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MAJOR TROPICAL FRUITS

Market Review 2021



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NOTE ON METHODOLOGY

This report describes full-year results on developments in global major tropical fruits trade in 2021 and represents an update to the *Major Tropical Fruits Market Preliminary Results 2021*. The analysis contained herein is based on data on trade quantities that were compiled from the following sources: country responses to the 2022 questionnaire of the FAO Intergovernmental Sub-Group on Tropical Fruits; data from the UN Comtrade database and Trade Data Monitor Inc.; communications with national sources and industry partners in trading countries; and secondary data and information from desk research. The findings incorporate revised data and information as available up to the end of June 2022. Detailed tables on global trade in major tropical fruits as well as further information on data sources and any deviations from the underlying methodology can be found in the *Major Tropical Fruits Statistical Compendium*. All data in this report should be considered as provisional. FAO is continuously monitoring global trade flows of major tropical fruits and will update these results should revisions of officially reported data be released.

FOREWORD

This report is issued on an annual basis to the Members and Observers of the Sub-Group on Tropical Fruits of the Intergovernmental Group on Bananas and Tropical Fruits, which is a subsidiary body of the Committee on Commodity Problems (CCP). It is prepared by the Team on Responsible Global Value Chains, Markets and Trade Division, Food and Agriculture Organization of the United Nations (FAO), Rome.

The Team on Responsible Global Value Chains provides research and analyses on global value chains for agricultural commodities, and economic data and analyses on tropical fruits. Regular publications include market reviews, outlook appraisals and projections for bananas and tropical fruits.

The team also provides assistance to developing countries in designing and implementing national policies regarding responsible value chains in agriculture.

The report is available at the following FAO webpage:

www.fao.org/economic/est/est-commodities/tropical-fruits/en/



DEVELOPMENTS AT A GLANCE

- World trade in major tropical fruits expanded by 6.8 percent in 2021, reaching a record volume of USD 10.4 billion in constant 2014-2016 dollar terms.
- Growth in trade in tropical fruits in 2021 was driven by ample global supplies of major tropical fruits from the major production zones, including a recovery in global supplies of pineapples, combined with rising import demand for all four commodities.
- Substantial increases in the costs of inputs and transport, alongside the global shortage in refrigerated containers, however, exerted upward pressure on consumer prices and squeezed margins along the value chain.
- Developments by commodity:
 - Global exports of mango, mangosteen and guava rose by 1.9 percent, to 2.3 million tonnes in 2021.
 - Global pineapple exports rose by 5.7 percent, to 3.2 million tonnes in 2021
 - Global exports of avocado rose by 9.7 percent, to 2.5 million tonnes in 2021.
 - Global exports of papayas grew by 5.7 percent, to 368 000 tonnes in 2021.
- World average export unit values of all four major tropical fruits displayed an overall tendency to increase amid ample global import demand and rising costs for inputs and transport.
- Indicative average wholesale prices in the United States similarly displayed a tendency to increase for most major tropical fruits, with the exception of pineapples, whose average wholesale prices remained at a low level amid high pressure along the value chain.

The war in Ukraine - Preliminary insights into the immediate impact on tropical fruit trade:

- The global operating environment for tropical fruits has been complicated by the war in Ukraine since February 2022.
- Critically, the war has exacerbated already previously mounting pressures on global energy and fertilizer markets as well as supply chains.
- The considerable rise in input prices is raising production costs and is expected to result in higher fruit prices over the year 2022. Data on price developments over the first six months of 2022 already point into this direction for all four of the major tropical fruits.
- The war has further resulted in the discontinuation of important trade relations amid the economic sanctions and has caused severe disruptions to transport routes to Ukraine.
- The Russian Federation imports some 160 000 tonnes of major tropical fruits annually, predominantly pineapples, avocados and mangoes, while Ukraine imports 20 000 to 30 000 tonnes of mainly avocados and pineapples. Peru and Costa Rica are the leading suppliers to these two markets.
- These quantities translate into some 2.4 percent of global tropical fruit shipments that have been facing considerable obstacles to reach their destination market.
- Major tropical fruit producers such as Costa Rica and Mexico on average import approximately one quarter to one third of the fertilizers used in their agricultural production from the Russian Federation.
- Preliminary data points on how the war has been impacting on relevant trade flows – as available at the time of writing – are provided in the Constraints and Uncertainties section of this report.

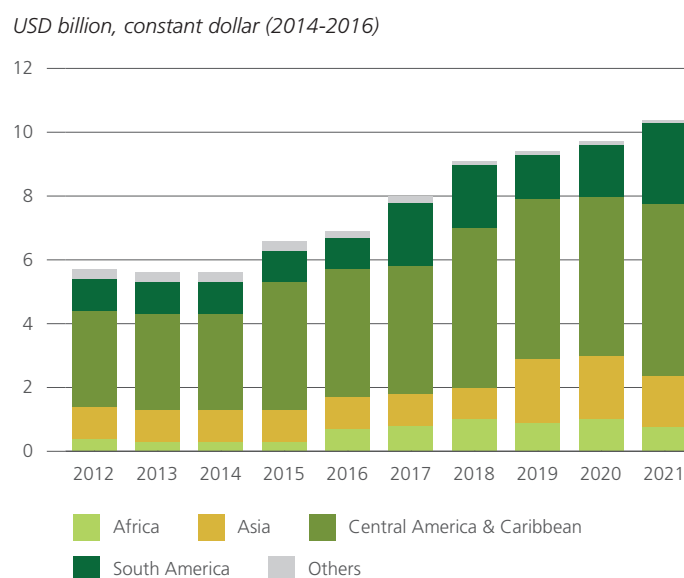
Overview

Available data indicate that, despite significant bottlenecks in global supply chains and rising input and transport costs, the volume of world trade in major tropical fruits¹ in 2021 rose to a record of USD 10.4 billion in constant 2014-2016 dollar terms, marking an expansion of 6.8 percent over 2020 (Fig. 1). This overall positive performance was facilitated by abundant supplies from the major production zones, which had invested in production expansion in response to burgeoning global demand and lucrative export opportunities in previous years, resulting in a generally strong availability of produce in 2021. On the import side, the reopening of the hospitality sector supported demand growth, particularly for avocados and pineapples, in both the United States of America and the European Union, the two main importers. Consumers displayed a higher propensity to spend on nutrient-rich foods, encouraged by relevant advertising campaigns in retail markets highlighting the purported health benefits of tropical fruits.² This particularly underpinned rising demand for avocados, whose global exports continued to expand to their historical peak in 2021 despite rising costs of production, transport and marketing along the value chain.

Globally, pineapple, avocado and mango continued to be the three most significantly traded tropical fruits in terms of their export quantities in 2021, bananas aside (Fig. 2a). With global exports of approximately 3.2 million tonnes, pineapples remained by far the predominant commodity in quantity, with their popularity primarily driven by the fruit's extremely low average export unit values. However, in value terms, avocados accounted for over 50 percent of global trade in major tropical fruits in 2021 (Fig. 2b), on account of the significantly higher average export unit value of this fruit, which is typically a multiple of the average export unit value of pineapples. The commodity cluster mango, mangosteen, and guava accounted for approximately 26-27 percent of global major tropical fruit trade in both quantity and constant value terms in 2021. At

an export quantity of only 368 000 tonnes, papayas continued to play only a marginal role in international markets. A major obstacle to a significant expansion in global papaya trade, outside of its main destination of the United States, remains the fruit's high perishability and sensitivity in transport, which renders Central and South American produce less suitable for supply to far afield destinations, including the European Union.

