



Food and Agriculture  
Organization of the  
United Nations



MAJOR TROPICAL FRUITS



MARKET REVIEW

2018





COMMITTEE ON COMMODITY PROBLEMS INTERGOVERNMENTAL  
GROUP ON BANANAS AND TROPICAL FRUITS

**MAJOR TROPICAL FRUITS**  
**MARKET REVIEW**  
**2018**

Food and Agriculture Organization of the United Nations  
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## Foreword

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This report is issued on an annual basis to 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 International Investment and Tropical Fruits, Trade and Market Division, FAO, Rome, and the tables contained bring together the information available to FAO, supplemented by data obtained from other sources in particular with regard to preliminary estimates.

The Team on International Investment and Tropical Fruits provides research and analyses on agricultural investments in developing countries, 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 investment in agriculture. The report is available at the following FAO website: <http://www.fao.org/economic/est/est-commodities/tropical-fruits/en/>

## Note on Methodology

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Data and information in this market review were compiled from communications with national sources and industry partners in trading countries, monthly data from TDM and COMTRADE and secondary information and data from desk research. All data in this report should be considered as provisional.

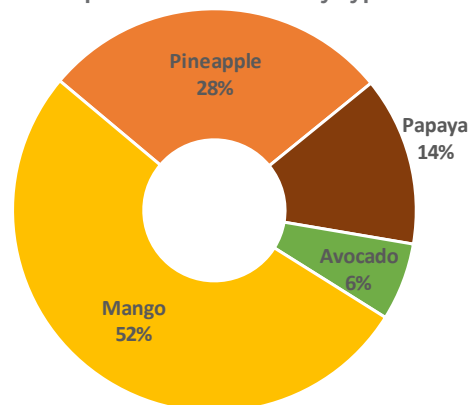
## Developments in production and trade of major tropical fruits 2018

### Production

Global aggregate production of major tropical fruits<sup>1</sup> was estimated at approximately 100 million tonnes in 2018, following a year-to-year increase of 3.3 percent from 2017. The pace of growth was only marginally slower than the annual average of 3.8 percent seen over the previous decade. Strong output growth at an estimated annual increase of 4 percent between 2017 and 2018 was observed in the two major global production regions, Asia and Central America and the Caribbean, predominantly on account of corresponding increases in harvested areas. Favourable weather conditions in the major producing zones, particularly in the case of avocado and pineapple, and a lower occurrence of destructive climatic events further supported robust supplies of major tropical fruits in 2018. Global production has been following a path of rapid expansion over the past decade in response to ample demand in both domestic and export markets.

In terms of production volume, mango continued to rank as the predominant tropical fruit variety, due to the commodity's popularity in India, where an estimated 38 percent of global production originates. Global production of mango accounted for more than half of total global major tropical fruit production in 2018. Pineapple ranked second in global production thanks to robust international demand, largely met by Costa Rica, the world's leading producer and exporter of pineapple, and by significant domestic consumption in Brazil, the second largest producer of pineapple. Papaya and

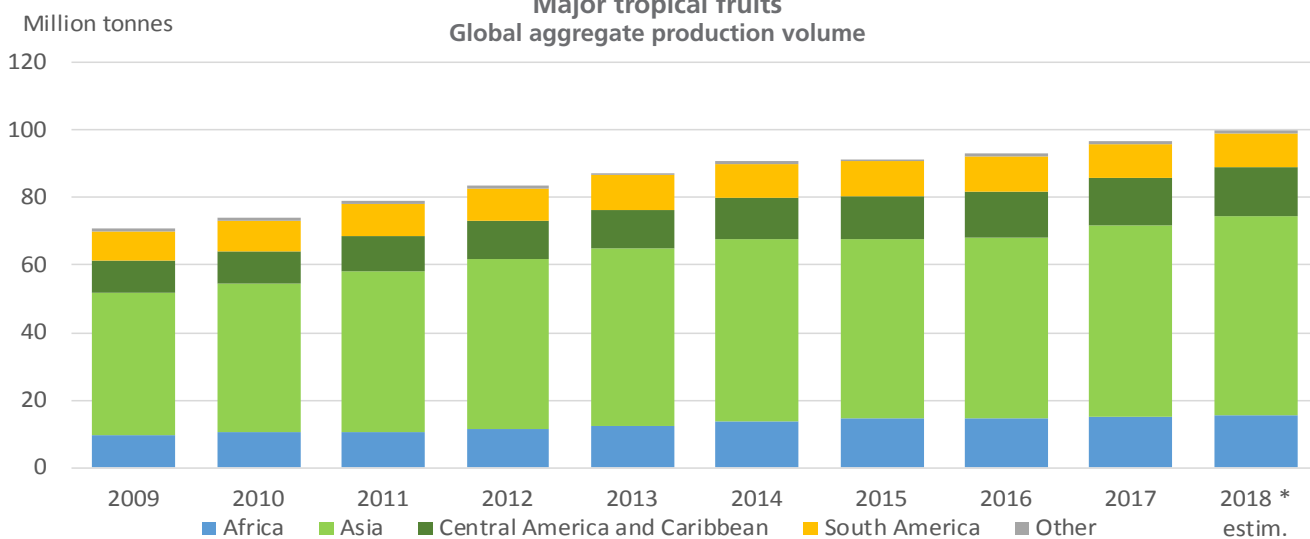
Major tropical fruits  
2018 production volume by type



avocado meanwhile account for significantly lower volume shares. Papaya is mainly produced and consumed in India and Brazil, where population growth has sustained domestic demand. Avocado production predominantly takes place in Mexico, from where it caters to both the domestic and export markets.

When viewed in terms of producing countries, the leading producer of major tropical fruits continued to be India at an estimated 30 percent of total global major tropical fruit production in 2018, due to its strong position in the production of mango and papaya. India accounts for approximately 40 percent of total global mango production and 50 percent of global papaya production, but produces predominantly for its domestic market. Other significant producers of tropical fruits include China and Brazil, where again produce is mainly destined for domestic consumption, and Mexico, which ranked as the second largest exporter of major tropical fruits behind Costa Rica in 2018.

Major tropical fruits  
Global aggregate production volume



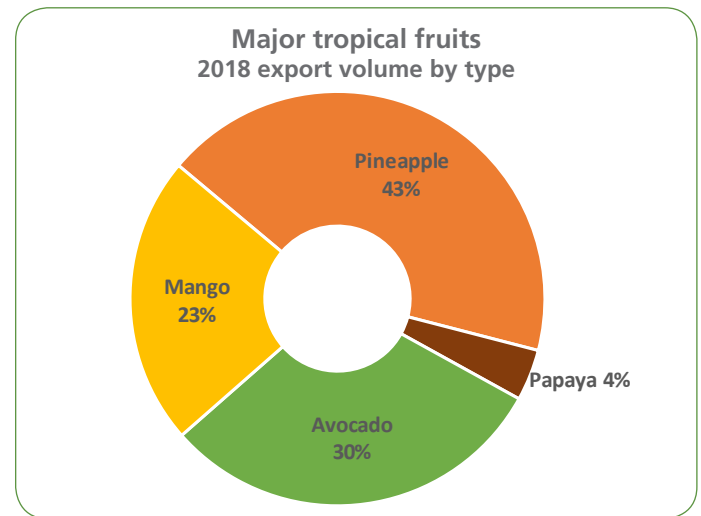
<sup>1</sup> Major tropical fruits includes: mango, mangosteen and guava; pineapple; avocado and papaya.

