



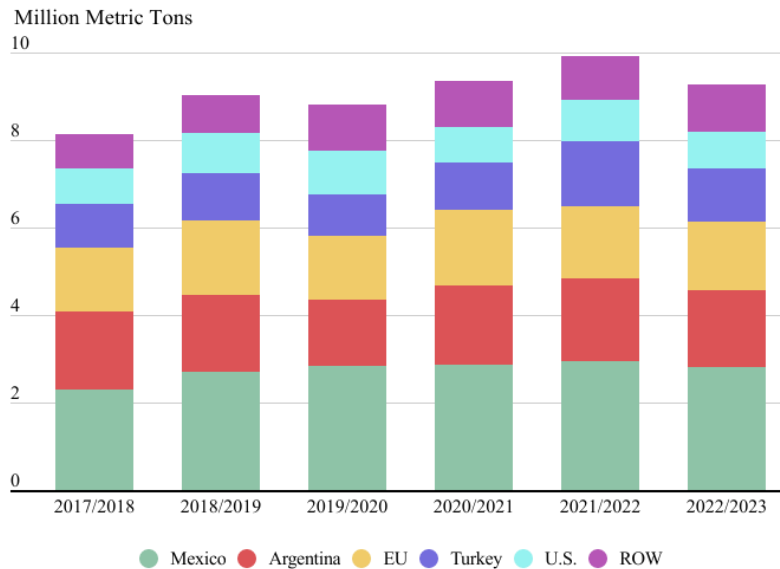
GLOBAL MARKETS FOR TEXAS ORGANIC LIMES¹

CNAS Report 2023-06

World Lime Production

During the 2022/2023 marketing year, 9.27 million metric tons of lemons and limes were grown around the globe. The five leading countries were responsible for 88-91 percent of lemons and limes grown between the 2017 marketing year and the 2022 marketing year. Mexico leads the world growing 2.8 MMT of lemons and limes in 2022 with the lowest production year being 2017 when only 2.31 MMT were grown. Argentina and the EU follows producing 1.77 and 1.57 MMT of lemons and limes, respectively. Turkey and the United States rank as the fourth and fifth largest growers respectively. Together, these countries grew 8.19 MMT of lemons and limes.

World Production of Lemon-Limes, 2017-2022



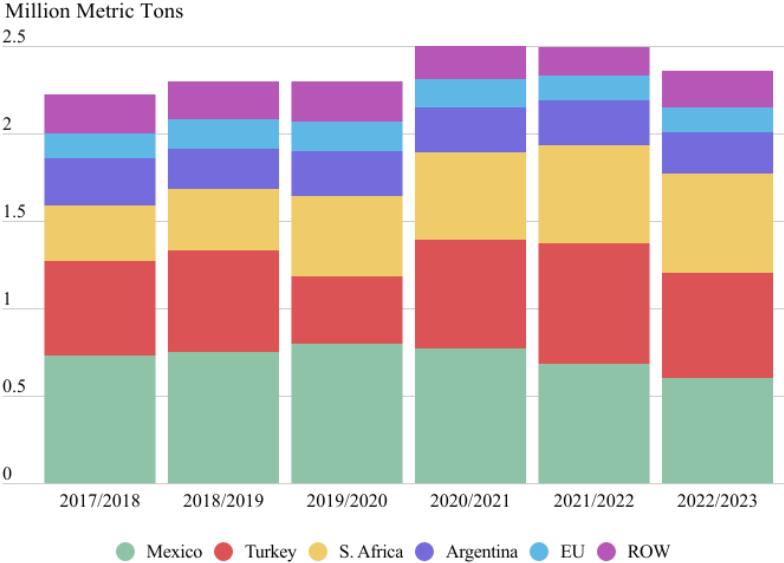
Source: Production, Supply & Distribution (PS&D), USDA/FAS

Global Lime Exports

¹ *Global Markets for Texas Organic Limes* is a report of the project Organic Export Market Analysis for Selected Texas Commodities, funded by the Texas Department of Agriculture and Texas International Produce Association. For more information, please contact the Center for North American Studies, Department of Agricultural Economics, Texas A&M AgriLife Extension Service, College Station, TX, 77843-2124. 979-845-3070.