Figure 1. Major Tropical Fruits: Global aggregate export volumes, 2012-2021



Source: FAO data, compiled from several sources as indicated in the note on methodology.

¹ This note defines major tropical fruits as pineapple, avocado, papaya and the commodity cluster composed of mango, mangosteen and guava.

² See for example: www.freshplaza.com/article/9371681/growers-working-to-mitigate-cost-increases-in-pineapple-production-and-distribution/.

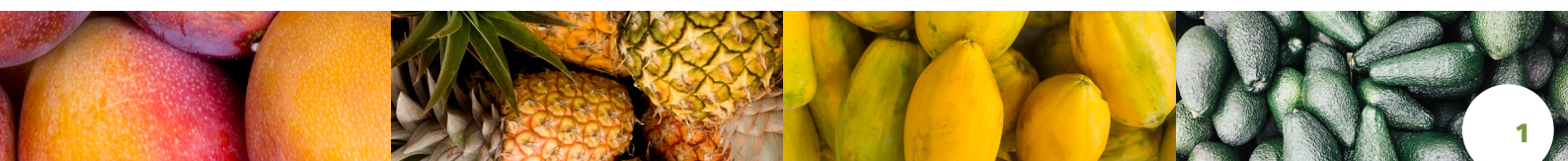


Figure 2A. Major tropical fruits: Share of 2021 export quantities by type, measured in tonnes

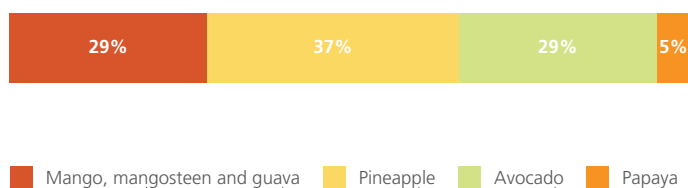
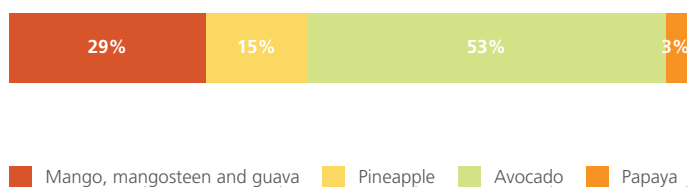


Figure 2B. Major Tropical Fruits: Share of estimated 2021 export volumes by type, measured in constant dollar terms (2014-2016)



Source: FAO data, compiled from several sources as indicated in the note on methodology.

Prices

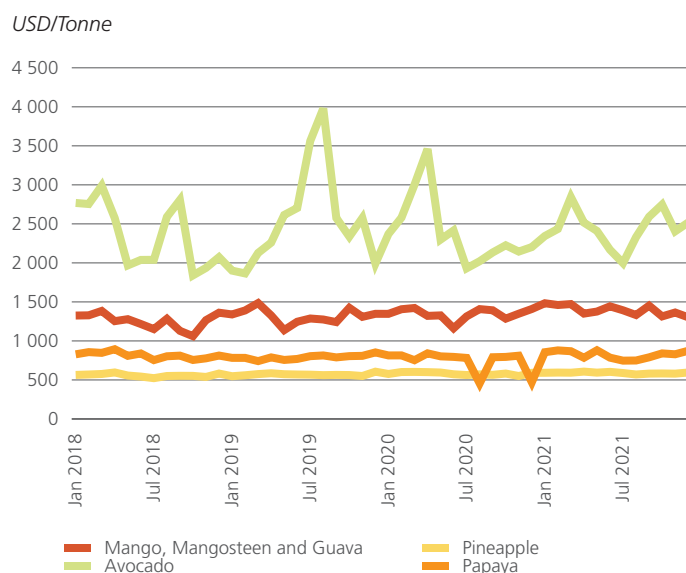
World average export unit values³ of all four major tropical fruits (Fig. 3) continued to reflect closely their respective supply and demand conditions in 2021 and displayed an overall tendency to increase amid ample global import demand and rising costs for inputs and transport.

Average export unit values of avocados rose to peaks of around USD 2 800 and USD 2 700 per tonne in March and October 2021, respectively, due to a surge in demand in the United States, the main importer, as well as a temporary supply shortage in the major exporter, Mexico. However, on account of generally strong supplies throughout the rest of the year, average

export unit values of avocados remained substantially below their previous peak of USD 3 800 seen in August 2019, and the 2021 average was, at USD 2 442 per tonne, only some 1.8 percent above the 2020 average. World average export unit values for mangoes, meanwhile, continued to largely follow their regular seasonal variations throughout the year, starting from a high of USD 1 483 in January 2021 and ranging noticeably above their 2020 level for most of the year thereafter. On average, export unit values for mangoes stood 3.7 percent higher in 2021 than in the previous year due to demand outstripping supply, most notably during the first half of the year.

Average export unit values of pineapples continued to rise in 2021, by 1.6 percent on average compared to 2020, on account of strong demand in both key destinations, the United States and the European Union, as well as a shortage in supplies from the Philippines. Average export unit values of papayas, meanwhile, displayed a strong tendency to rise in 2021, by 10.7 percent across the year, on account of the positive demand situation in the United States, the main importer of papayas.

Figure 3. Major tropical fruits: World average export unit values, January 2018 to December 2021



Source: FAO data, compiled from several sources as indicated in the note on methodology.

³ Calculated as the weighted average export unit values of world shipments of the respective commodities. Indicative export unit values are illustrative of market behaviour only and do not represent actual prices, which are determined in spot or futures markets.

Commodity Briefs

Mango, mangosteen and guava

Exports

Global exports of mango, mangosteen and guava⁴ rose to approximately 2.3 million tonnes in 2021, an increase of 1.9 percent, or 42 000 tonnes, from the previous year. In terms of export quantities by type, mango continued to account for around 83 percent of global shipments and mangosteen for around 16 percent. As previously, guava continued to display a low availability in import markets, in particular due to its lower suitability for transport.

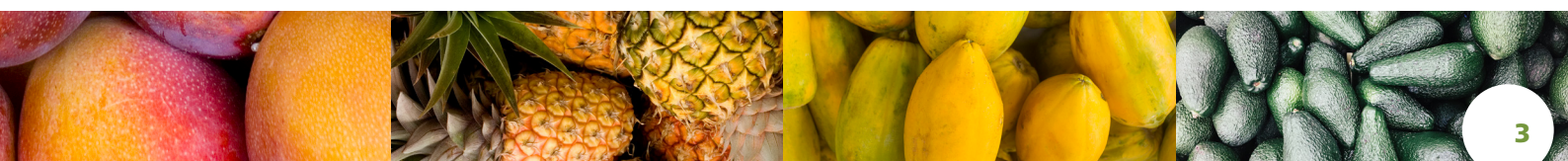
Following two very strong export years in 2019 and 2020, growth prospects in 2021 were somewhat hampered by adverse weather conditions in Mexico, the world's largest exporter of mangoes with an approximate 20 percent quantity share. Heavy rainfall and cold temperatures had reportedly affected the growing cycles of mangoes in several producing areas of Mexico, which resulted in delayed ripening and smaller fruit sizes. Available data and information accordingly suggest that exports from Mexico grew by only 0.8 percent in 2021, to 458 000 tonnes, considerably slower than the annual average growth of 8.3 percent seen in the previous five years. Close to 90 percent of Mexican mangoes are destined for the United States, with the remainder predominantly reaching Canada. Amidst the slowdown in supplies, the average export unit value from Mexico surged by 8.6 percent in 2021, to USD 1 176 per tonne, impeding the competitiveness of mango imports from Mexico in their key destination market of the United States. This facilitated higher exports to the United States from competing mango suppliers from Central America, notably Guatemala, Nicaragua and Costa Rica, whose average unit values ranged between 47 percent and 29 percent lower in 2021 than those offered by Mexico. Exports from Thailand, the leading supplier of