## Trade

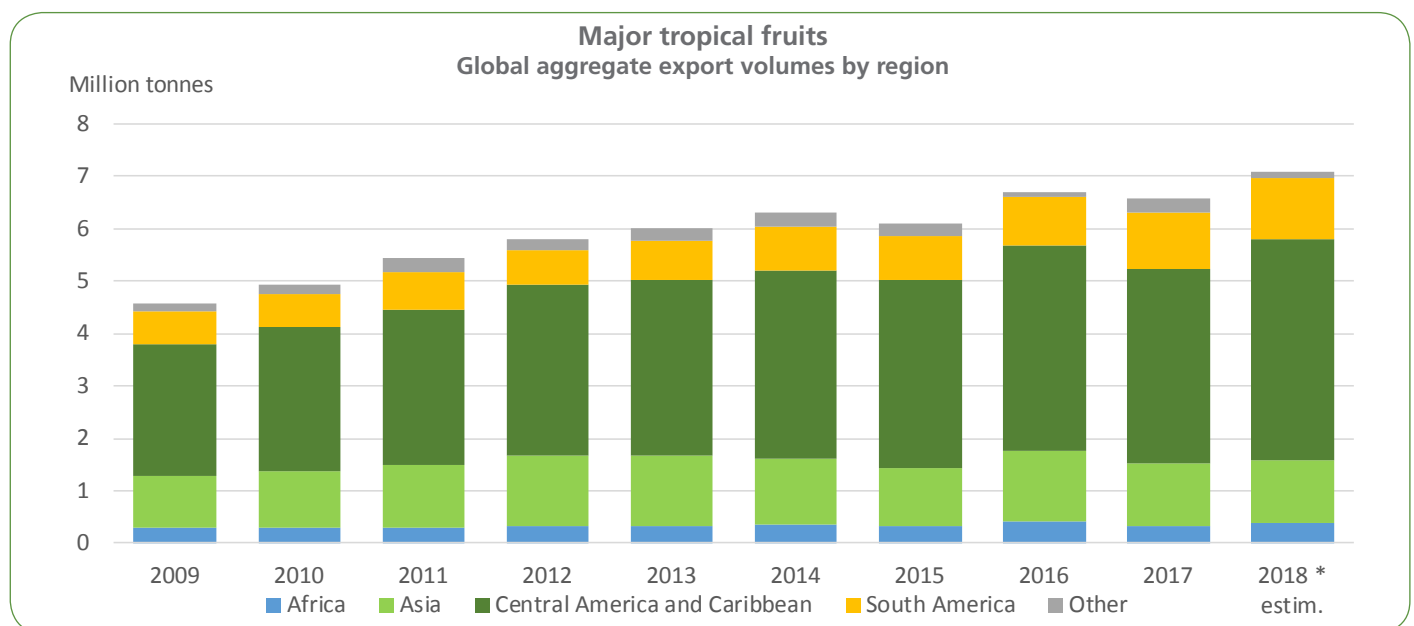
Global trade in major tropical fruits reached an unprecedented peak of 7.1 million tonnes in 2018, following an expansion of 7.6 percent or 500 000 tonnes from the previous year. Strong growth in exports of pineapples and avocados, which both recovered from the weather-related declines experienced in 2017, were chiefly accountable for this. Global shipments of mangoes, meanwhile, expanded at a slower pace following weather-induced supply shortages in Mexico, the major exporter. Similarly, global exports of papaya were hindered by adverse weather in Mexico, the major exporter also of papayas, and additionally suffered from a continuation of phytosanitary concerns that resulted in volumes being rejected by border controls in the main importing market, the United States of America.

Globally, pineapple, avocado and mango are the three most significantly traded tropical fruits, bananas aside. On the back of rapidly growing global demand, export volumes of avocado overtook those of mango in 2017, and continued to gain substantial share in 2018. Papaya meanwhile is traded in much lower volumes, accounting for a mere 4 percent of global volumes, and continued to suffer from supply shortages and phytosanitary concerns in 2018.

On the demand side, changing consumer preferences in developed country markets continued to be the predominant factor fueling the expansion in global shipments. Particularly in the United States of America and the European Union, the two largest import markets, increasing health consciousness and more widespread awareness of the nutritional benefits of tropical fruits



are contributing to fast growing consumption. However, different elasticities of demand are observed for the different fruits. While demand for mango, pineapple and papaya have shown to be fairly susceptible to own-price, cross-price and income effects, demand for avocado has remained fairly inelastic in both the United States of America and the European Union. In developing countries, most prominently in India and China, rising incomes, expanding markets and an intensifying consumer interest in healthy nutrition are similarly paving the way for higher consumption of tropical fruits, particularly in the increasingly prosperous urban areas of the emerging economies.

