



GRO STRATEGIC ASSESSMENT

Fuel for the Fire: The Russia-Ukraine War and Vegetable Oil Prices

APRIL 2022

www.gro-intelligence.com

© 2022 Gro Intelligence Inc, All Rights Reserved

Contents

- | Executive Summary
- | Introduction
- | Why Vegetable Oil Prices Are So High
- | Impact of the Russia-Ukraine War
- | Vegetable Oils: Fuel vs. Food
- | What to Watch
- | Conclusion
- | About Gro

Executive Summary

Global vegetable oil prices have been on an upward trajectory for the better part of two years. The onset of the Russia-Ukraine war on February 24, 2022, caused prices to spike higher in volatile trading as Black Sea sunflower oil exports were halted by the conflict. While some of the war price premium will likely abate once hostilities cease, a host of pressures on vegetable oil supply lines should keep prices elevated for some time to come.

- Global vegetable oil demand is expected to continue to increase steadily, as it has over the past 10 years, both for food use and for processing into biofuels.
- Production growth in several countries has faltered in recent years, resulting in global supply shortfalls and rising prices.
- War damage in Ukraine and Western sanctions on Russia could reduce sunflower oil exports well into 2023.
- Inventories of several types of vegetable oils are at some of their tightest levels in years.

Vegetable oils are produced from oilseeds through a process known as crushing, or by pressing the fruit of palm trees to create palm oil. Palm oil is the most popular type of edible oil, followed by soybean oil.

- Vegetable oils are one of the most widely used commodities, found in everything from fried foods to ice cream, and from soaps to cosmetics.
- International trade amounts to some \$75-\$80 billion annually.
- Increasingly, vegetable oils also are used as a replacement for fossil fuels, a usage that is forecast to grow rapidly as companies expand biofuel production capacity, especially in the US.

Today, vegetable oil supplies face renewed risks in several countries, which will continue to weigh on global markets.

- The Russia-Ukraine war is blocking exports of sunflower oil, which makes up about 10% of world vegetable oil consumption.

- Drought in Brazil reduced that country's recent harvest of soybeans, which are crushed to produce soybean oil.
- Palm oil production in Malaysia, the No. 2 producer, has suffered from heavy rainfall.
- Top palm oil producer Indonesia has restricted exports to control domestic prices.
- Edible oils are often interchangeable, so a shortage of one type exerts pressure on the others.

Much of the impact of tight vegetable oil supplies and high prices is being felt by countries that rely heavily on imports.

- India, the largest vegetable oil importer, recently turned to the US as an alternative source of supply for soybean oil, despite higher freight costs.
- China relies on Ukraine sunflower oil for 10% of its vegetable oil imports, which it will need to source from other suppliers.
- Other countries are also significant importers of sunflower oil from the Black Sea, including in the EU, North Africa, and the Middle East.

Upcoming oilseed harvests will largely determine supply quantities and prices.

- In Argentina, the world's biggest exporter of soybean oil, prospects for this season's soybean crop have improved, but the harvest is still likely to just match last year's depressed levels, according to Gro's forecast model as of early April.
- In the US, farmers intend to sharply increase soybean acreage when planting begins in a few weeks, and that could result in a bumper crop, weather permitting.

Gro has created its [Food Security Risk Management Toolkit](#) so that users can readily monitor and gain insights into future production prospects. The Toolkit brings together in one place Gro's diverse set of machine learning-based forecast models for crops worldwide. Our wheat models, for instance, predict yield and production in seven major wheat producing countries, accounting for more than half the world's wheat production.

And [Gro's Climate Risk Navigator for Agriculture](#) application provides detailed information on growing conditions weighted for a specific crop for any region in the world.

Introduction

The Russia-Ukraine war has halted exports of a host of agricultural commodities. The situation has driven food prices higher worldwide and forced importing countries to scramble for alternative sources of supply.

In the case of vegetable oils, one of the most widely used food products, stalled shipments from the Black Sea region come as global supplies have already experienced unprecedented tightness and elevated prices for close to two years.