Of the 9.27 MMT of lemons and limes grown across the globe, 2.36 MMT were exported from the country which they were grown. Mexico and Turkey both exported 600 thousand metric tons (TMT) of lemons and limes during the 2022 marketing year. Mexico has seen exports decrease some in recent years with exports peaking at 800 TMT in the 2019 marketing year. Turkey on the other hand, has had wild swings in the volume exported in time ranging from 380-690 TMT. South Africa is the third largest exporter of lemons and limes and has seen export volume increase every year since 2017. During 2022, South Africa exported 570 TMT of lemons and limes, a 250 TMT increase from 2017. Argentina holds the fourth position with 240 TMT of exports in 2022 and the EU in the fifth with 140 TMT. Exports from these five countries has been over 90 percent of the total for the world every year since 2017.

World Exports of Lemon-Limes, 2017-2023



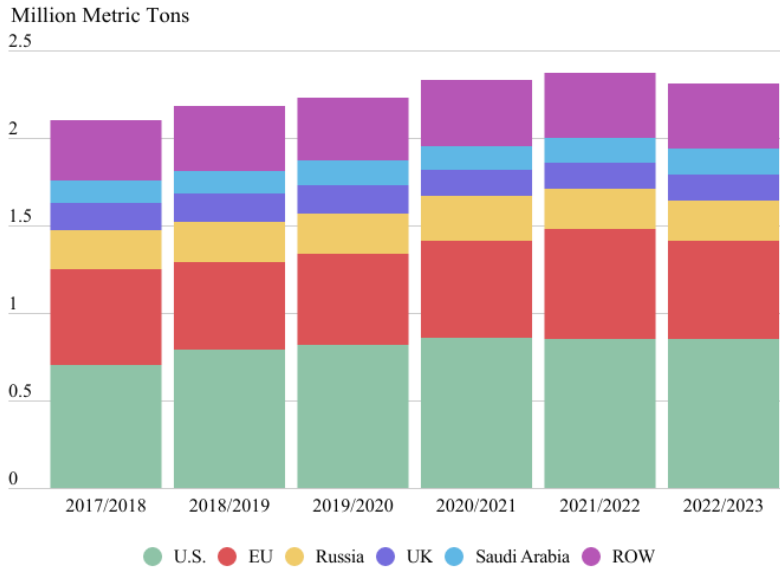
Source: Production, Supply & Distribution (PS&D), USDA/FAS

Global Lime Importers

The United States is the largest global importer of lemons and limes. During both the 2021 and 2022 marketing years the United States imported 850 TMT and has seen little change since 2018. The EU is the second largest market for lemons and limes, importing 560 TMT in 2022. This is the highest import volume seen by the EU bloc, with exception to the 2021 marketing year. Germany, the Netherlands, France, and Poland together account for 63 percent of the entire EU’s imports of lemons and limes.

The United States and EU account for 59-63 percent of all lemons and limes imported since 2017. After these two is Russia, the UK, and Saudi Arabia which together imported 30 TMT less than the EU in 2022. Russian imports of lemons and limes were 230 TMT and both the UK and Saudi Arabia imported 150 TMT.