mangosteens to world markets, declined by 2.6 percent in 2021, to 376 000 tonnes. Adverse weather conditions in key growing regions had resulted in lower production levels than seen in previous years, which also underpinned substantial price increases, as evidenced by higher average export unit values. This especially curtailed the growth potential for shipments to China, the largest recipient of mangosteens from Thailand at an approximate Thai export quantity share of 62 percent in 2021. Data for 2021 show a surge in the average export unit values from Thailand to China of 29 percent, to USD 2 119 per tonne. Mangosteen shipments to China had expanded sixfold between 2017 and 2019 on the back of strong consumer demand but registered only 3.8 percent growth in 2021 in view of the rise in export unit values and growing competition from cheaper domestic fruits in China. Exports of mangosteen from Thailand to neighbouring Viet Nam, meanwhile, dropped by nearly 60 percent in 2021, to some 28 000 tonnes, as higher domestic production in Viet Nam reportedly reduced import demand. This considerable decrease in supplies of mangosteen from Thailand to Viet Nam additionally hindered further trade expansion for this fruit in 2021.

Exports of mango, mangosteen and guava from South American suppliers expanded by 8.9 percent in 2021, to reach 600 000 tonnes. Favourable production conditions in Brazil and Peru resulted in strong supplies of mangoes, which in turn facilitated growth in exports of 12 percent and 9 percent for these countries, respectively. Shipments from Brazil and Peru are primarily destined for European Union markets, with only some 20 to 30 percent of exports from both countries reaching the United States. In the European Union, Brazil benefits from its ability to produce mangoes perennially, including a number of varieties that are popular in key European import markets such as *Tommy Atkins*, *Keitt* and *Kent*. With total export quantities of 270 000 and 260 000 tonnes, respectively, Brazil and Peru each attained an approximate 12 percent share in global mango, mangosteen and guava exports in 2021.

In terms of emerging suppliers to world markets, available data on exports by type as provided by Trade Data Monitor indicate that both India and Pakistan registered fast growth in mango exports in 2021. India ranks as by far the largest producer of mangoes

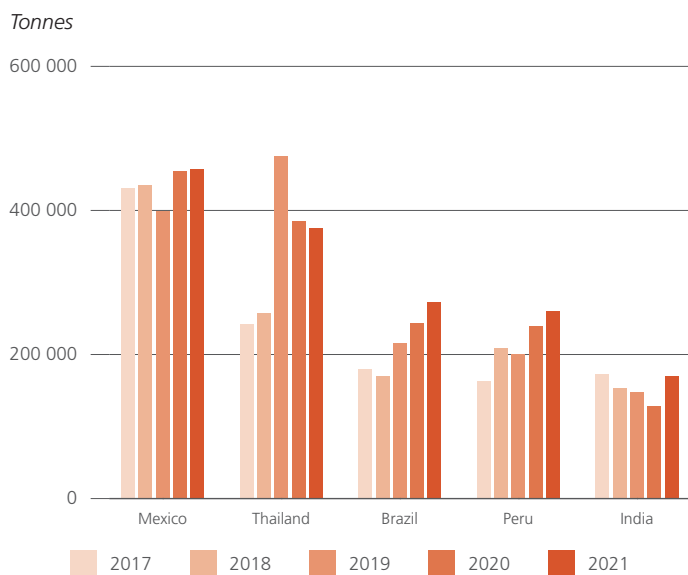
⁴ International commodity classification schemes for production and trade do not require countries to report the fruits within this cluster separately, thus official data remain sparse. It is estimated that, on average, mango accounts for approximately 75 percent of total production quantity, guava for 15 percent and mangosteen for the remaining 10 percent.



globally, at a production quantity of 24 million tonnes in 2020, as reported by the latest available FAOSTAT data.

Strong domestic demand for mangoes in India means that supplies almost exclusively cater to the domestic market, with only 170 000 tonnes reaching global markets in 2021. Some 30 percent of shipments from India are typically supplied to the United Arab Emirates and Saudi Arabia, where demand for tropical fruits has been burgeoning in recent years. Trade data for 2021 further show a more than twofold expansion in exports to Nepal, to a total of 18 000 tonnes, as well as a 68 percent increase in exports to the Netherlands, to some 14 400 tonnes. Overall, mango exports from India were reported to have grown by 33 percent in 2021. Available data for exports from Pakistan, meanwhile, suggest that the country expanded shipments by 84 percent in 2021, to nearly 190 000 tonnes, on account of higher import demand from Central and East Asia.

Figure 4. Mango, Mangosteen, and Guava: Export quantities from the leading exporters, 2017 to 2021



Source: FAO data, compiled from several sources as indicated in the note on methodology.

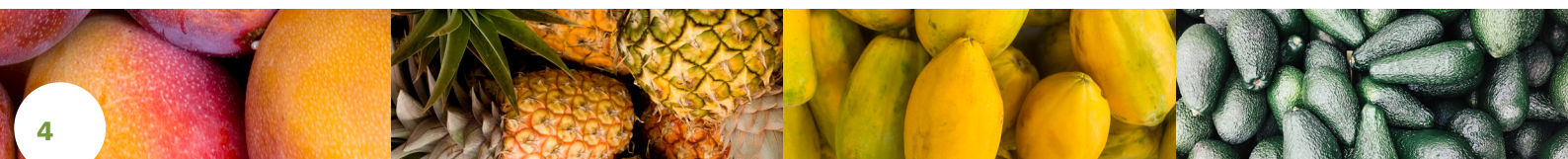
Imports

Total global import quantities of fresh mangoes, mangosteens, and guavas rose to 2.1 million tonnes in 2021, an increase of 2.4 percent from 2020. The United States and the European Union (EU-27) remained the two leading global importers, at import shares of 26 percent and 19 percent, respectively. In both markets industry sources reported higher consumer demand for mangoes, in particular organic types, in line with a generally higher nutritional awareness of the assumed health benefits of these fruits. However, import growth in the United States was somewhat constrained by the difficult supply situation in Mexico, with import growth of 2.6 percent in 2021 being substantially lower than the near 10 percent increase seen in 2020. Overall, imports into the United States were reported at 560 000 tonnes in 2021.

Imports into the European Union, meanwhile, rose by 7.6 percent, to 409 000 tonnes, facilitated by the strong supply situation in Brazil and Peru, the two primary origins of mangoes in the EU. Higher demand from several emerging importers, notably Saudi Arabia, the UAE and the Russian Federation further contributed to the overall growth in global imports.

Imports by China, the third leading global importer of mangoes, mangosteens and guavas in 2021, fell by 38 percent, to approximately 298 000 tonnes, equivalent to 14 percent of global imports. Chinese imports of this commodity group are dominated by mangosteens, which accounted for some 95 percent of total quantities over the period up to December 2021 according to available data on imports by type provided by Trade Data Monitor, while only 5 percent of imports in this group were made up of fresh mangoes, and a negligible amount of guavas. The weather-induced supply shortages hampering exports of mangosteens from Thailand, the major supplier of this fruit to China, as well as COVID-19 induced disruptions to supplies of fresh mangoes from Viet Nam to China resulted in this decline. In particular, a 35 percent rise in average unit values charged for mangosteen imports from Thailand into China rendered these imports less competitive against other domestically produced fruits.