- Russia and Ukraine combined account for nearly 80% of the world's sunflower oil exports. While sunflower oil makes up just 10% of all vegetable oil consumption, overall tight supplies of edible oils mean that Black Sea exports have an outsize impact.
- Vegetable oils are largely interchangeable. But countries and companies seeking alternatives to Black Sea supplies have few good options.
- Poor oilseed crop performance in regions ranging from Canada and Malaysia to Brazil and Argentina mean supplies are limited and prices are high. Other producers, including Indonesia and Russia, have imposed export restrictions on edible oils to control domestic prices.
- The US is one of the few areas that offers hope, as farmers are expected to sharply increase acreage of soybeans in the upcoming season, which could mean greater supplies of soybean oil.

Still, vegetable oil production will need to continue increasing just to keep pace with steadily rising demand and new uses for the product. Plans to rapidly expand biofuel production capacity, especially in the US and Europe, are likely to continue the trend of tight vegetable oil supplies and elevated prices for some time.

Why Vegetable Oil Prices Are So High

Global vegetable oil production has struggled to keep up with rising consumption. The ubiquitous use of vegetable oils for cooking and as a food ingredient means demand rises

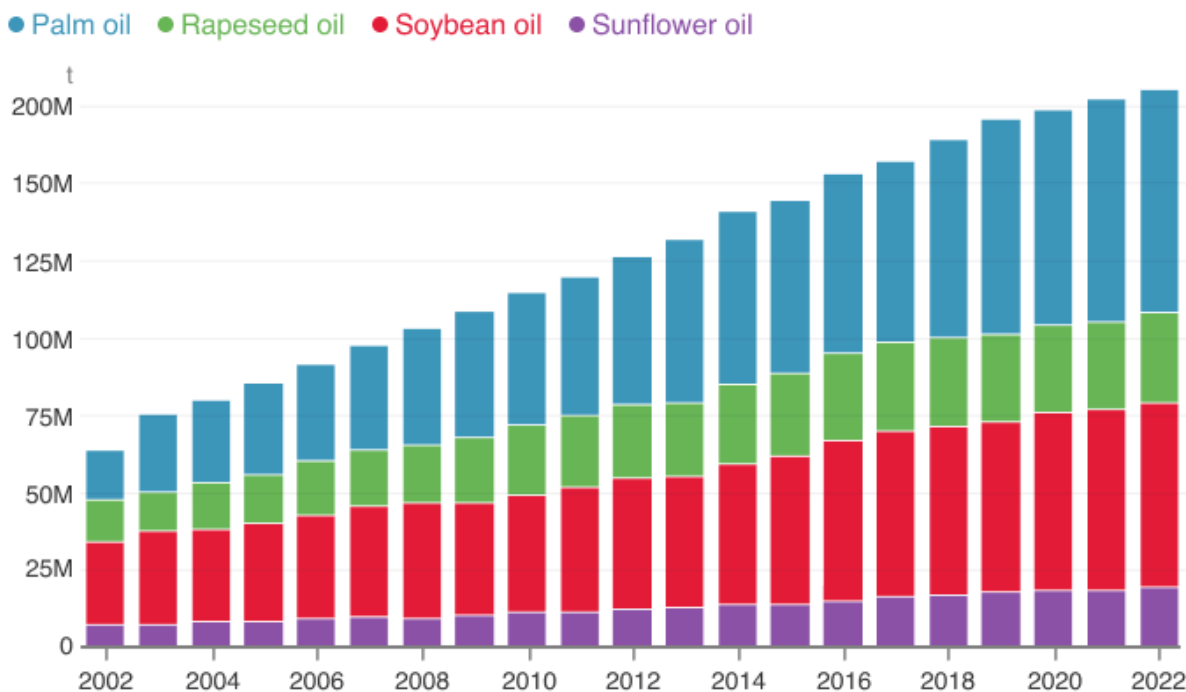
steadily as populations grow. In addition, renewable fuel mandates, intended to reduce reliance on fossil fuels, are drawing off a growing share of vegetable oil supplies and creating competition between uses for food versus fuel.