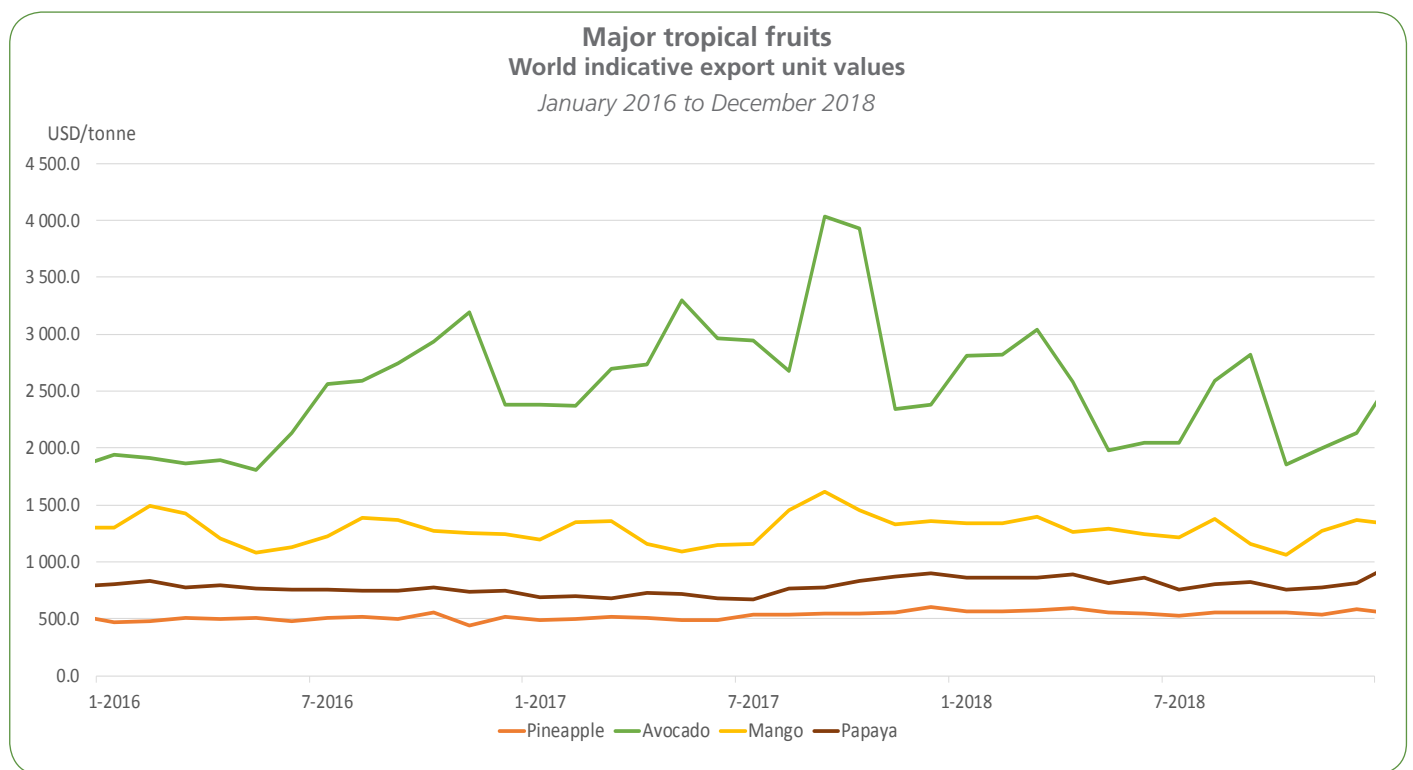




## Prices

Price movements of major tropical fruits are influenced by various factors, but are invariably intrinsic to the supply and demand conditions of the respective commodity. A prime example of this continued to be world indicative export unit values for mango, which largely followed their regular seasonal variations in 2018, with a slight tendency to decline on account of satisfactory supplies. Indicative export unit values of pineapples continued to follow a virtually flat trend, but the annual average ranged 6 percent higher than in 2017 as consumer preferences in key import markets reportedly tended to shift to more expensive specialty types.

World indicative export unit values of avocados, meanwhile, displayed a strong downward trend in 2018 as a result of fast growth in supplies from the leading global producer and exporter, Mexico, declining by 17 percent from their peak annual average of USD 2 900/tonne observed in 2017 and causing concern to avocado growers over declining margins. Indicative export unit values for papaya, meanwhile, trended upwards in 2018 on the back of supply disruptions related to adverse weather conditions and phytosanitary concerns, with the annual average increasing by 10 percent from 2017.



## Commodity Briefs

### Mango, mangosteen and guava

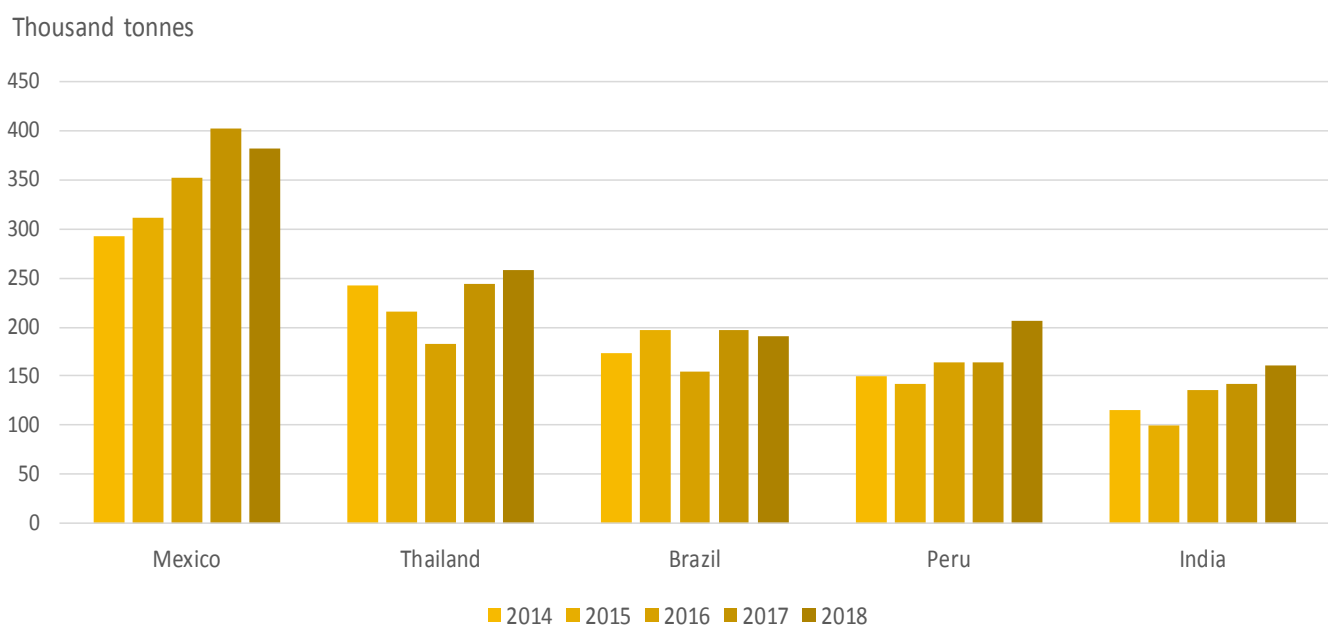
Provisional figures indicate that world production of mango, mangosteen and guava, the world's most sizeable group of tropical fruits, reached 52.1 million tonnes in 2018, an increase of 2.8 percent over 2017. International commodity classification schemes for production and trade do not require countries 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 volume, guava for 15 percent and mangosteen for the remaining 10 percent.

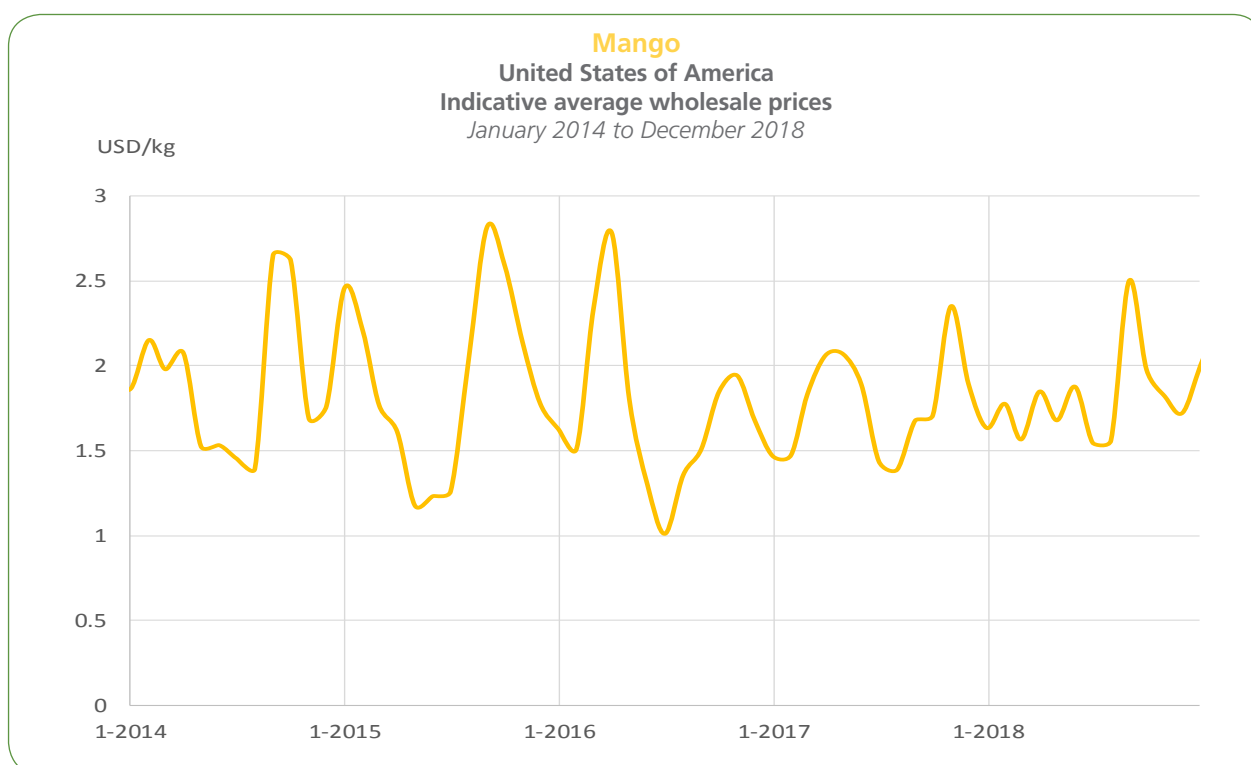
In terms of regional distribution, approximately 73 percent of mango, mangosteen and guava production originated in Asia, 16 percent in Africa and 11 percent in Latin America and the Caribbean in 2018. Production in India, the major producing country, increased by an estimated 500 000 tonnes in 2018, or 2.6 percent, on the back of a 1.5 percent gain in land productivity and a 1.1 percent expansion in area harvested. With a provisionally reported output of 20 million tonnes in 2018, India accounted for approximately 38 percent of total global production, almost exclusively mango and guava. Mango production in India is primarily destined for consumption within the country,