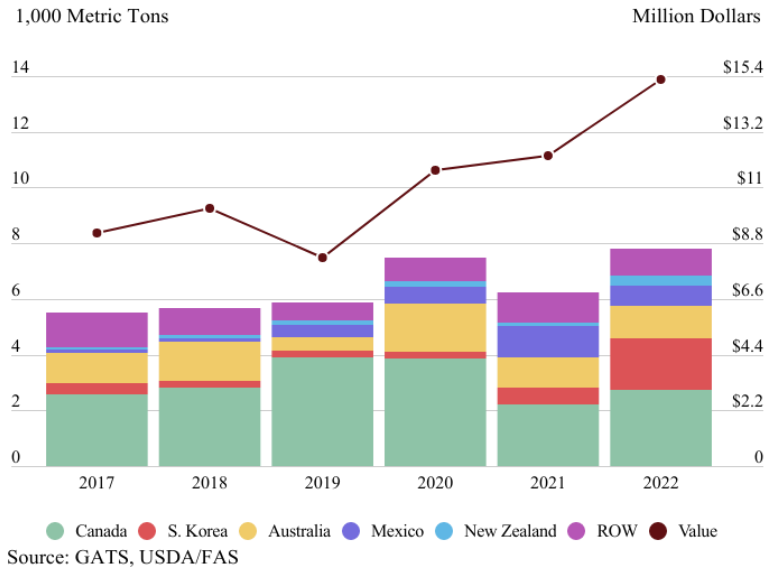
World Imports of Lemon-Limes, 2017-2023



U.S. Lime Exports

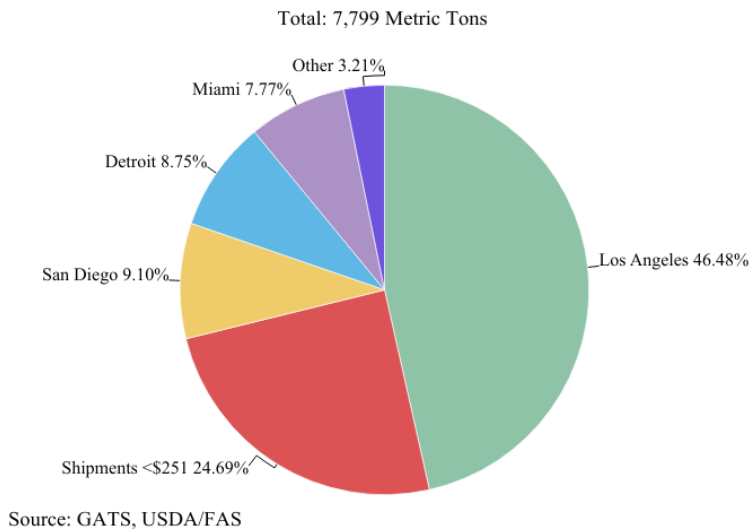
Exports of limes from the United States totaled 7.8 TMT of volume in 2022 worth \$15.28 million. With exception to 2021, lime exports from the United States have increased every year since 2017. The largest market for U.S. limes is Canada which imported 2.75 TMT during 2022, down 1.15 TMT from the peak of lime exports in 2019. Part of the reason Canadian imports fell in 2021 was lower production in the United States for the 2020/2021 marketing year. South Korea follows as the second largest destination for limes exported from the United States, in 2022 there were 1.84 TMT of U.S. limes imported. Exports to South Korea are 1.2 TMT more than the previous highest year's export volume, 630 metric tons (MT) in 2021. Australian imports of U.S. limes were 1.15 TMT in 2022 and in years prior was the second largest market for U.S. lime exports. These top three markets have accounted for 62-79 percent of the limes exported from the United States since 2017 and totaled 74 percent of the total in 2022. Mexico and New Zealand round out the top five markets for U.S. lime exports.

U.S. Exports of Limes, 2017-2022



Los Angeles led all U.S. port districts for volume of lime exports in 2022 with 3.62 TMT, 82 percent was exported to South Korea and Australia. Shipments with a total value under \$251 are aggregated to a small shipment category which, if counted as a stand-alone port district, would rank as the second largest for U.S. lime exports totaling 1.93 TMT, all of which are destined for Canada. The 682 MT of limes exported from Detroit also went entirely to Canada. San Diego port district exported 704 MT of limes to Mexico. Miami ranked as the fifth largest port district for U.S. lime exports with 606 MT in 2022, this went to multiple smaller markets including: Barbados, Turks and Caicos, and the Bahamas.

U.S. Exports of Lemon-Limes by Port District, 2022



Production data for limes is estimated using published data for acres bearing limes and national yield per acre of lemons for the given years. Using this estimation, in 2017 there was 14.9 TMT of limes grown in the United States. California has led the nation since 2007 with more than a third of the total acres in production, during 2017 there was 11.5 TMT of limes grown on the 816 acres bearing fruit. California’s share of lime production in the United States has increased each year from 39 percent in 2002 to 78 percent in 2017. Florida had previously ranked above California for total acreage prior to 2007 with 644 acres bearing limes, but acreage has decreased with each census to fifty-nine acres bearing limes in 2017 producing 830 MT of limes. Lime production in Hawaii and Texas have two reported acreage values, 2007 and 2017, acres bearing is not published for 2002 or 2012 to protect production information of individual firms.