- Over the past decade, **vegetable oil production** has increased 5.7 million tonnes per year on average, reaching an estimated 206 million tonnes in 2021.
- By contrast, consumption has increased by a greater amount, averaging 6.2 million tonnes per year. 2021 consumption is estimated at 204 million tonnes.
- **Biofuel usage** accounted for nearly 30% of the annual increase in vegetable oil demand.

Production growth slowed markedly starting in 2020 amid problems in various countries. That set the stage for supply shortfalls and rising prices that continue to bedevil markets today.

- The onset of the COVID-19 pandemic in early 2020 resulted in labor shortages and export disruptions in palm oil producers **Malaysia** and Indonesia. The two countries combined account for 85% of world palm oil production.
- Soybean harvests in multiple countries were down; in the **US, production plunged 20%** in 2019 from the previous year.
- Drought drove **canola production** down 35% in 2021 in Canada, the largest canola producer.
- Production of **sunflower oil** in Russia and Ukraine combined fell 16% in the 2020/21 season due to drought.
- Soybean oil **stocks-to-use ratio**, an important measure of supply availability, is projected to finish 2022 at its tightest level since 2014. For **palm oil**, the ratio will be the lowest in five years.

Global Vegetable Oil Consumption

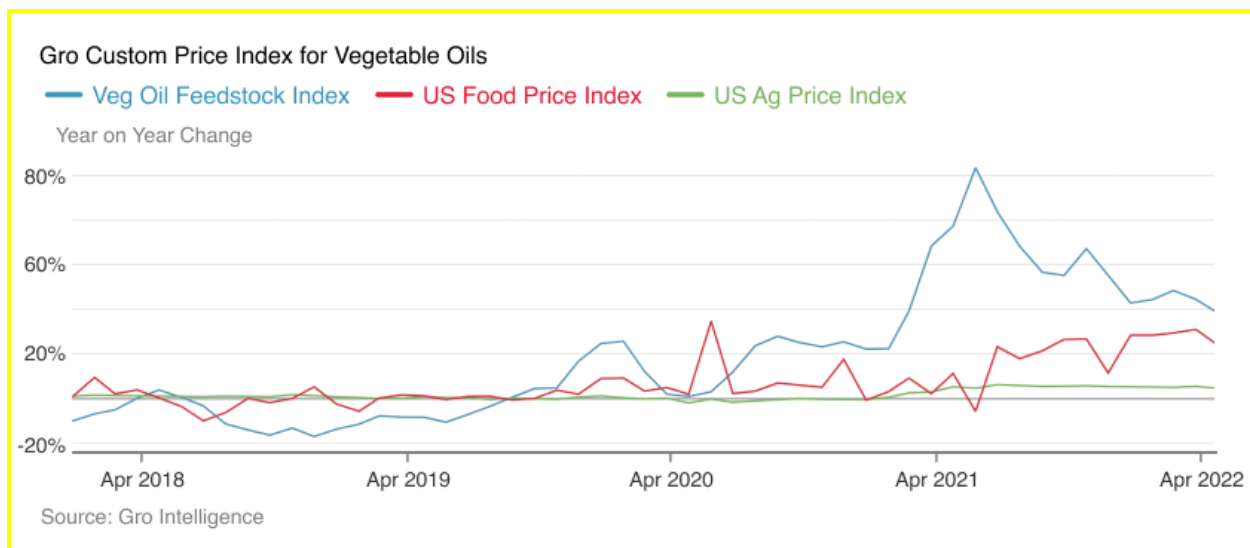


DATA: USDA PS&D, Gro Intelligence

Worldwide vegetable oil consumption has grown steadily, propelled by food usage and increasingly as a feedstock for biofuel production. Consumption growth has outpaced production gains over the past decade.