thanks to ample domestic demand and strong domestic prices, which render the national market highly lucrative to producers. This also applies to guava, of which only a negligible fraction is exported. Mangosteen production remains low in India; nevertheless, it has displayed fast growth in recent years due to the crop's assumed health benefits and ease of cultivation. Demand for fruits in India, in particular for mangoes and bananas, has been supported by population growth and rising disposable incomes, which is facilitating a growing interest in healthier nutrition.

Global exports of mango, guava and mangosteen reached an estimated 1.6 million tonnes in 2018. This represents a 3.2 percent increase from 2017, slightly slower than the 4 percent average annual growth registered between 2008 and 2017. The slowdown in growth was attributed to a 5-percent contraction in exports from Mexico, the world's leading supplier of mangoes. Mexico had exported a record of 354 000 tonnes of mangoes to the United States of America in 2017, on account of robust import demand. In 2018, while import demand remained strong, drought and adverse weather conditions in some of the key producing areas of Mexico not only reduced supplies but also impacted the quality of produce for export, with parts

**Mango, mangosteen and guava**  
Shares and volumes of the leading exporters  
2014 to 2018





of the harvest having to be diverted to the national market. In several of the key Mexican producing areas, growers reported losses of up to 70 percent of production, resulting in an overall decline in Mexican production by an estimated 2.7 percent in 2018, to 1.9 million tonnes.

On the import side, the main consumers continued to be the United States of America and the European Union, at approximate shares of one third of global imports each in 2018. Of the commodity cluster, mango's main importers have found growing consumer interest, thanks to favourable preferences and increased nutritional awareness. The latest available figures indicate that per capita availability of mangoes reached 1.5 kg in the United States of America and 0.8 kg in the European Union in 2018, up from 1 kg and 0.4 kg in 2009, respectively. In terms of export volumes, mango continued to account for approximately 90 percent of global shipments, with guava and particularly mangosteen displaying a low availability in import markets.

Mexico remained the undisputed leading exporter, with an estimated volume share of 24 percent in 2018, followed by Thailand (16 percent), Brazil (12 percent) and Peru (10 percent). Mexico primarily exports mangoes to the United States of America (approximately 80 percent of the country's entire shipments in 2018) but suffered from

production losses due to drought in some of the main production areas in 2018. Thailand, which also ranks as one of the leading exporters of mangosteen, ships the bulk of its mango production to foreign markets, primarily to destinations within the confines of the Southeast Asian region. Mango exports from Brazil are mainly destined for the European Union market, where the country maintains a strong position through its ability to produce mangoes perennially, including a number of varieties that are popular in European markets, among them Tommy Atkins, Keitt and Kent. Peru exports mainly fresh mango and mangosteen, with approximately 46 percent of shipments going to the Netherlands, 25 percent to the United States of America and 8 percent to the United Kingdom in 2018.

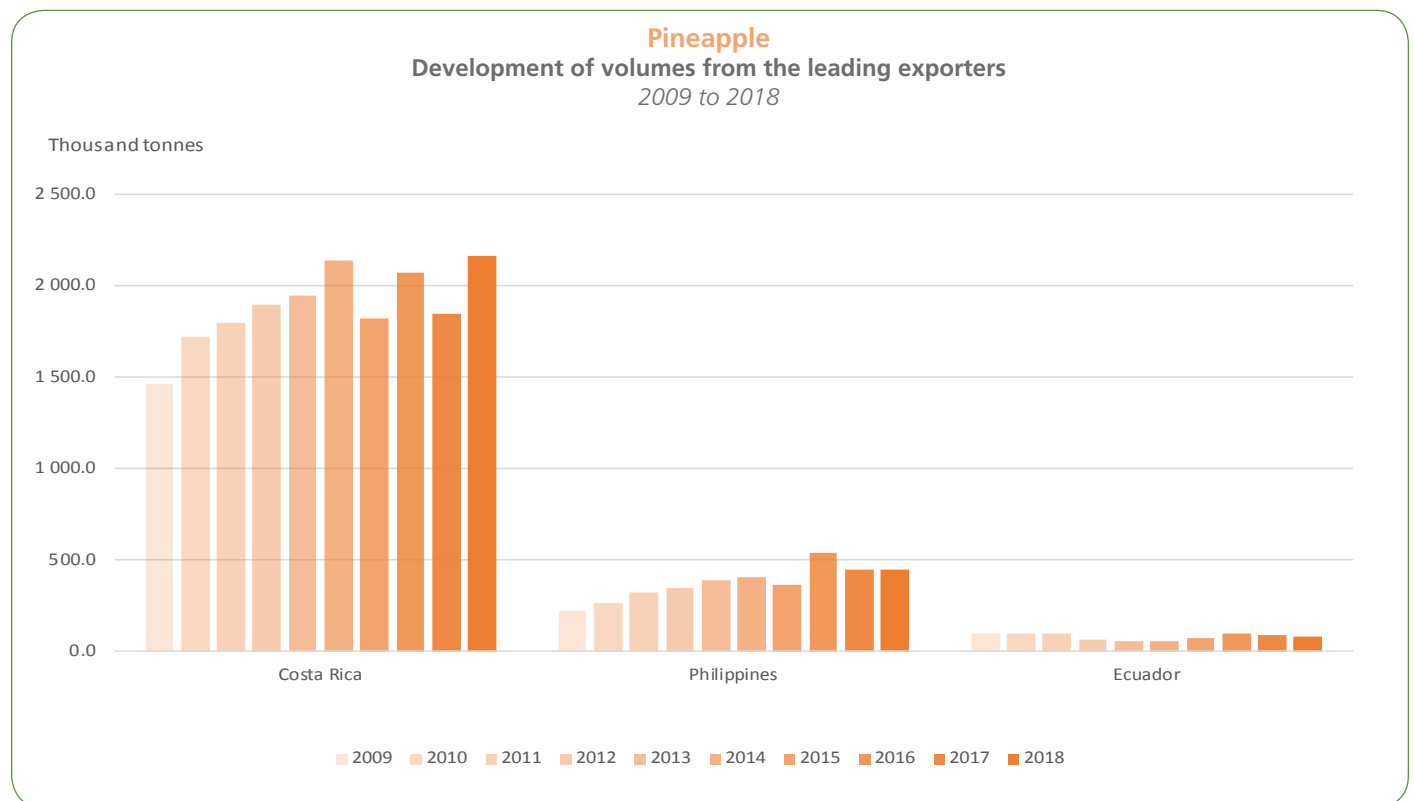
The United States of America wholesale prices of mangoes continued to respond to seasonal fluctuations in supply and demand in 2018, but displayed lower volatility than in previous years. Prices fluctuated around an average of USD 1.68 per kilogram during the first eight months of the year, and reached a peak of USD 2.5 per kilogram in September 2018 in response to a contraction in trade volumes. In light of ample import demand, the United States of America wholesale prices continued to display a sustained upward trend in 2018, with the annual average reaching USD 1.8 per kilogram, compared to USD 1.72 and USD 1.77 per kilogram in 2016 and 2017, respectively.