Further noteworthy importers of mango, mangosteens and guavas continued to be the United Arab Emirates,



Pineapple

Exports

Available full-year data indicate that global exports of pineapples rose by 5.7 percent in 2021, to 3.2 million tonnes, marking a strong recovery from the supply chain disruptions that had impeded pineapple trade in 2020. Around 70 percent of world shipments continued to be supplied by Costa Rica, the second largest global producer of pineapples behind the Philippines.

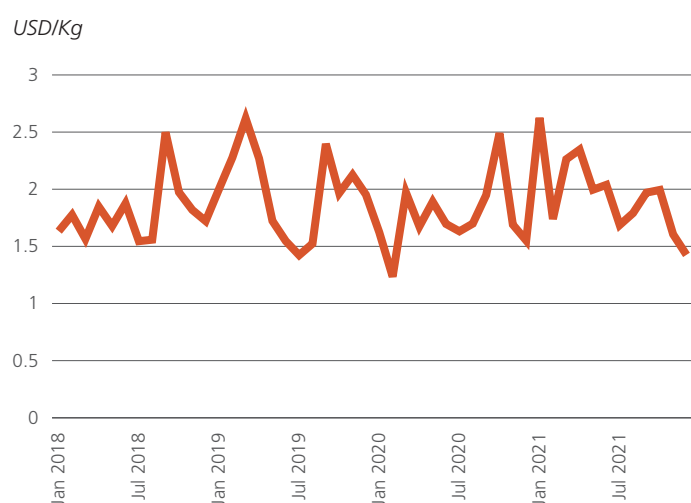
According to industry information, favourable weather conditions in Costa Rica had positively impacted productivity levels, enabling a higher number of large pineapples compared to medium or small sizes to be available for export. Shipments from Costa Rica therefore expanded by some 220 000 tonnes in 2021, to 2.2 million tonnes, the equivalent of a 10.7 percent rise from 2020. At the same time, industry sources reported growing difficulties stemming from the continuing bottlenecks in global input supply chains, with cardboard and agrochemicals challenging and costly to obtain. While growers and market agents along the value chain reportedly managed to largely absorb these higher costs in 2021, the expectation for 2022 is that pineapple prices will rise substantially. In terms of leading destinations, pineapple shipments from Costa Rica continued to be almost exclusively destined to the United States and the European Union, where retailers reportedly ran frequent promotions highlighting the nutritional contents and potential health benefits of the fruit to support demand.

Exports from the Philippines, the second leading exporter of pineapples to global markets, experienced a 9.8 percent fall in 2021, to some 540 000 tonnes, on account of continuing COVID-19 related difficulties hampering industry operations as well as hurricane damage and the high costs of inputs impacting the quality of fruit for export. This particularly impeded shipments to Japan and South Korea, two of the key importers of Philippine pineapples, which declined by 14 percent and 7 percent in 2021, respectively. Similar to the situation observed in banana exports from the Philippines, quality concerns resulted in the cancellation of orders.

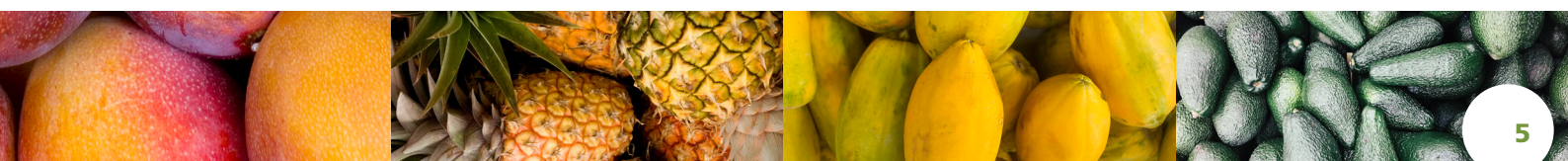
which procured an estimated 90 000 tonnes from world markets in 2021, and Saudi Arabia, whose imports rose by 10.5 percent to 87 000 tonnes in 2021. Imports of this commodity cluster by Saudi Arabia continued to be dominated by fresh or dried mangoes in 2021, with guavas and mangosteens making up only a negligible share of total imports. Trade in this commodity cluster also continued to be significant within Southeast Asia, mostly in the form of intra-regional trade in fresh or dried mangoes, with Malaysia, Viet Nam, Singapore and Thailand estimated to have jointly imported some 190 000 tonnes of mangoes, mangosteens and guavas in 2021.

Indicative average wholesale prices of mangoes in the United States (Fig. 5), which exclude mangosteen and guava, continued to reflect seasonal fluctuations in supply and demand in 2021, but remained largely above their average of the previous year, especially in the first half of the year. Prices had reached a peak of USD 2.6 per kilogram in January 2021 in response to low supplies, and largely fluctuated around USD 2.0 per kilogram until July, when competition from cheaper summer fruits exerted downward pressure. Over the full year, the average United States wholesale prices ranged 11 percent above their level seen in the same period of 2020, at USD 1.96 per kilogram and very close to the pre-COVID-19 average of 1.99 per kilogram.

Figure 5. Mango: United States of America, Indicative average wholesale prices January 2018 to December 2021



Source: FAO data, compiled from several sources as indicated in the note on methodology.



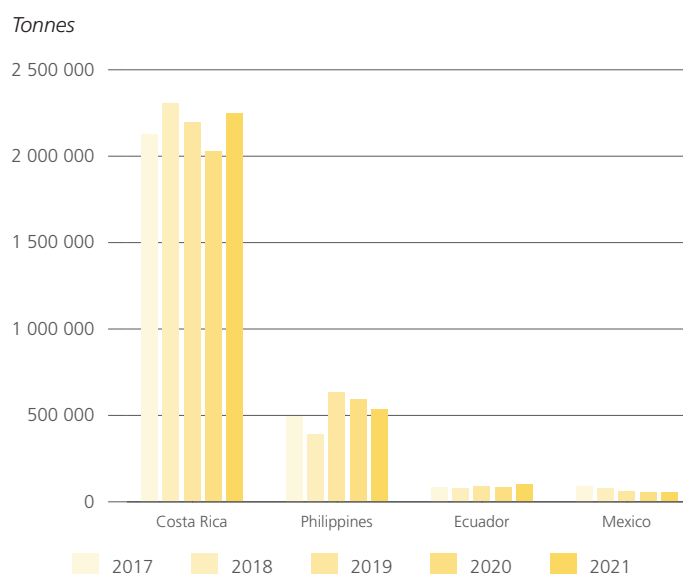
Shipments from Ecuador, the leading exporter of pineapples from South America, increased by 18.9 percent in 2021, to approximately 100 000 tonnes, on account of higher import demand in Chile, the European Union and the United States. Data on trade flows by destination indicate that Ecuador sent approximately 42 percent of its total exports in 2021 to the European Union, some 34 percent to Chile, and 10 percent to the United States.

Pineapple exports from Mexico increased by 2.7 percent, to approximately 57 000 tonnes. Supplies from Mexico are virtually exclusively destined for the United States, where the country ranks as the third leading origin of pineapple imports behind Costa Rica and Honduras.

Exports from Côte d'Ivoire, the leading African supplier of pineapples to world markets, increased by 18.6 percent in 2021, to around 31 000 tonnes. Favourable weather conditions in the country had resulted in good supplies in terms of both quantity and quality, enabling the country to cater to higher import demand from European Union markets. France and Belgium continued to be the two key destinations of pineapples from Côte d'Ivoire, jointly procuring some 75 percent of the country's total shipments in 2021. The average export unit value of shipments from Côte d'Ivoire to world markets stood at USD 497 per tonne in 2021, an increase of 22 percent from the previous year.