Vegetable oil prices began a prolonged ascent around May 2020, fueled by concerns about tight supplies. The onset of the Russia-Ukraine war on February 24, 2022, sparked further price increases and volatile trading.

- **Palm oil prices** jumped as much as 15% after the Russian invasion and are up 58% for the year ended March 2022.
- **Soybean oil prices** increased as much as 8% following the war's onset, and are up 37% year over year.
- In the US, a basket of vegetable oils commonly used by food manufacturers cost 45% more in March 2022 than a year earlier, far outpacing overall food inflation, according to [Gro's Custom Price Index](#) application.



Vegetable oil prices in the US have risen sharply for two years, outpacing other measures of food price inflation. This chart from Gro's Custom Price Index compares year-over-year price changes for a basket of vegetable oils against Gro's US Food Price Index and Ag Price Index.

Impact of the Russia-Ukraine War

Russia's invasion of Ukraine has halted exports of many major commodities from the Black Sea region, including sunflower oil. That has exacerbated concerns about global vegetable oil supplies.

- Ukraine is the biggest exporter of **sunflower oil**. Combined with Russia, the two countries account for nearly 80% of all sunflower oil exports.
- Ukraine produced a bumper, 18 million-tonne sunflower crop last year. After processing, sunflower oil exports totaled 5.8 million tonnes.
- Sunflower oil makes up about 10% of all vegetable oil consumption. But in a world of tight supplies, the stalled Black Sea exports have an outsized impact on global markets.
- Ukraine also produces significant volumes of **soybeans and rapeseed**, nearly half of which is exported.

The war will have ramifications for supplies of vegetable oils and other agricultural commodities well into 2023.

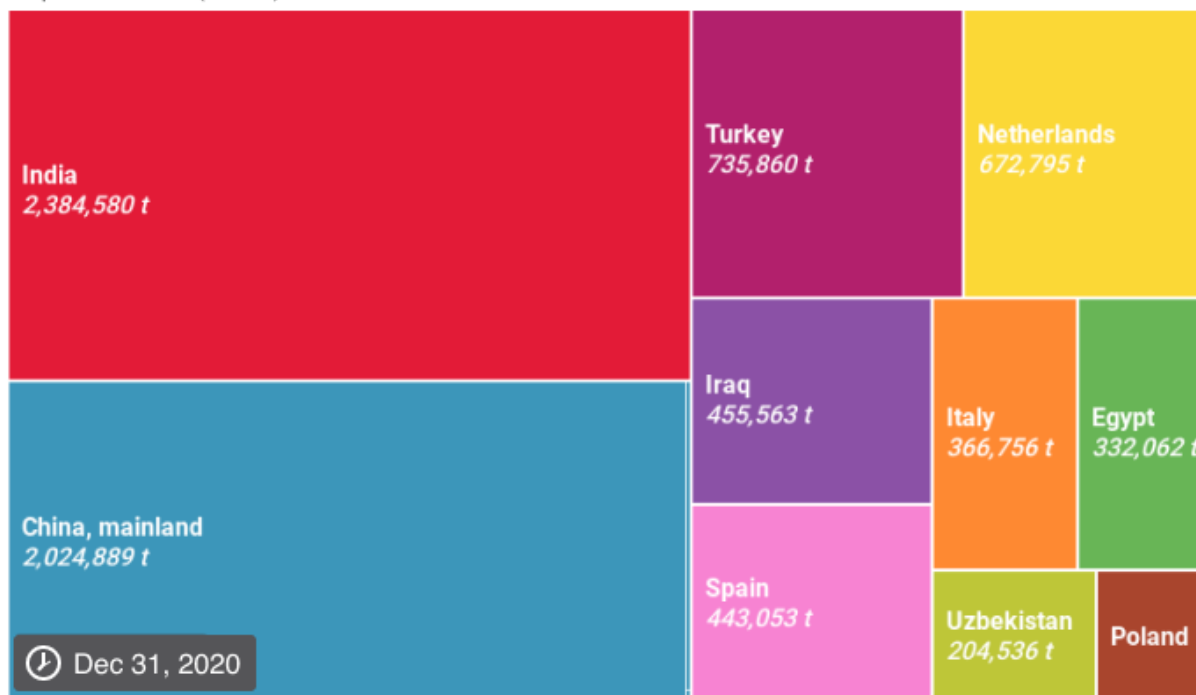
- Ukraine's agriculture ministry has estimated the war will reduce spring crop planting by about 25% year over year, although the actual impact could be substantially different as the conflict rages on.
- Disrupted shipments of **fertilizers** from Russia, one of the world's biggest fertilizer exporters, and its ally Belarus could cause crop nutrient shortages around the world. **Brazil** is the top buyer of Russian fertilizer.
- The war has also driven up prices for natural gas, a key ingredient for fertilizer manufacturing, further fueling **fertilizer price** increases.