## Pineapple

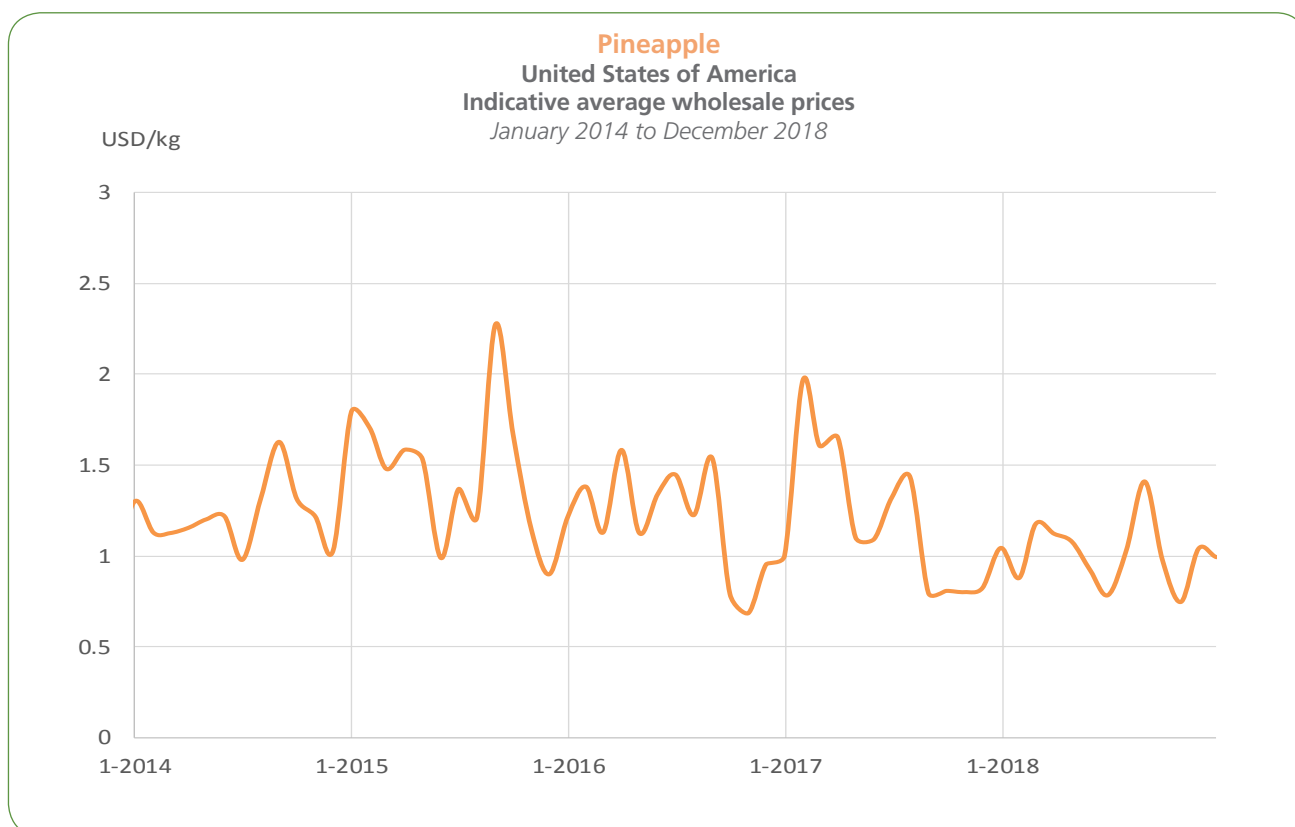
Pineapple, the second-ranked tropical fruit in terms of importance in world production, registered an estimated 3 percent increase in output and reached an unprecedented production volume of approximately 28.3 million tonnes in 2018. Growth was mainly on account of the production recovery in Costa Rica, the main producer of pineapple in the world, which had seen weather-related crop damages in 2017, as well as area expansion in Thailand and the Philippines, two other significant producers. As such, global output expansion in 2018 came close to matching the average annual pace of 3.6 percent observed between 2008 and 2017.

Costa Rica, which accounted for about 11 percent of total global pineapple production in 2018, experienced an estimated 5 percent increase in output, exclusively on account of area expansion. Other major producers of pineapple include the Philippines and Thailand, with an estimated volume share of 10 and 8 percent, respectively, in 2018, followed by China, Brazil, India and Indonesia. Production in Brazil, China, India and Indonesia is primarily destined for the domestic fresh market owing to strong internal demand and competitive retail prices. Thailand is the world's leading producer and exporter of processed pineapple.

On the back of ample supplies, global exports of pineapple rose to approximately 3 million tonnes in 2018, representing a 7.8 percent increase from 2017. The expansion in trade was almost exclusively facilitated by the production recovery in Costa Rica, which saw exports rise by 17.3 percent, or 320 000 tonnes, in 2018. As such, Costa Rica increased its total volume share in world supplies of pineapple to 71 percent in 2018. Shipments from the country are almost exclusively destined to the United States of America and the European Union, at almost equal share in 2018. The Philippines, the second largest exporter with an approximate global volume share of 15 percent in 2018, witnessed a very slight increase of 0.5 percent from 2017, to approximately 447 000 tonnes in 2018. Shipments from the Philippines are primarily destined to East Asia, with a large share exported in processed form. African ACP<sup>1</sup> exporters, which accounted for a large share of shipments to the European Union until the mid-2000s, continued to experience declining trade volumes due to the difficulty of competing with the very low prices of Costa Rican pineapples. Total exports of pineapples from Africa dropped to an estimated 63 000 tonnes in 2018, from approximately 170 000 tonnes in 2008.



<sup>2</sup> African, Caribbean and Pacific Group of States.



Owing to the robust supply recovery in Costa Rica as well as surging domestic demand, imports by the United States of America, the largest importer of pineapple globally, increased by an estimated 27.5 percent in 2018, to approximately 1.2 million tonnes or 40 percent of total global import volumes. The popularity of pineapples in the United States of America is aided by the fact that they are the cheapest of the four major tropical fruits, with wholesale prices having fallen to USD 1.02/kg on average in 2018, and a widespread ingredient of juice mixes. Imports by the European Union (excl. intra-trade), meanwhile, declined from their peak of 1.1 million tonnes reported in 2017, by an estimated 7.6 percent from 2017, to 1 million tonnes. Per capita consumption of pineapple stood at approximately 4 kg in the United

States of America and 2 kg in the European Union in 2018.