Shipments from Ghana, previously the second leading exporter from Africa, continued to fall drastically, by an estimated 70 percent in 2021, to around 2 500 tonnes. Trade data by destination show that some 83 percent of exports from Ghana were destined to France. Exports from Ghana continued to struggle to keep up with the lower prices of pineapples from competing origins in global value chains, with the average import unit value of shipments from Ghana received by France exceeding USD1 100 per tonne in 2021. By comparison, this was some 54 percent higher than the average import unit value of imports by France from Costa Rica, and some 11 percent higher than the average import unit value of imports by France from Côte d'Ivoire.

Figure 6. Pineapple: Export quantities from the leading exporters, 2017 to 2021



Source: FAO data, compiled from several sources as indicated in the note on methodology.

Imports

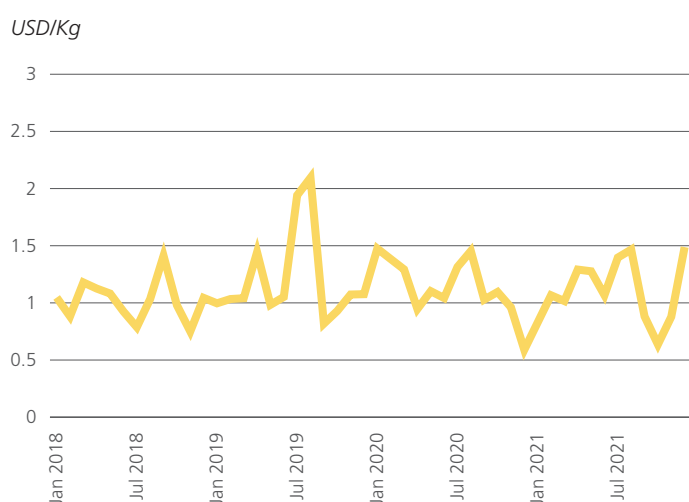
Global imports of pineapples increased to 3 million tonnes in 2021, an expansion of 6.7 percent compared to 2020 as demand in both key destinations, the United States and the European Union, was strong. Full-year data indicate that the United States procured about 37 percent of global export supplies in 2021, and the European Union close to 28 percent. In both markets, a large share of pineapples is consumed outside of the home. Estimates for the United States, for example, indicate that food service sales account on average for some 60 percent of total sales.⁵ Industry sources reported that the reopening of the hospitality sector in both key markets was a key factor driving growth, alongside retail promotions advertising the nutritional aspects of the fruit. Accordingly, imports by the United States rose by 7.9 percent in 2021, to some 1.1 million tonnes, while imports by the European Union (EU-27, excluding intra-EU trade) grew by 5.7 percent in 2021, to around 830 000 tonnes.

⁵ Estimate by the International Pineapple Organization.

Imports by China, the third leading global importer of pineapples, contracted by 2.5 percent in 2021, to 214 000 tonnes. These lower imports were compounded by a weather-induced lower availability of high quality domestically produced pineapples. As a result of this reduction and firm consumer demand, domestic prices in China reportedly rose.

Indicative average wholesale prices of pineapple in the United States displayed a strong tendency to rise over the first eight months of 2021, peaking at USD 1.47 per kilogram in August 2021 but declining sharply thereafter, to a low of USD 0.64 per kilogram in October, before climbing again to USD 1.49 per kilogram in December 2021. Over the full year, average wholesale prices thereby stood 3 percent lower than in the previous year, exerting further pressure on a market that is characterised by strong competition along the value chain. Particularly in key import markets such as the United States, the United Kingdom and Germany, the fruit is habitually sold at low prices in retail outlets, which squeezes producer margins.

Figure 7. Pineapple: United States of America, Indicative average wholesale prices, January 2018 to December 2021



Source: FAO data, compiled from several sources as indicated in the note on methodology.

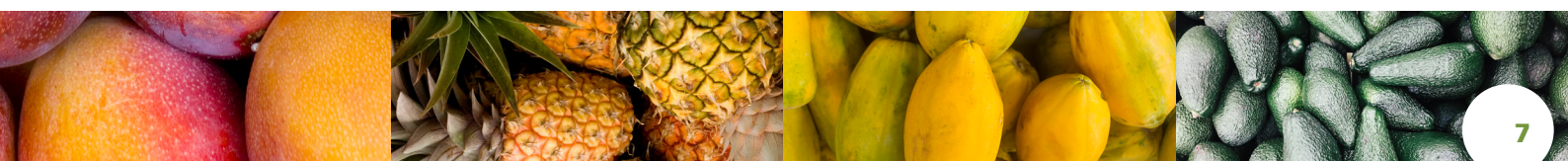
Avocado

Exports

Global exports of avocado rose by 9.7 percent in 2021, to 2.5 million tonnes, on account of strong supplies from Mexico and Peru, the two leading exporters. Ample global demand and high export prices continued to be critical drivers of growth, stimulating substantial investments in area expansion in both countries. For example, preliminary data provided by the Mexican government indicate that avocado production in the country reached 2.5 million tonnes in 2021, a level 6 percent higher than two years prior, primarily on account of a 5 percent expansion in area over the two-year period 2019-2021.

Full-year data on exports from the country indicate a growth in shipments from Mexico of 2.8 percent in 2021, to 1.4 million tonnes. In global trade, Mexico, where avocados originate, typically accounts for some 55 to 60 percent of total export quantities. This is due to Mexico's ability to produce the fruit in all seasons and its focus on the higher quality *Hass* variety, which is in greater demand in world markets than other varieties. The country's proximity to the United States is another determining factor since it provides Mexico with a unique competitive advantage in North American markets, placing it as the leading supplier of avocados to the United States. In 2021, this position was further consolidated by the opening of the US market to exports from Jalisco, another important avocado growing region in Mexico beside Michoacán, previously the only Mexican state allowed to export to the United States. Available trade data by destination indicate that over the course of 2021, nearly 80 percent of Mexico's avocado exports went to the United States, some seven percent to Canada and some five percent to the European Union and Japan. The average export unit value of shipments from Mexico stood at USD 2 425 per tonne in 2021, some 4 percent higher than in the previous year.

Favourable weather and successful prior investments in production expansion stimulated significantly higher supplies also from Peru, which further consolidated its position as the second leading supplier of avocados to world markets. Industry sources reported that Peruvian



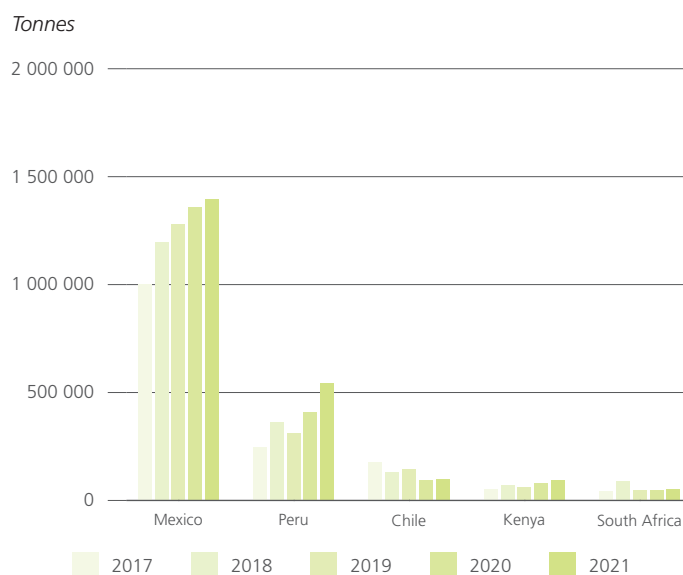
production had soared in August 2021 on account of favourable weather conditions, with a 40 percent year-on-year surge in the harvested quantity recorded.⁶ Available trade data suggest that exports from the country expanded by 32 percent in 2021, to 542 000 tonnes, enabling Peru to reach a share of global exports of 22 percent, up from 18 percent in the previous year. This expansion was further enabled by the comparatively lower prices for shipments from Peru, reflected by export unit values which averaged USD 1 936 in 2021, some 20 percent lower than the average export unit value for avocados from Mexico. Approximately 50 percent of shipments from Peru continued to be destined to European Union markets in 2021, but data on trade flows by destination show large increases in exports to the United States, Chile and Hong Kong.

