4 470.8
JAPAN												
Wheat tariff-quota	kt	5 740.0	5 740.0	5 740.0	5 740.0	5 740.0	5 740.0	5 740.0	5 740.0	5 740.0	5 740.0	5 740.0
In-quota tariff	'000 JPY/t	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Out-of-quota tariff	'000 JPY/t	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0
Barley tariff-quota	kt	1 369.0	1 369.0	1 369.0	1 369.0	1 369.0	1 369.0	1 369.0	1 369.0	1 369.0	1 369.0	1 369.0
In-quota tariff	'000 JPY/t	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Out-of-quota tariff	'000 JPY/t	39.0	39.0	39.0	39.0	39.0	39.0	39.0	39.0	39.0	39.0	39.0
Rice tariff-quota	kt	682.2	682.2	682.2	682.2	682.2	682.2	682.2	682.2	682.2	682.2	682.2
In-quota tariff	'000 JPY/t	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Out-of-quota tariff	'000 JPY/t	341.0	341.0	341.0	341.0	341.0	341.0	341.0	341.0	341.0	341.0	341.0
KOREA												
Wheat tariff	%	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4
Maize tariff-quota	kt	6 102.0	6 102.0	6 102.0	6 102.0	6 102.0	6 102.0	6 102.0	6 102.0	6 102.0	6 102.0	6 102.0
In-quota tariff	%	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
Out-of-quota tariff	%	304.7	304.7	304.7	304.7	304.7	304.7	304.7	304.7	304.7	304.7	304.7
Barley tariff-quota	kt	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.6
In-quota tariff	%	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Out-of-quota tariff	%	271.4	271.4	271.4	271.4	271.4	271.4	271.4	271.4	271.4	271.4	271.4
Rice quota[9]	kt	408.7	408.7	408.7	408.7	408.7	408.7	408.7	408.7	408.7	408.7	408.7
In-quota tariff	%	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
MERCOSUR												
Wheat tariff	%	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Coarse grain tariff[10]	%	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Rice tariff	%	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
MEXICO												
Barley import tariff	%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
UNITED STATES												
ARC participation rate												
Wheat	%	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Coarse grains	%	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Wheat loan rate	USD/t	118.8	124.2	124.2	124.2	124.2	124.2	124.2	124.2	124.2	124.2	124.2
Maize loan rate	USD/t	83.3	86.6	86.6	86.6	86.6	86.6	86.6	86.6	86.6	86.6	86.6
CHINA												
Wheat tariff-quota	kt	9 636	9 636	9 636	9 636	9 636	9 636	9 636	9 636	9 636	9 636	9 636
In-quota tariff	%	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Out-of-quota tariff	%	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
Coarse grains tariff	%	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Maize tariff-quota	kt	7 200	7 200	7 200	7 200	7 200	7 200	7 200	7 200	7 200	7 200	7 200
In-quota tariff	%	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Out-of-quota tariff	%	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
Rice tariff-quota	kt	5 320	5 320	5 320	5 320	5 320	5 320	5 320	5 320	5 320	5 320	5 320
In-quota tariff	%	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Out-of-quota tariff	%	51.7	51.7	51.7	51.7	51.7	51.7	51.7	51.7	51.7	51.7	51.7

Table C.17. Main policy assumptions for cereal markets *(cont.)*

Marketing year

		Average 2018-20est	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
INDIA												
Minimum support price												
Rice	INR/t	20 361	18 076	18 578	19 092	19 626	20 176	20 717	21 245	21 761	22 267	22 760
Wheat	INR/t	17 595	19 138	19 539	20 679	21 076	22 124	22 645	23 640	24 218	25 129	25 733
Wheat tariff	%	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0
Rice tariff	%	70.5	70.5	70.5	70.5	70.5	70.5	70.5	70.5	70.5	70.5	70.5
RUSSIA												
Wheat ad valorem import tax	%	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Rice tariff equivalent of import barriers	%	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Coarse grains tariff equivalent of import barriers	%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Coarse grain specific tariff	RUB/t	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Coarse grain ad valorem import tax	%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Note: Marketing year: See Glossary of Terms for definitions. Average 2018-20est: Data for 2020 are estimated.The sources for tariffs and Tariff Rate Quotas are the national questionnaire reply, UNCTAD and WTO.

1. Year beginning 1 July.
2. Since 2015 the Basic payment scheme (BPS) holds, which shall account for 68% maximum of the national direct payment envelopes. On top of this, compulsory policy instruments have been introduced: the Green Payment (30%) and young farmer scheme (2%).
3. Refers to all current European Union member States (excludes the United Kingdom)
4. Mainly for durum wheat. Implemented in 6 Member States.
5. Implemented in 6 Member States.
6. Buying-in at the fixed reference price is operable automatically only for common wheat up to a maximum quantity of 3 million tons per marketing year. Above that ceiling and for durum wheat, maize and barley intervention can take place only via tender.
7. Estimated net amounts for all direct payments based on Annex II of EU Regulation No 1307/2013, accounting for the transfers between direct aids and rural development envelopes.
8. Intervention is set at zero tonnes per marketing year. However, the Commission may initiate intervention if market requires.
9. Milled rice basis.
10. Applied by Brazil only.

Source: OECD/FAO (2021), "OECD-FAO Agricultural Outlook", *OECD Agriculture statistics* (database). dx.doi.org/10.1787/agr-outl-data-en