Estimated U.S. Lime Production, TMT				
	2002	2007	2012	2017
California	7.89	6.97	6.41	11.55
Hawaii	(D)	2.06	(D)	1.61
Florida	10.28	6.96	3.37	0.83
Texas	(D)	0.03	(D)	0.71
Other States	1.92	0.00	1.41	0.17
U.S. Total	20.08	16.02	11.19	14.87

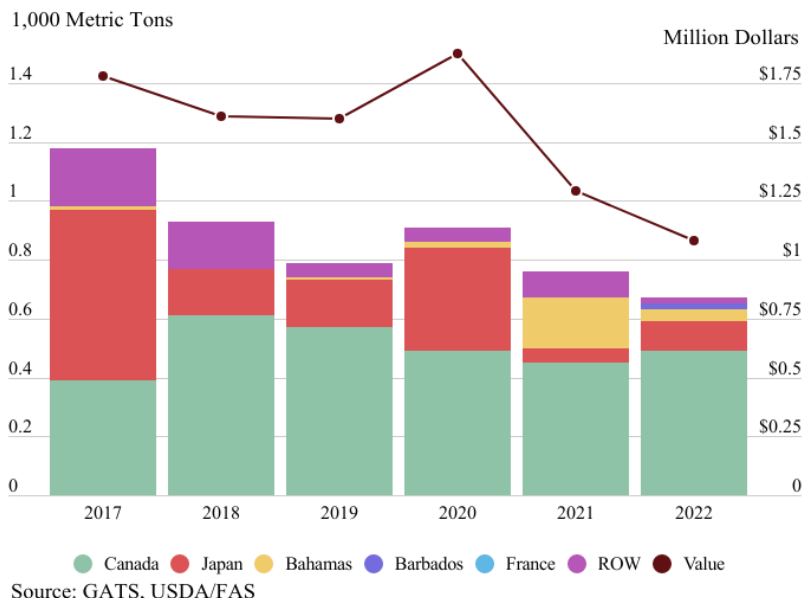
Source: QuickStats, USDA/NASS

U.S. Organic Lime Exports

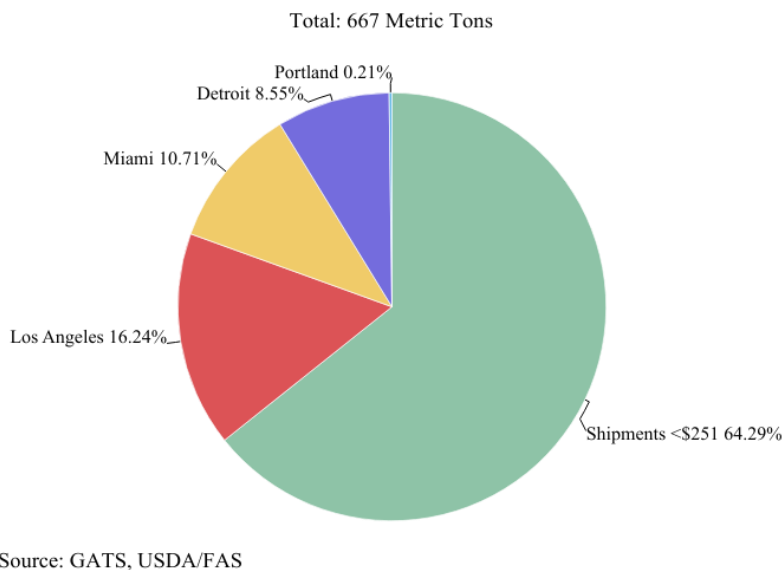
Unlike total lime exports, organic limes exported from the United States have fallen every year since 2017, except for a small increase seen in 2020. Exports of organic limes in 2022 was 670 MT, a 500 MT decline from 2017 exports. Organic limes exported in 2022 were valued at \$1.08 million with the peak value being \$1.88 million in 2020. Canada led all countries importing these limes, accounting for 490 MT in 2022 and between 33-74 percent of organic limes exported since 2017. Japanese imports of organic limes from the United States took a large step back after 2017 when it imported 580 MT and since has averaged around 160 MT annually.