Exports from Kenya, an emerging supplier to global markets and leading avocado exporter from Africa, grew by 20 percent, to 95 000 tonnes in 2021. The country had invested in significant area expansion for avocados in recent years, nearly tripling the harvested area since 2015, to 24 447 ha in 2020, as indicated by latest available production data reported by FAOSTAT. More than half of Kenya's exports continued to be supplied to European Union markets in 2021, where the country was able to compete well on account of very low average export unit values. Despite upward pressure on prices due to rising production costs, these values continued to range around USD 1 500 in 2021, some ten percent lower than the average unit values of shipments from Peru to the European Union, for example.

Other globally significant exporters of avocado continued to be Chile and South Africa, which also primarily supply the European Union. In 2021, however, exports from Chile were restrained by strong domestic demand, which diverted produce away from export markets. In combination with low supplies particularly in the first half of the year, a repercussion of the severe drought experienced in 2020, exports from Chile expanded by only 1.2 percent in 2021, to a total quantity of some 98 000 tonnes.

Exports from South Africa, meanwhile, grew by 11.7 percent in 2021, to 53 000 tonnes, as harvest conditions were reportedly positive. However, industry sources reported that higher export growth from South Africa was curtailed by the substantial surge in the costs of global transport as well as strong domestic demand, which diverted produce away from export markets. Monthly export data for the period up to October 2021 indicate a 40 percent year-on-year surge in the average unit value of shipments from South Africa, to USD 2100 per tonne. Nearly 65 percent of supplies from South Africa over this period were destined to the Netherlands.

Figure 8. Avocado: Export quantities from the leading exporters, 2017 to 2021

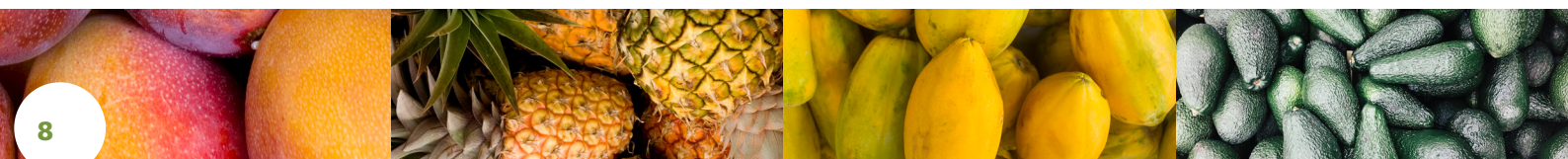


Source: FAO data, compiled from several sources as indicated in the note on methodology.

Imports

Available data and information indicate that global imports of avocados expanded by 18.5 percent in 2021, to 2.5 million tonnes. Growth continued to be supported by strong demand in the two major import markets, the United States and the European Union, which respectively accounted for 47 percent and 23 percent of global imports in 2021. In both destinations, avocado consumption continued to gain in popularity among an increasingly health-

⁶ www.freshplaza.com/article/9367802/peru-s-avocado-production-soared-in-august/.



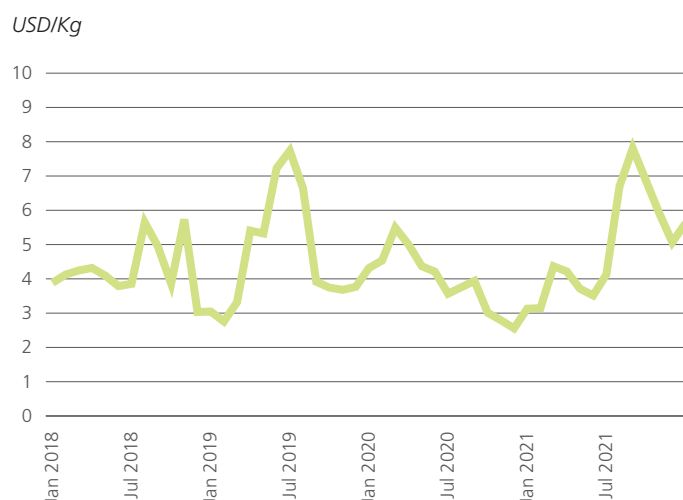
conscious population, with avocados widely perceived as a highly nutritious fruit. The successive reopening of the hospitality sector in the United States and the European Union provided another positive impetus to growth, with out-of-home consumption accounting for a substantial share of total avocado consumption in both markets.

Imports by the United States thereby grew by a reported 20.7 percent in 2021, to a peak of 1.2 million tonnes, accompanied by an increase in the average import unit values of 14 percent. Almost 90 percent of avocado imports into the United States in 2021 originated in Mexico, some 7 percent in Peru and some 3 percent in the Dominican Republic, according to available data on trade by origin.

Meanwhile, imports into the European Union grew by 14.4 percent in 2021, to about 583 000 tonnes. Within the European Union, growth was particularly strong in Italy, where imports expanded by 51 percent from 2020, to some 42 000 tonnes. Expansion was also seen in Poland, another emerging avocado consuming country, which posted import growth of 13.8 percent in 2021, arriving at an approximate quantity of 29 000 tonnes. Of these, however, some 8 000 tonnes were re-exported to neighbouring countries in Eastern Europe, importantly to Ukraine. Both Italy and Poland primarily procured avocados re-exported from the Netherlands, an important trade hub in the European Union, which typically accounts for some 50 percent of the European Union's total imports and on average re-exports some 90 percent of their gross avocado imports.

Indicative average wholesale prices of avocado in the United States ranged 23 percent higher between January and December 2021 than over the same period in 2020. Prices displayed a strong tendency to rise throughout most of the year, increasing from a low of USD 3.13 per kilogram in January to a peak of USD 7.81 per kg in October 2021, and stood at just above USD 5 per kilogram in December 2021. Over the full year, the average thereby amounted to USD 4.88 per kilogram, a level close to the average of USD 4.71 per kilogram seen over the course of 2019, before the COVID-19 pandemic.

Figure 9. Avocado: United States of America, Indicative average wholesale prices, January 2018 to December 2021

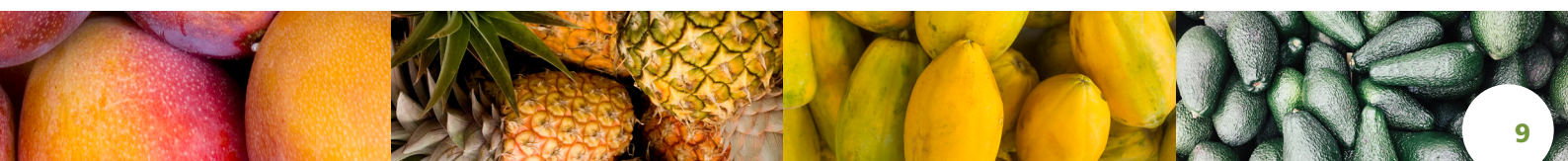


Source: FAO data, compiled from several sources as indicated in the note on methodology.