The United States wholesale prices of pineapple reflected the pronounced increase in supply during the first half of the year, with average prices falling to USD 0.78/kg in June 2018. A drastic drop in volumes during August and September meanwhile resulted in a sharp increase in prices to an average of USD 1.41/kg in September 2018. Overall, the annual average unit price of pineapple displayed a tendency to decline in 2018. Prices of standard pineapple are typically restrained by strong competition in the global value chain as the fruit is sold at low prices in key export markets such as the United States of America, the United Kingdom and Germany.

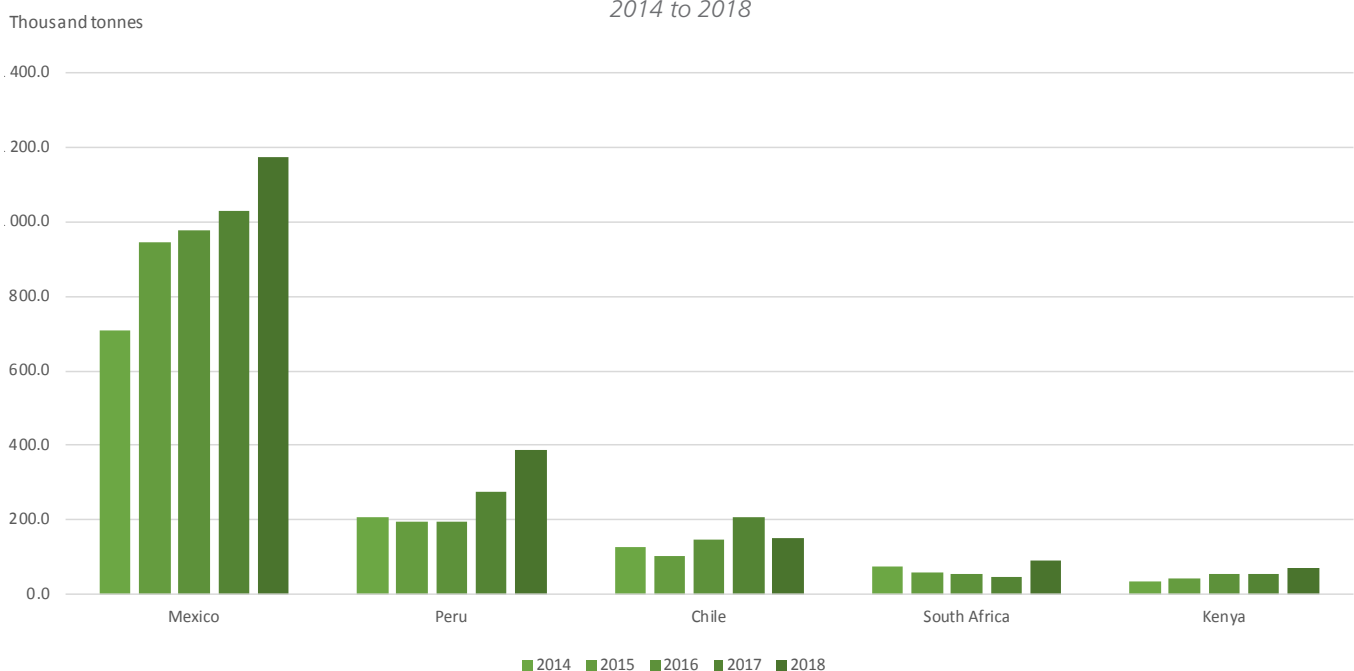
## Avocado

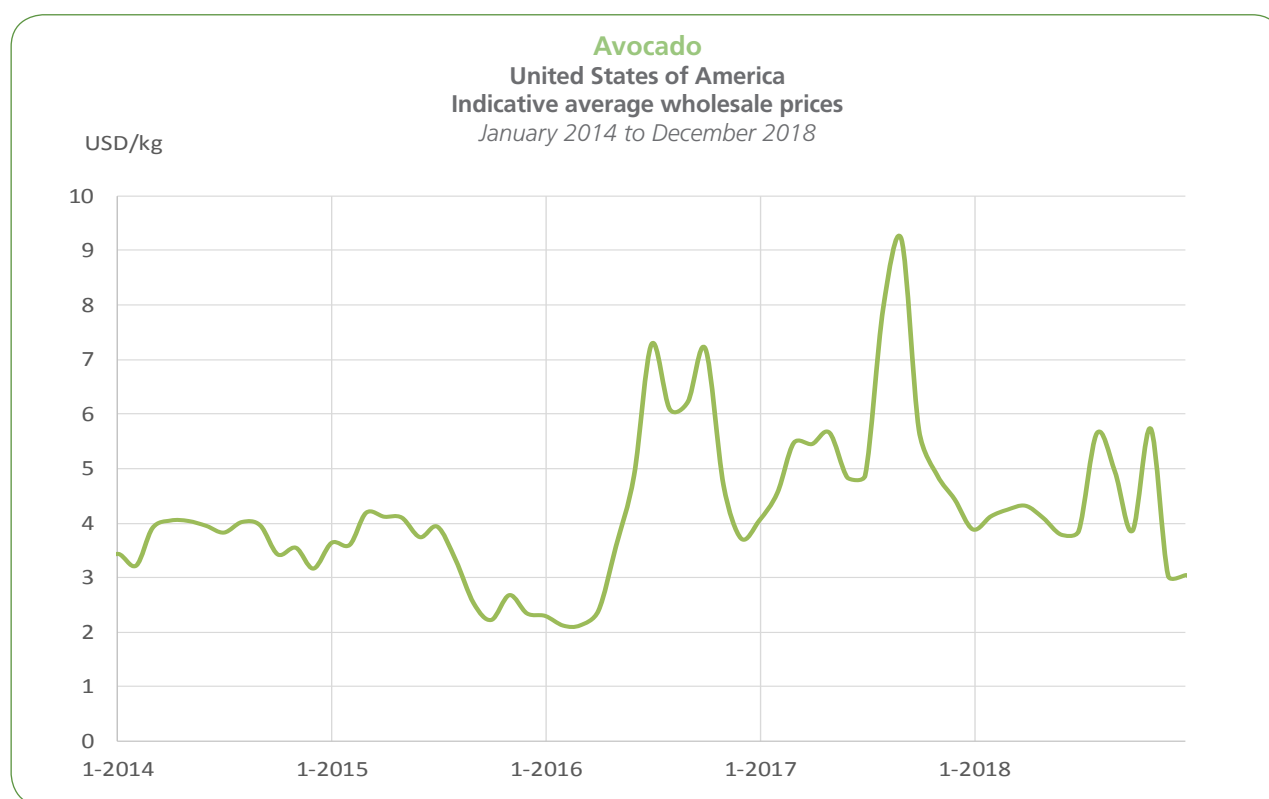
On the back of rapidly growing global demand, world production of avocado reached an estimated 6.3 million tonnes in 2018, representing a 6.7 percent increase from 2017. Among all the major tropical fruits, avocado has seen the fastest production growth in the last decade, at an annual average rate of 6 percent, primarily due to increases in harvested area in the major producers. Since avocado has the highest share of trade in production among the major tropical fruits, growth in production has first and foremost been driven by surging global import demand, which expanded at an annual average rate of 13 percent over the previous decade. In 2018, approximately 35 percent of global avocado production were destined for export markets, compared to some 3 to 5 percent on average for the other major tropical fruits. However, in global production terms, avocado remains the smallest of the major tropical fruits, accounting for a mere 6 percent of total major tropical fruit production in 2018.