When looking at where these organics leave the United States, 429 MT of organic limes were exported to Canada and aggregated as shipments worth less than \$251. These small value shipments accounted for 64 percent of all organic limes exported in 2022. Detroit and Portland exports were also entirely destined for Canada. The Los Angeles port district was the site for 118 MT of organic lime exports, 97 MT of that was destined for Japan with New Zealand and the Philippines importing the rest. Just over 71 MT of limes passed through the Miami port district with the majority going to the Bahamas and Barbados.

U.S. Exports of Organic limes, 2017-2022



U.S. Exports of Organic limes by Port District, 2022

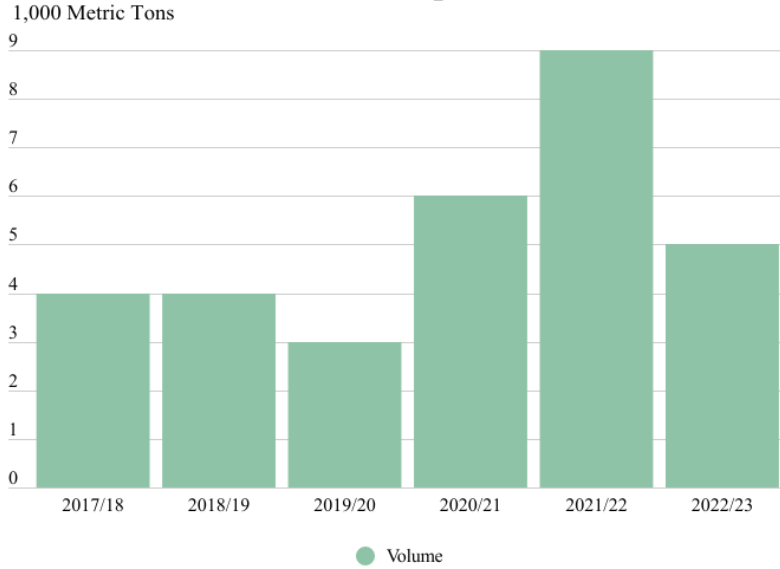


Mexican Market for U.S. Limes

During the 2022/2023 marketing year, Mexico imported 5 TMT of lemons and limes. That total includes 730 MT of limes from the United States in 2022 worth \$1.28 million. Exports of limes from the United States to Mexico have increased each year from 2018 to 2021, when exports peaked at 1.14 TMT worth \$2.3 million. In 2022 limes exported to Mexico from the United

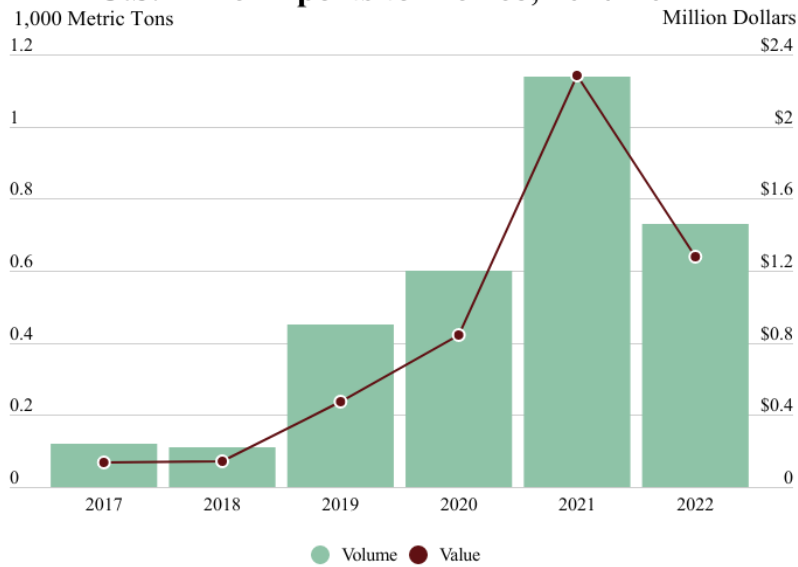
States still surpassed export volume in 2020, despite the decrease from 2021. While multiple factors might have caused the sharp increase in U.S. lime imports by Mexico, part of this could be attributed to lower production in recent years while maintaining similar export volume. Though Mexico is the fourth largest importer of U.S. limes in 2022, there has been no imports of organic limes from the United States by Mexico since 2019. Since 2017, Mexico has only imported organic limes two years which totaled 50 MT worth \$47,000.