Import-reliant countries are most affected by cutoffs in shipments from the Black Sea.

- The **Middle East and North Africa** are collectively the biggest buyers of Black Sea sunflower oil. Record levels of **drought** in these regions is depressing domestic production and increasing demand for additional imports.
- **India**, the biggest importer of vegetable oils overall, normally purchases nearly a quarter of the sunflower oil shipped from the Black Sea.
- Sunflower oil makes up about 10% of China's total vegetable oil imports. **China** is the second-biggest importer of vegetable oils.

Black Sea Sunflower Oil Major Export Destinations

Export volume (mass)



DATA: FAO Trade Matrix, Gro Intelligence

Countries that rely on sunflower oil imports from the Black Sea region have been directly impacted by the Russia-Ukraine war's disruption to shipments. Because vegetable oils are largely interchangeable, the conflict has tightened supplies and boosted prices for a wide range of edible oils.

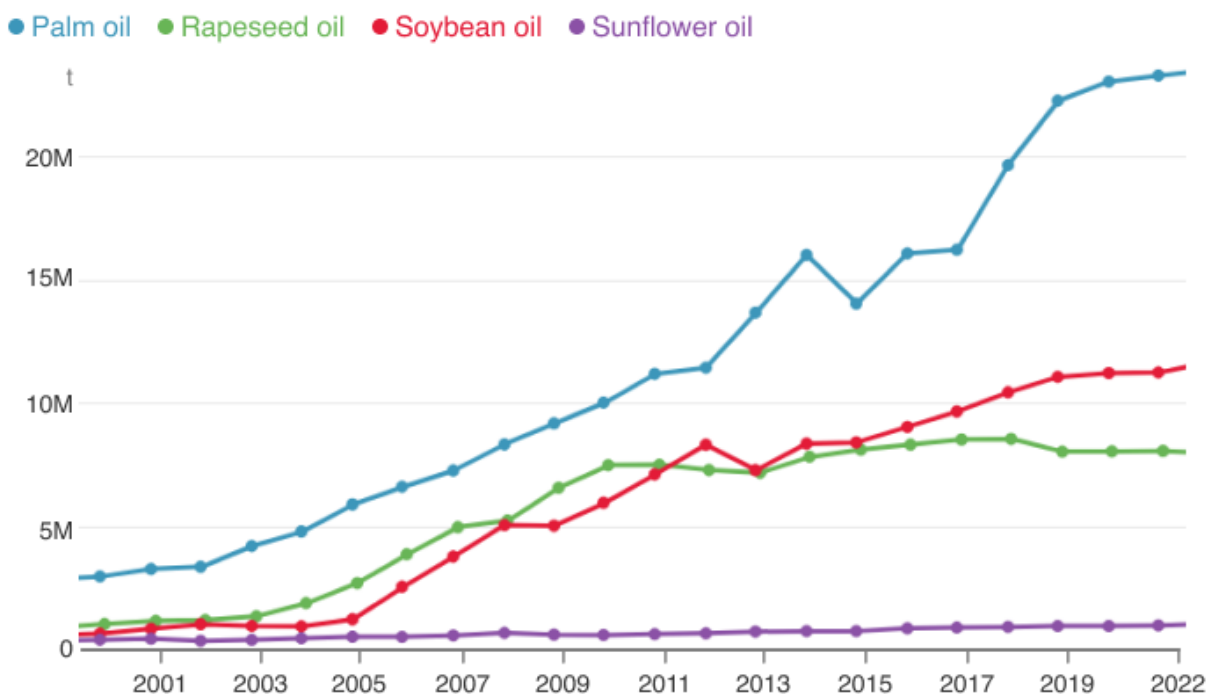
Vegetable Oils: Food vs. Fuel

In the past decade, **biofuel production** accounted for nearly 30% of the average annual increase in global vegetable oil consumption. That percentage will likely increase as new biofuel capacity comes online. In the US, most new biofuel capacity is for renewable diesel, which will increasingly use soybean oil as primary feedstock. That will boost competition for edible oils and spark a new round of food versus fuel policy debates at a time of heightened US food inflation.