More than half of all avocado production takes place in Central America and the Caribbean, largely owing to the strong position of Mexico and the Dominican Republic. Production in Mexico alone accounted for more than one-third of global output in 2018, having grown by an estimated 11 percent from 2017 as a result of significant investments into yield-improving technologies and area expansion. Production in the Dominican Republic, the world's second leading producer of avocado, similarly

benefited from investments into area expansion and yield improvement and expanded by an estimated 10 percent in 2018, reaching approximately 700 000 tonnes. The small island state's agricultural crops, including avocados and bananas, are acutely prone to hurricane damage given the country's geographic location within the tropical belt. In addition, the peak harvest period for avocados in the Dominican Republic is between October and March, when approximately 80 percent of production is harvested, making the crop particularly vulnerable to hurricane damage. Production in Peru, meanwhile, registered an estimated 13 percent increase over 2017, following an approximate 8 percent increase in harvested area, which was stimulated by strong import demand from the European Union, the largest export destination for supplies from Peru. Consequently, Peru ranked as the third leading producer of avocado, with an estimated 8 percent volume share in 2018. Avocado is also the only fruit for which developed countries account for a non-trivial share of production, with the United States of America accounting for approximately 2 percent of global volume in 2018, primarily for domestic consumption. However, the United States of America production of avocado has been suffering from high input costs and adverse conditions caused by a prolonged drought in California, the main avocado growing area. This induced a further decline in the United States of America avocado production in 2018, to an estimated 100 000 tonnes, from a peak of 200 000 tonnes in 2015.

**Avocado**  
Development of volumes from the leading exporters  
2014 to 2018





Global exports of avocado grew to a first-time 2.2 million tonnes in 2018, representing a 15.9 percent increase from 2017 and outperforming the 12.6 percent average annual growth rate seen over the previous decade. Mexico, as the leading global exporter of avocado, experienced a 14-percent expansion in shipments on account of ample production growth and strong import demand in the United States of America, the main recipient of Mexican avocados. In global trade, Mexico accounted for an estimated 54 percent of avocado exports in 2018, shipping approximately 1 million tonnes of avocado, or 77 percent of its exports, to the United States of America. Mexico's strength in avocado trade lies in its ability to produce avocado in all seasons, its focus on the higher quality Hass variety, and also its close proximity to the United States of America, which gives the country a unique competitive advantage. Other significant exporters are Peru, Chile, South Africa, and Kenya, which all primarily export to the European Union and have benefited from fast growth in its import demand for avocado. Mexico is a less prolific exporter of avocado to the European Union, as prices received in the United States of America are significantly more lucrative. The Dominican Republic primarily engages in the production of tropical avocados, which are considerably more susceptible to damage in transit than the more resilient Hass variety, due to their softer peel. As such, the Dominican Republic, despite being among the leading consumers of avocado, plays a marginal role in global trade.

The main export destinations for avocado are the United States of America, which absorbed nearly half of global

shipments in 2018, and the European Union, which received approximately 28 percent. In the United States of America, the consumption of avocados is supported by nation-wide marketing activities at popular events such as the Super Bowl, which are financed through a fee of USD 0.6 charged for every box of Hass avocados imported from Mexico, Chile and the Dominican Republic. Aided by this, the United States of America per capita fresh fruit retail availability of avocado reached an estimated 3.6 kg in 2018. The latest available data for the European Union indicate a per capita avocado availability of 1.4 kg on average in 2018, with the key avocado-consuming markets of France and the United Kingdom reaching an estimated 1.7 kg and 1.5 kg per capita, respectively. Demand for avocado has been supported by the fruit's assumed health benefits related to its very high nutritional value.

The United States of America wholesale prices of avocado displayed a strong downward tendency in 2018, declining noticeably from the peaks reported in 2016/17. The robust supply situation in Mexico had resulted in ample shipments throughout the year, with only two significant price spikes observed in response to volume declines in August and November 2018. Additional imports from Peru during the early summer months further contributed to lower average price levels. Over the year, the average United States of America wholesale price stood 23 percent lower than in 2017, at USD 4.29/kg on average compared to an annual average of USD 5.58/kg in 2017.

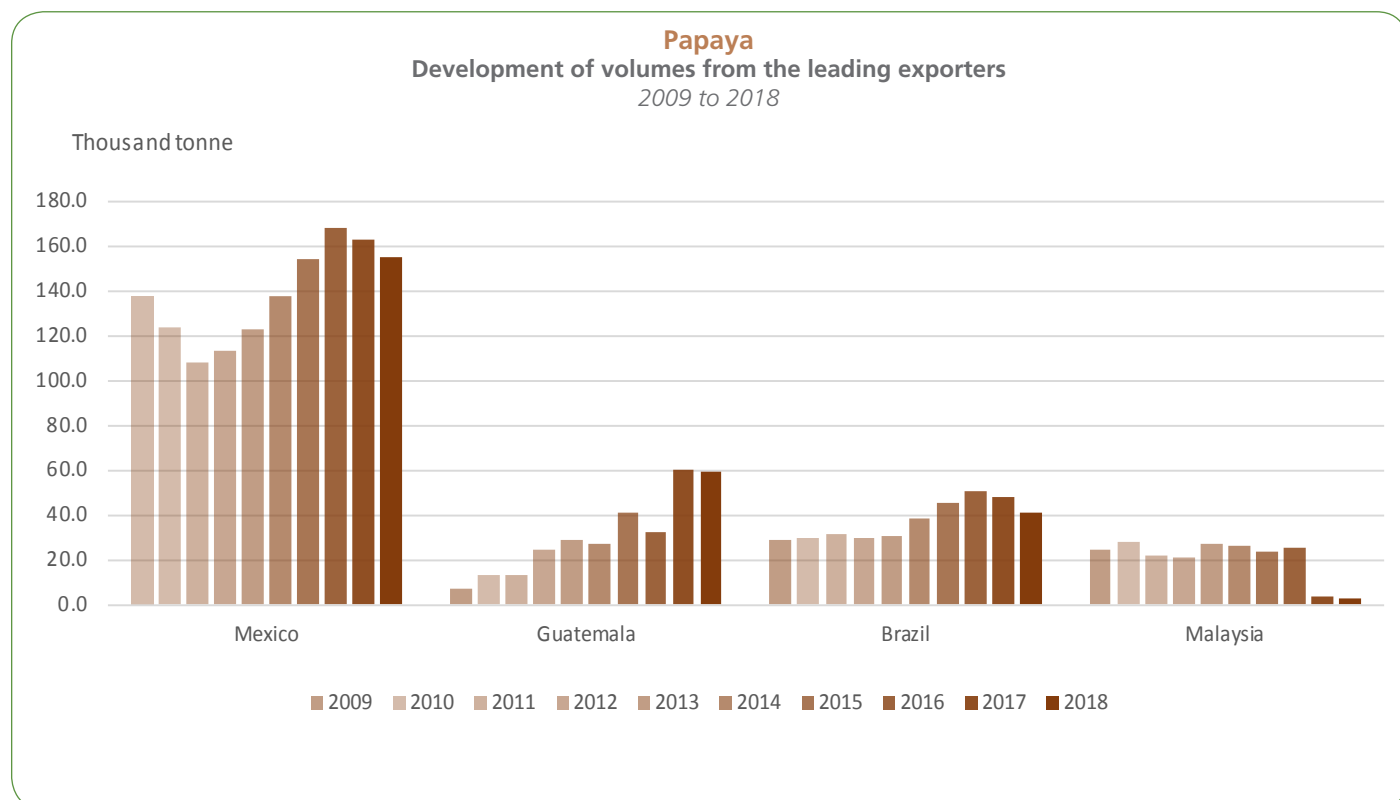
## Papaya

Global production of papaya reached an estimated 13.6 million tonnes in 2018, up by approximately 4 percent from the 2017 level, on the back of fast growth in domestic demand in some of the largest producing countries, which stimulated investments into productive capacity and area expansion. Despite the crop's stronger resilience to varying weather conditions, papaya production experienced some significant weather-related disruptions in 2018, but nevertheless exceeded the average annual growth rate of 3 percent registered over the past ten years. In terms of regional distribution, an estimated 60 percent of global papaya production originated from Asia in 2018, 29 percent from Latin America and 10 percent from Africa.