Mexico Lemon-Lime Imports, MY2017-2022



Source: PS&D, USDA/FAS

U.S. Lime Exports to Mexico, 2017-2022



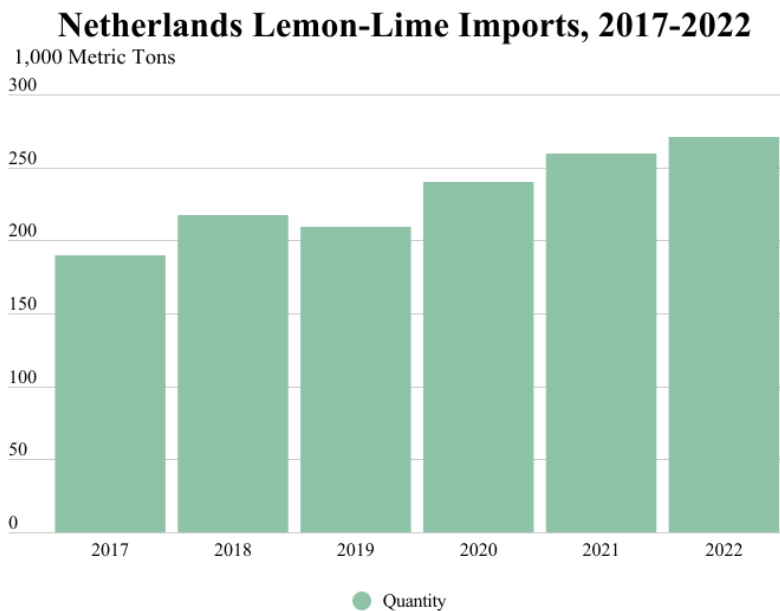
Source: GATS, USDA/FAS

Mexico is the second largest market for U.S. organic exports, behind only Canada, with an existing market for limes that has been growing during recent years. Mexico could be a target for U.S. organic lime exporters that view this trend continuing. Growing these exports and having limes enter the organic market in Mexico could be especially beneficial for Texas growers' due production taking place primarily in the southern part of the State near the Mexico border.

Unlike many other potential markets, there are very few barriers in place to export limes to Mexico thanks to the groundwork that put in place with NAFTA and USMCA. Tariffs for limes exported to Mexico are set at zero percent from the United States. The only certifications that are required for any U.S. state to export limes to Mexico are for select parts of California which need to have a phytosanitary certificate (PC).