Papaya

Exports

Full-year data indicate a rise in global exports of papayas of 5.7 percent in 2021, to 368 000 tonnes. Exports from Mexico, the largest global exporter of papayas, continued to display fast growth on account of further production expansion. Preliminary data provided by the Mexican government estimate that papaya production in the country grew by 1.5 percent in 2021, to 1.1 million tonnes, primarily due to an expansion in area of 2.8 percent. Export data for 2021 point to a growth in shipments of 9.6 percent for the full year, to 185 000 tonnes. The country thereby raised its share in global exports to 50.4 percent in 2021. Virtually all Mexican papaya exports are destined for the United States, which globally ranks as the largest importer of papayas, accounting for over half of all imports in 2021, as indicated by trade data by destination. As can be inferred from the above figures, the bulk of Mexican papaya production, however, is destined for domestic consumption, meaning that trade outcomes depend critically on developments in both domestic and foreign markets.



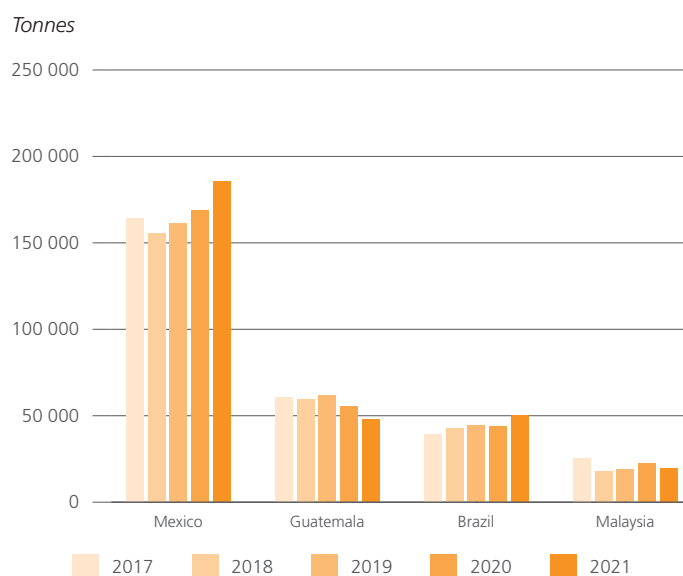
The second and third leading suppliers of papayas to world markets continued to be Brazil and Guatemala, which exported some 50 000 tonnes and 48 000 tonnes in 2021, respectively. Shipments from Brazil, one of the leading producers of papayas globally, grew by 15.1 percent in 2021 on account of ample demand from the European Union, the leading destination for papayas from Brazil. This rise occurred despite prolonged conditions of drought in key producing areas during Brazil's important harvesting period in the fall of 2021. A lack of rainfall had resulted in stunted fruit growth and reportedly in high crop losses for producers. These supply side problems combined with firm import demand, resulted in substantial increases in the average export unit value. Data provided by the Brazil Ministry of Development, Industry and Trade accordingly indicate a rise in the 2021 average export unit value of 126 percent over 2020, as exporters outbid domestic demand. As in the case of Mexico, the bulk of Brazilian papaya production caters to the domestic market, where demand for the fruit remains high, but is more price sensitive than for exporters.

Exports of papayas from Guatemala, meanwhile, fell by 13.2 percent in 2021. Aside from COVID-19-related difficulties, shipments from the country were hampered by back-to-back Hurricanes Eta and Iota that had passed through Central America in November 2020 and instigated severe flooding, landslides and damage in key production areas. Approximately 70 percent of supplies from Guatemala continued to be destined for the United States in 2021, where papayas of the *Tainung* variety are well received on the grounds of their versatility, consistency in quality and resistance in transport. The remaining share of papaya exports from Guatemala primarily reached neighbouring El Salvador, where domestic production continued to be low. However, the combined impact of the pandemic and the hurricane damage significantly affected trade flows between Guatemala and the two countries in 2021, with data on papaya shipments showing a year-on-year decrease of 15 percent to the United States and a decrease of 9 percent to El Salvador.

Papaya exports from Malaysia declined by 12 percent in 2021, to 20 000 tonnes. Supplies from Malaysia are almost exclusively destined for Singapore, where the fruit enjoys popularity. According to industry information provided by the International Tropical Fruits Network,

papaya shipments from Malaysia were hampered by severe labour shortages caused by the COVID-19 pandemic in 2021, which impeded farm operations in the country and led to a reduction in production. Furthermore, bacterial plant diseases, in particular the bacterial dieback disease caused by phytopathogenic bacteria *Erwinia mallotivora*, were quoted as another factor having impeded Malaysian papaya production in 2021. On the import side, labour shortages in the Singapore wholesale market hindered a smooth continuation of trading activity, with some traders reportedly having ceased operations. Furthermore, demand for Malaysian papayas in Singapore was reportedly impacted by a shift in consumer preferences, with the smaller and sweeter solo variety gaining in popularity compared to the *sekaki* variety commonly grown by Malaysian producers.

Figure 10. Papaya: Export quantities from the leading exporters, 2017 to 2021



Source: FAO data, compiled from several sources as indicated in the note on methodology.

Imports

On the import side, available data indicate a rise in global imports by 5 percent, to 342 000 tonnes. The United States remained the largest importer globally, accounting for a quantity share of 54 percent in 2021. Available data indicate that imports by the United

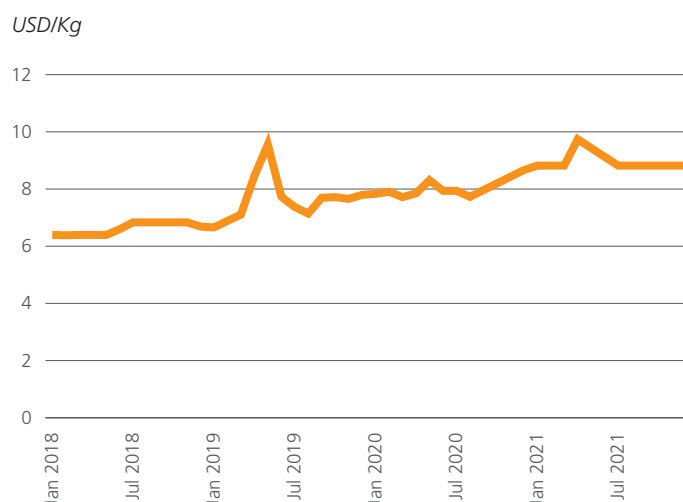
States grew by 4.4 percent in 2021, to 186 000 tonnes. Demand for papayas in the United States continued to be supported by consumers' rising awareness of healthy nutrition, with papayas benefiting from their reputation of being a rich source of vitamin C. The ample supply situation in Mexico, the leading supplier of papayas to the United States, further facilitated higher imports, with full-year 2021 data reporting that US procurements of papayas from Mexico expanded by 9 percent year-on-year. Meanwhile, US imports from Guatemala, the second leading origin of papayas in the US, decreased by a reported 13.8 percent as supplies were hindered by the hurricane-induced production shortage experienced in Guatemala.

The second leading importer globally continued to be the European Union, albeit with a much lower share in world imports of only 11.3 percent. Consumer awareness of papaya in the European Union remains low, mostly due to the fruit's fragility in transport, which renders a significant expansion in this market difficult to attain. However, in response to growing consumer interest in the fruit, imports by the European Union grew by 7 percent in 2021, to 39 000 tonnes.