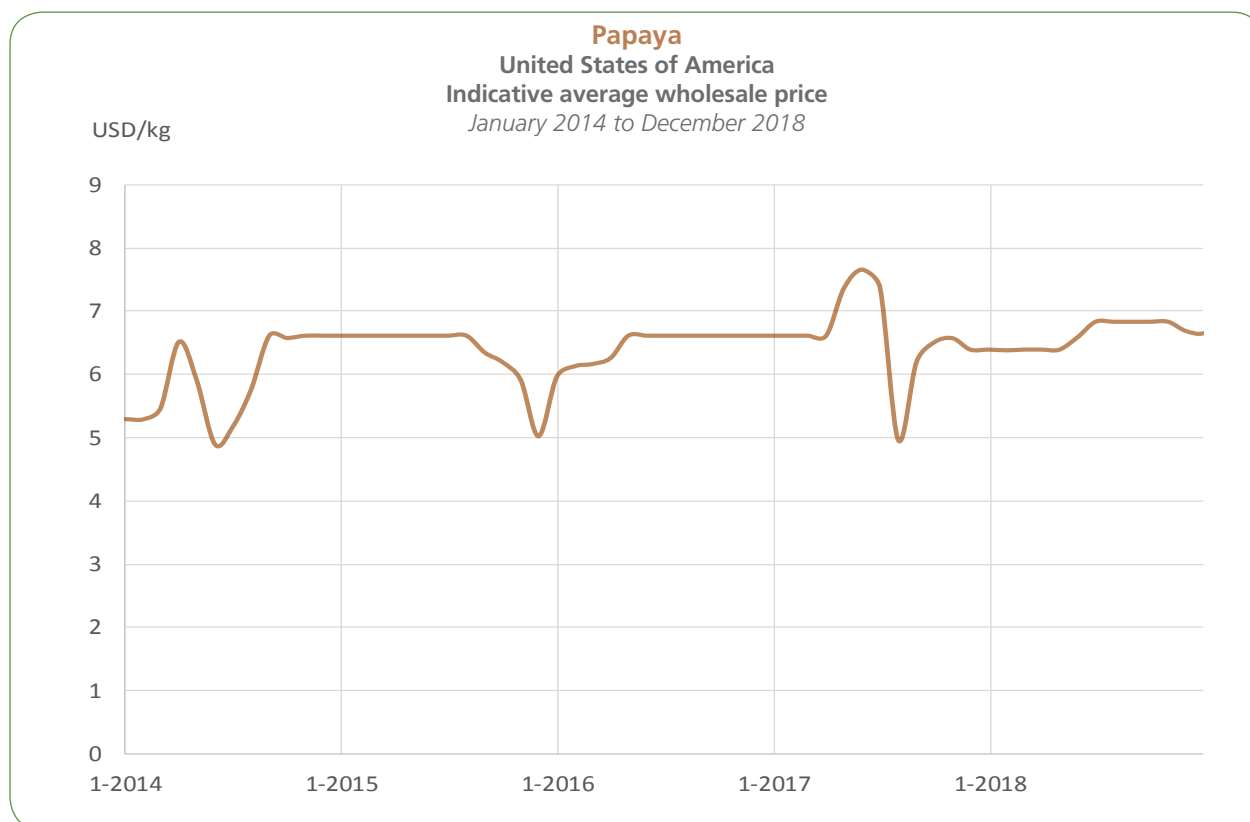
India, the largest papaya producer in the world, with an estimated 48 percent output share in 2018, registered approximately 10 percent production growth from 2017, largely due to increases in the harvested area. Overall, the country was estimated to have added nearly 600 000 tonnes to its papaya output in 2018 compared to the previous year. Indian papaya production is mainly destined for internal consumption, as domestic demand has been supported by rising incomes and changing consumer preferences. These factors have stimulated India's fast expansion of papaya production, which increased at an annual average growth rate of 5 percent over the previous decade, from 3.9 million tonnes in 2009 to an estimated 6.5 million tonnes in 2018.

Production in Brazil, the second largest producer in the world, declined for the fourth consecutive year in 2018, by an estimated 16 percent from 2017, due to a series of adverse weather conditions in the key producing areas. Overall, Brazilian papaya production dropped to approximately 890 000 tonnes in 2018, from 1.6 million tonnes in 2014. Papaya production in Brazil is primarily destined for the domestic market, which experienced noticeable shortages in supply following the weather-induced decline in production in 2018. This resulted in significant increases in domestic prices, which reportedly rose above border prices and thereby diverted volumes away from export markets.

Global exports of papaya dropped to an estimated 284 000 tonnes in 2018, an annual decrease of 10 percent from 2017. Excess rainfall in Mexico, the leading international supplier, affected not only the quantity but also the quality of supplies, rendering significant volumes unfit for export. Mexico accounted for approximately 55 percent of global papaya exports in 2018, making developments in shipments from the country particularly impactful on global trade. Exports from Mexico are almost exclusively destined to the United States of America, which absorbed a reported 99 percent of Mexican papayas in 2018. However, in the aftermath of a widely reported salmonella outbreak linked to the







consumption of Mexican papayas of the Maradol variety across the United States of America in August 2017, prolonged concerns about the contamination with several strains of the salmonella bacterium continued to severely affect the United States of America imports of papaya from Mexico. As of March 2019, the United States of America Food and Drug Administration maintained an import alert, which permits the detention of Mexican Maradol papayas without physical examination at United States of America ports of entry. As such, despite Mexican papaya production surpassing 1 million tonnes in 2018, papaya exports from Mexico declined by approximately 4.8 percent in 2018. Industry sources reported that Mexican growers began switching to the Tainung variety, which reportedly complies with international phytosanitary standards and displays stronger consistency and resistance in transport.

Of the major tropical fruits, papaya is the least traded fruit, but it has seen promising growth over the past decade. The largest importers of papaya are the United States of America, with an estimated 70 percent volume share

in 2018, and the European Union, with an approximate 15 percent volume share. As a result of the supply shortages and phytosanitary concerns in Mexico, the United States of America imports of papaya experienced a decline by 4.1 percent in 2018, to 187 000 tonnes. Latest available data indicate that the United States of America per capita availability of papaya remained at 0.6 kg in 2018. Despite the European Union ranking as the second largest importer, consumer awareness of the fruit remains low, with per capita consumption of papaya remaining at a negligible level of 0.1 kg in 2018. Promotion of the fruit and its nutritional benefits are therefore key to supporting import demand and further growth, particularly in the European Union.

United States of America wholesale prices remained virtually flat at USD 6.4 during the first six months of 2018, and displayed a tendency to increase during the second half of the year in response to shortages in supplies from Mexico. Overall, price fluctuations were observed to be less pronounced in 2018 than in previous years, with an effective absence of significant peaks or troughs.



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