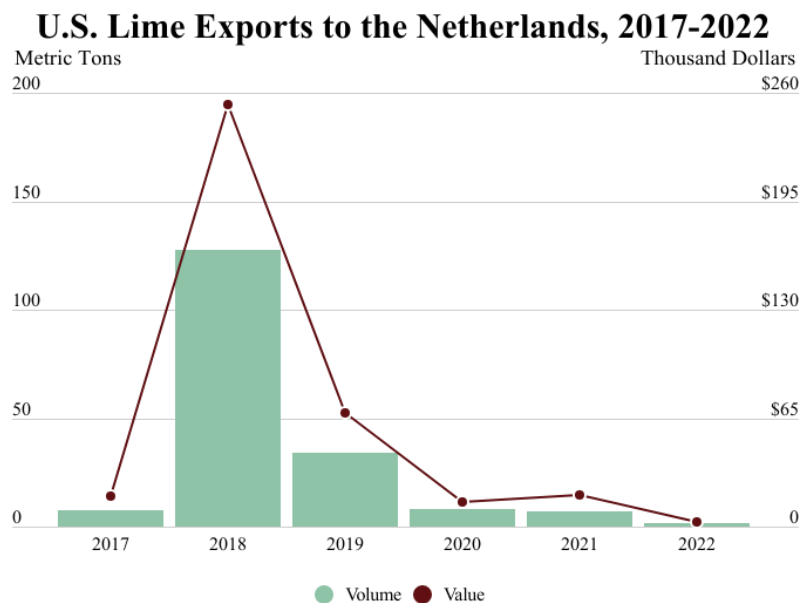
Dutch Market for U.S. Limes

The Netherlands is one of the largest importers of lemons and limes in the EU. During 2022, the country imported 270 TMT of lemons and limes, imports have increased every year since 2019. The United States sends almost no lemons or limes to the Netherlands, the bulk of these imports each year come from Brazil, Spain, South Africa, and Mexico.



Source: ComTrade, United Nations/Department of Social and Economic Affairs

Despite growing imports in recent years, the United States has seen less limes exported to the Netherlands each year since 2018. During 2022, 1.5 MT of limes were exported from the United States to the Netherlands. Only four years prior, 128 MT were exported to the Netherlands worth \$253,000. There have been no organic limes exported to the Netherlands from the United States since 2018, when 39 MT of limes valued at \$67,000 were sent to the country.



Source: GATS, USDA/FAS

There is a 12.8 percent tariff on any limes exported from the United States to the Netherlands. In addition to this there is a PC requirement and specific treatment requirements for limes exported based on their origin location within the United States. To learn more about PC, import permit (IP), or treatment requirements for the EU or any of the other countries mentioned contact information for the Texas Animal and Plant Health Inspection Service (APHIS) is found at: https://www.aphis.usda.gov/aphis/ourfocus/planthealth/sa_export/sa_ecs/texas/. An IP is obtained by the foreign importer. A PC may be obtained by contacting the USDA APHIS.

With so many present barriers, the opportunities in the market can be difficult to see. First, the Netherlands is one of the largest markets importing lemons and limes in the EU. During 2023, the EU is planning on spending 49 million euros for marketing organic products across the region. In addition to this added push for organic products, the Netherlands is already one of the leading countries in the EU for purchase of organic products. While there is much competition and multiple barriers for trading with the country, there are also multiple factors that could help exporters see success in the Dutch market.

Australian Market for U.S. Limes

During 2022, Australia imported 930 MT of lemons and limes, decreasing from 3 TMT in 2021. Imports have been on the decline since 2017, excluding the 6.11 TMT of imports during 2020 which shot up from prior years but continued the trend falling further in 2021 and 2022. Looking at imports of lemons-limes by Australia, during 2022 it was reported that 43 percent came from the United States. From 2017-2021, the United States supplied around between 54-85 percent of Australia’s lemon and lime imports since 2017 with Egypt being the largest competitor with the United States.



Source: ComTrade, United Nations/Department of Social and Economic Affairs

Australia imported 1.15 TMT of limes from the United States in 2022 worth \$2.25 million. Limes exported from the United States to Australia have been between 1-1.75 TMT since 2017 with a much lower volume in 2019, 460 MT. Note that U.S. lime exports to Australia is a higher volume than all lemon and lime imports by Australia in 2022, this is because of different values reported by the two countries. The United States has only exported organic limes to Australia one year since 2017. In 2020, 39 MT of organic limes were exported, none have been exported since.



Source: GATS, USDA/FAS

Australia is the third largest market for U.S. limes in 2022 and has imported almost no organic limes since 2017. Additionally, in the past there was a demand for lemons and limes in the Australian market that just needs to be revived, this foundation could help eliminate some of the time required to build the market in the country.

A barrier that exporters will not have to worry about in the Australian market is tariffs with the rate on limes set at zero. Australia does require a PC and specific treatment requirements for limes coming from different regions of California and Arizona. The rest of the United States requires a PC and IP for limes exported to the country. As previously mentioned, competition with Egypt also stands as a barrier to trading limes with Australia.