- The Environmental Protection Agency (EPA), as part of its Renewable Fuel Standard (RFS), proposed increasing blending quotas for advanced biofuel, which includes renewable diesel, to 5.77 billion gallons in 2022, which is up almost 11% over 2021 and 25% over 2020 levels.

- US production of renewable diesel is forecast to almost triple in 2022 from a year earlier to 2 billion gallons (5.8 billion tonnes). Additional plant construction has been announced to come online in subsequent years.
- Future renewable diesel production is expected to consume greater quantities of soybeans. Each 1 billion gallons of renewable diesel would require some 3.5 million tonnes of additional edible oil feedstock. If that came entirely from soybeans, it would consume 17 million tonnes of soybeans. The US last year produced about 120 million tonnes of soybeans.
- Unlike in the US, Europe plans a more limited expansion of biofuel production, partly due to a gradual phaseout of palm oil usage on concerns that plantation growth has caused deforestation. A possible substitute feedstock could be European-grown rapeseed.

Growth in Biofuel and Other Industrial Uses for Vegetable Oils



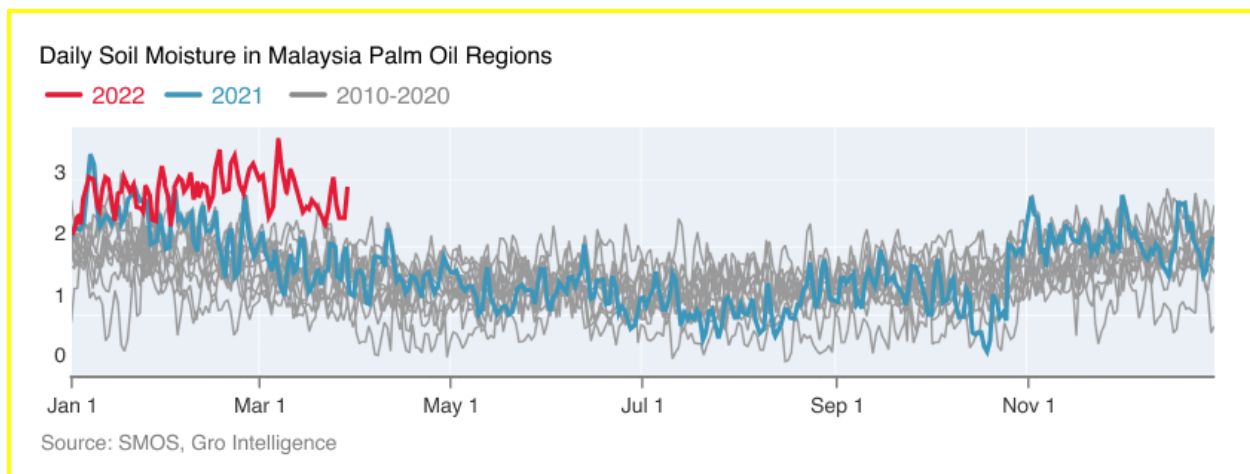
DATA: USDA PS&D, Gro Intelligence

In addition to their food-related uses, vegetable oils have increasingly found industrial applications, especially as feedstock for producing biofuels. Palm oil, which accounts for 35% of all vegetable oil consumption, has seen the greatest growth in industrial usage.

| What to Watch

There's no immediate relief in sight for tight global supplies of vegetable oils. However, production prospects can change with the weather. Several crops around the world are worth following closely.