Further noteworthy importers of papaya in 2021 were Canada and Singapore, at shares of approximately 6 percent of global imports each, as well as El Salvador and the United Arab Emirates, at some 5 percent each.

Indicative average wholesale prices of papayas in the United States continued to follow an upward trend in 2021, especially during the first half of the year when prices exceeded USD 9 per kilogram between April and June. Although prices remained largely flat thereafter, averaging USD 8.82 per kilogram between August and December 2021, they stayed at a high level. Over the full year, the indicative wholesale prices averaged USD 8.97 per kilogram, some 12 percent higher than in 2020.

Figure 11. Papaya: United States of America, Indicative average wholesale prices, January 2018 to December 2021

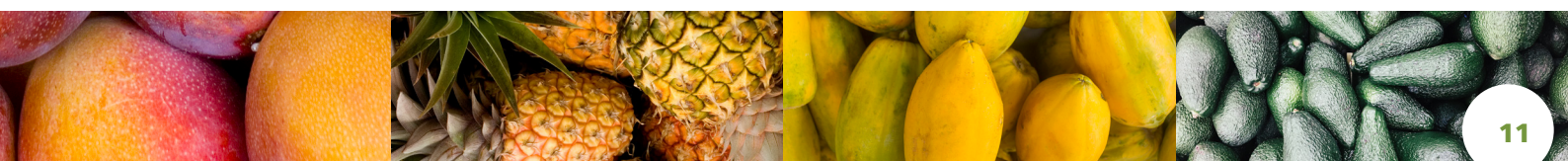


Source: FAO data, compiled from several sources as indicated in the note on methodology.

Constraints and uncertainties

The global operating environment for tropical fruits has of late been complicated by the war in Ukraine, which has exacerbated already previously mounting pressures on global energy and fertilizer markets as well as supply chains. The cultivation of tropical fruits, much like the rest of agricultural production, absorbs high amounts of energy directly, through fuel, gas and electricity use, and indirectly, by using agri chemicals such as fertilizers, pesticides and lubricants. Expenditures on fertilizers and pesticides weigh particularly heavily in the production of some tropical fruits because of their very high frequency of use. With prices of fertilizers and other energy-intensive products rising as a consequence of the conflict, overall input prices are expected to experience a considerable increase. The higher prices of these inputs will first translate into higher production costs and eventually into higher food prices. Data on price developments over the first six months of 2022 already point into this direction for all four of the major tropical fruits.

Critically, the conflict has also resulted in the discontinuation of important trade relations amid the



economic sanctions and has caused severe disruptions to transport routes to Ukraine. The repercussions of these developments for global tropical fruit markets have been immediate. While bananas are not covered in this report, the Russian Federation importantly ranks as the fourth largest importer of this fruit⁷ globally, procuring some 1.4 to 1.5 million tonnes from world markets annually. A preliminary analysis of the impact of this is further described in the *Banana Market Review 2021*. The country further imports some 160 000 tonnes of tropical fruits per year, predominantly pineapples, avocados and mangoes, with supplies principally originating in Costa Rica and Peru. Ukraine, meanwhile, imports some 20 000 to 30 000 tonnes of major tropical fruits per year, mainly avocados and pineapples originating in Peru and Costa Rica. These quantities translate into some 2.4 percent of global tropical fruit shipments that have been facing considerable obstacles to reach their destination market. In turn, major tropical fruit producers such as Costa Rica and Mexico on average import approximately one quarter to one third of the fertilizers used in their agricultural production from the Russian Federation. Preliminary data points on how the war has been impacting on relevant trade flows – as available at the time of writing – report the following developments:

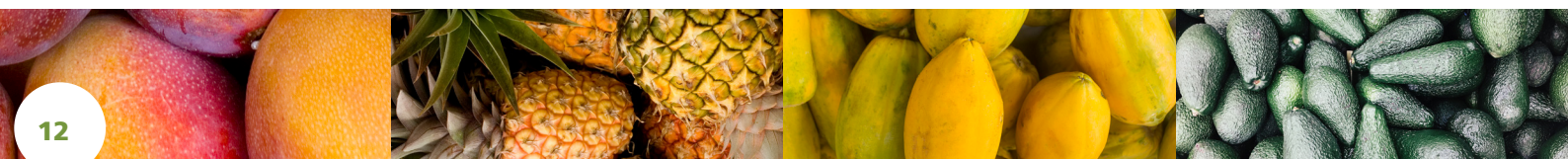
- Preliminary monthly data on import quantities of major tropical fruits by Ukraine for the period January to April 2022 indicate a 35 percent year on year decline, as reported by the State Customs Committee of the Ukraine.
- Preliminary monthly data on pineapple export quantities from Costa Rica as available up to March 2022 show year on year declines of 31 percent in shipments to the Russian Federation and 80 percent in shipments to Ukraine.
- Monthly data on avocado export quantities from Peru as available up to May 2022 show year on

year declines of 44 percent in shipments to the Russian Federation and 78 percent in shipments to Ukraine.

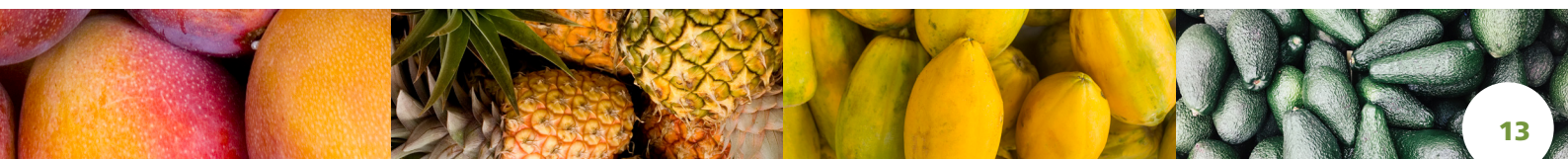
- Fertilizer quantities imported by Mexico from the Russian Federation between January and April 2022 show a year-on-year decline of 58 percent, or 237 000 tonnes, as reported by the Mexico National Institute of Statistics. Total Mexican imports of fertilizers thereby declined by 19 percent year-on-year over this period.

Beyond the impact of COVID-19 and the ongoing war in Ukraine, several significant threats to global production, trade and consumption of major tropical fruits are present. The prolonged lockdowns currently implemented in some Asian countries indicate that the threat of supply chains disruptions and economic repercussions stemming from COVID-19 mitigation measures continues to be present. The likely recessions that some analysts are predicting for key global economies threaten to hinder demand, especially for higher value tropical fruits. Should the current crises be resolved by next year, it would be possible that the growth prospects would return to their previous trajectories. However, the effects of global warming are resulting in a higher occurrence of droughts, floods, hurricanes and other natural disasters, which render the production of major tropical fruits increasingly difficult and costly. Given the perishable nature of tropical fruits in production, trade and distribution, environmental challenges and insufficient infrastructure continue to jeopardise production and supply to international markets. This is a particularly acute difficulty since the vast majority of tropical fruits are produced in remote, informal settings, where cultivation is highly dependent on rainfall, prone to the adverse effects of increasingly erratic weather events and disconnected from major transport routes.

⁷ Detailed analysis of global trade in bananas is covered in FAO's biannual *Banana Market Reviews*, as published on the dedicated webpage on global banana markets: www.fao.org/markets-and-trade/commodities/bananas/en/.



NOTES





CONTACTS

Team on Responsible Global Value Chains

Tropical-Fruits@fao.org

Markets and Trade Division - Economic and Social Development stream

www.fao.org/markets-and-trade

Food and Agriculture Organization of the United Nations

Rome, Italy