Conclusion

The United States is the world's fourth largest producer of lemons and limes and ranks as the largest importer globally. U.S. lime exports have risen considerably in recent years, totaling \$15.28 million for 7.8 TMT of exports in 2022. Organic limes on the other hand have fallen almost every year since 2017. In 2022, organic lime exports totaled only 667 MT worth \$1.08 million.

When examining potential markets to grow U.S. lime exports, Mexico has the fewest barriers to trade. The Mexican market has no tariff on U.S. limes and only requires a PC if limes come from California, but also has seen demand for the product growing each year. The size of the Dutch market paired with consumption of organic products makes the Netherlands a good market to target also, but treatment requirements for limes and competition from multiple countries would make it difficult to take over a large share of the country's imports. The rationale for growing exports in Australia is the historical volume imported by the country while having less competition than some other markets. Exporters would have to examine precisely why the country has cut down on lime imports but would have a history of exports to help reestablish the import market.

In addition to these countries, some to examine as potential targets could also be the rest of the EU, South Korea, and the Philippines. If exporters choose to target the Netherlands and open the door for more lime exports to the region, Germany, France, and Poland are all major importers of lemons and limes. These countries would also benefit from the EU's plans to market organic products. South Korea has historically been the third largest importer of U.S. organic products, after Canada and Mexico. South Korea ranks as the second largest market in recent years for U.S. lime exports and has grown each of the past three years, 1.6 TMT total increase to reach 1.8 TMT in 2022. Only 159 MT has been organic. Pairing South Korea's history with U.S. organic products and a growing demand for U.S. limes could prove advantageous for exporters. The largest hurdle is that Texas limes are prohibited in the country.

Each of these countries has their own distinct advantages for lime exporters and the future looks bright for U.S. limes with countries around the globe being potential markets for their products. Producers also benefit from the opportunity to sell limes domestically as the United States is the

largest global importer. There are multiple routes for success present for U.S. lime producers and countries where growing exports could be advantageous for anyone in the industry.

Selected References

Foreign Agricultural Service (FAS). Global Agricultural Trade System (GATS). Online database. <https://apps.fas.usda.gov/gats/default.aspx>. Online public database accessed June-July 2023.

Foreign Agricultural Services. Ag Tariff Tracker. Online Public Database accessed August 2023. <https://apps.fas.usda.gov/agtariiftracker/Home/Search>

Busby, Mattha. The Guardian. “Mexico lime inflation leaves sour taste as cartels gouge prices for cuisine staple.” <https://www.theguardian.com/world/2022/feb/12/mexico-lime-prices-shortages-cartels>. February 12, 2022

United Nations Department of Economic and Social Affairs. Comtrade. Online public database. <https://comtradeplus.un.org/> accessed June-August 2023.

United Nations Food and Agricultural Organization (FAO). FAO Stat. Online public database accessed June 2023. <http://www.fao.org/faostat/en/#home>

United States International Trade Administration. FTA Tariff Tool. Online public database accessed July 2023. https://beta.trade.gov/fta/tariff-ratesearch?trade_flow=Exporting&countries=Colombia&hs_code=100610 USDA

USDA Animal and Plant Health Inspection Service (APHIS). Phytosanitary Export Database (PExD) with Requirements by Country. <https://pcit.aphis.usda.gov/PExD/faces/ViewPExD.jsp>. Online public database accessed July 2023.

USDA Foreign Agricultural Service (FAS). Global Agricultural Information Network (GAIN), various reports. <https://gain.fas.usda.gov/>. Online public database accessed June 2023.

USDA Foreign Agricultural Service (FAS). Production, Supply and Distribution Online (PS&DView). <https://apps.fas.usda.gov/psdonline/app/index.html#/app/advQuery/>. Online public database accessed July 2023.

USDA National Agricultural Statistics Service (NASS). Quick Stats. <https://www.nass.usda.gov> accessed June 2023.

World Institute for Strategic Economic Research (WISER). Online Trade Database. www.wisertrade.org. Online subscription database accessed June-July 2023.