- Argentina, the largest exporter of soybean oil, has just begun its soybean harvest. Although the crop's outlook improved in late season, production will probably just match last year's depressed volume of 46.2 million tonnes, according to [Gro's Argentina Soybean Yield Forecast Model](#).
- A better-than-expected Argentine harvest could bolster world vegetable oil stocks. Crush rates can be followed using [Gro data analytics](#) to monitor production volumes. Still, a recent hike in Argentina's export tax means soybean oil supplies will cost more.
- [Brazil](#), the top soybean producer, concluded its harvest in February with an estimated 8% decline, although production numbers won't be finalized for several months. Growing conditions should be monitored from September, ahead of the next crop planting, since, for example, early season [drought](#) in 2020 presaged that year's weak crop.
- Excessively wet conditions in Malaysia could continue to depress palm oil yields for the next few months, as rainfall has a lagged effect on production. Crop prospects can be tracked using Gro's data analytics for [production](#) and [weather](#), or by using [Gro's Climate Risk Navigator](#) application, focused on [Malaysia and weighted for palm oil](#).
- The US growing season offers one of the biggest hopes for replenishing global vegetable oil supplies. US farmers are expected to plant the highest ever number of [acres to soybeans](#), marking only the second time soybeans top corn for acreage. Seeds go in the ground starting in May and crop prospects can be monitored using [Gro's US Soybean Yield Forecast Monitor](#).
- Canada, the biggest producer and exporter of canola oil, plants its crop in May. Conditions are currently [dry in canola growing regions](#), but things would have to get much worse for production to fall below last year's volumes. In 2021, drought took off in May, and [Canada's canola](#) output slumped 35% year over year.



Heavy rainfall in Malaysia's palm growing regions has sharply elevated soil moisture levels and decreased crop yields. This chart is from Gro's Climate Risk Navigator application, which allows users to monitor growing conditions for any part of the world and weighted for a specific crop.

Conclusion

The Russia-Ukraine war exacerbated existing strains in global vegetable oil markets, which had already experienced sharply rising prices and tightening supplies for nearly two years. For countries and companies that rely on imports, finding alternative sources of vegetable oils will remain a challenge. Several major producers of oilseeds and edible oils face doubtful crop prospects. Meanwhile, worldwide vegetable oil consumption, which has outpaced production for the past decade, will continue inexorably to grow, fueled in part by expanding usage in biofuel production. As a result, global vegetable oil prices should be expected to remain elevated for some time to come.

About Gro

Gro Intelligence illuminates the interrelationships between the earth's ecology and human economy. Our system is curated by human intelligence and scaled through artificial intelligence to enable companies and countries to both see the big picture and act on the small details.

Gro's globally comprehensive data and forecast models cover a variety of subjects, geographies, and environmental conditions. By examining and translating the intersectional effects of supply, demand, price, climate, pests, and disease, the Gro platform provides

meaningful, actionable insight. Our mission is for customers to make decisions with confidence.

[Schedule a demonstration](#) to learn more about our models.

NEW YORK

8 West 40th Street
Second Floor
New York, NY 10018 USA
+1 718 935 0100

SINGAPORE

15 Beach Road
Singapore, 189677

NAIROBI

Eldama Park, Block A, 2nd Floor
Eldama Ravine Rd., Westlands
Nairobi, Kenya, P.O. Box
14410-00800
+254 788 448 678
+254 202 186 996

Copyright © 2022 Gro Intelligence Inc. All rights reserved.