

Supply Chain Solutions 2023, Part 1:

Ingredient shortages, climate change, and cyber threats

Introduction

Ingredient shortages, forced reformulation, and cyber threats that paralyse operations are just some of the supply chain issues that manufacturers will need to watch out for this year. In this report, we look at how brands can increase their resilience when faced with such challenges.

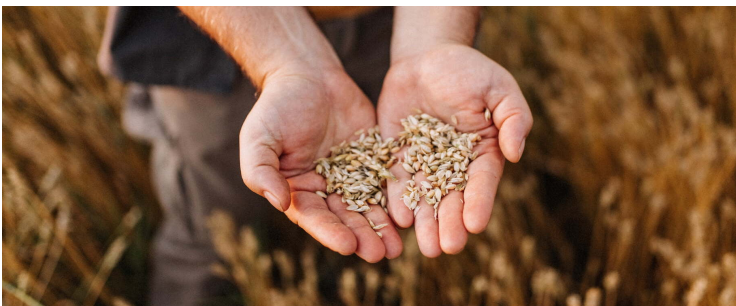
The Supply Chain Solutions report 2023 is written in two parts that will be published throughout 2023. You are reading part one.





Ingredient shortages

ONE of the biggest barriers to sourcing ingredients today is the Russia-Ukraine war. Specifically at issue is the disruption to the supply of grain exports from both countries. Russia and Ukraine are among the world's biggest growers and exporters of wheat and sunflower oil/seeds.



The European Commission estimates that before the war, Ukraine accounted for 10% of the global wheat market, 15% of the corn market, and 13% of the barley market.¹ Russia, according to market research firm Statista, recently had an annual production volume of sunflower seed oil reach a high of 5.8 million metric tons in the marketing year 2021-2022. In the following period, Statista said that number was expected to increase by nearly 7%.²

Complicating matters last spring was Russia's enactment of a ban on sunflower seed exports coupled with an added five-month export quota for sunflower seed oil. The move, coming on top of strained export disruptions resulting from the war, further jeopardized sourcing sunflower seed oil as a reasonable and affordable alternative to already elevated global vegetable oil prices.

Russia then proceeded to block ocean-going vessels carrying Ukrainian grain. During a round of peace talks, Russian initially agreed to allow Ukrainian ships to pass. Then in November 2022 Russia backed out of a deal to allow Ukraine to export its wheat. While Russia did allow limited shipments to move, as of January 2023, it is estimated that only about half of the normal supply of grain is being allowed to pass.



Starting with the first quarter of 2023, the delay in Ukrainian grain ship inspections means that sourcing wheat from the region as has been done in the past will continue to be difficult.³ The US and European allies are working hard to find new trade routes,⁴ and other nations are increasing their wheat planting. Even still, experts predict the war in Ukraine will continue to trigger price hikes in major markets such as the US, Asia and Africa, for instance. It is feared that populations in developing nations are at risk of going hungry.¹

Nearly one year after the Russia-Ukraine war, grain exports from the region are still not expected to reach 2022 levels. The wheat production in Ukraine for the marketing year 2022-2023 is projected to be 19.5 million metric tons, down 13.5 million tons (-41%) from last year.²

The challenge of climate change



CLIMATE-RELATED crop shortages worsened by rain, drought, and other extreme weather patterns, are expected to continue to cause roadblocks to ingredient sourcing in the early part of this year¹. Harsh weather conditions will open the door to pests and added tonnes of wasted material, impacting ingredient and finished product delivery times, transportation routes, and manufacturing.



In 2022, the Collins English dictionary made ‘permacrisis’ its word of the year. This notion of a

‘permanent crisis’ can be applied to the state of the food and beverage supply chain.

“We are going to be permanently in crisis in our food system,” said Chris Elliott, professor of food security and founder of the Institute for Global Food Security at Queen’s University, Belfast, speaking at Fi Europe in Paris last month. “These shocks will keep happening as our climate keeps changing and that’s why resilience becomes more important.”

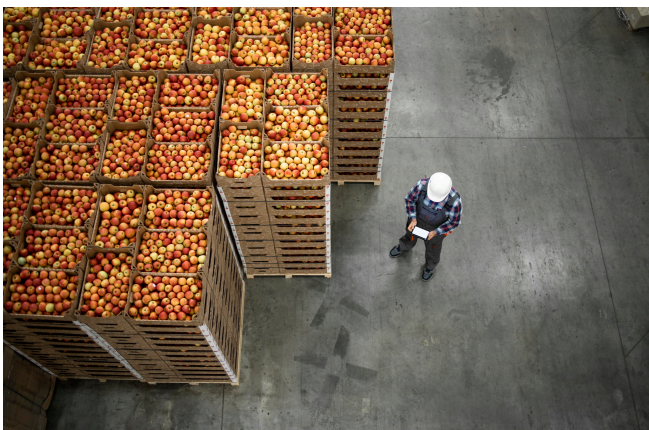
It’s likely that this permacrisis will be felt throughout the food supply chain, especially for foods like chicken, and ingredients like stevia leaf and wheat.

Case in point: in 2022 both Malaysia and India put export restrictions in place in reaction to extreme weather trends and ingredient shortages. Malaysia restricted exports of its hens in response to a country-wide chicken shortage for several months in mid-2022, before gradually lifting restrictions.² Domestically, farmers faced higher prices for grains to feed hens. As a result, they raised and sold fewer



READ MORE: Welcome to the permacrisis: How companies can build supply chain resilience (Click image)

birds for slaughter. Compounding the inability to pay for grain, a heatwave caused many birds to produce fewer eggs, leading to fewer live hens.



READ MORE: The interplay of food, energy, and water: Insights from Davos 2023 (click image)

In January 2023, Malaysia considered limiting palm oil exports to the EU, just as Indonesia had done in 2022. In mid-2022, India enacted a wheat export ban.¹ India is the world's second largest wheat producer after Ukraine. The ban came after a heatwave in March and April reduced domestic yields. When the

temperatures get too high, grain yields are reduced.

When it comes to the sugar alternative, stevia, market research firms anticipate strong sector growth. From the rising interest in sugar alternatives by consumers and taxes on sugary beverages, stevia leaf is in high demand. However, low farm yields have led to sourcing pressures and, when available, ongoing price fluctuations – all linked to supply chain restraints.

It is expected that in response to higher prices, low farm yields and domestic supply shortages, more and more countries could take on a nationalistic approach² when it comes to sharing its resources, or what is being described as “economic nationalism.”³

To prepare for the ongoing impact of climate change on supplies, food and beverage professional should have back up sourcing plans in place as it become more difficult to source one ingredient, such as wheat, from a single source.



Europe
Frankfurt, Germany
28-30 November 2023

**Where the
tastemakers
of the world
create a
world of taste**



[Learn more](#)



Solutions: From reshoring to reformulation

A recent report from TraceGains, a globally networked ingredient sourcing platform, highlighted what is already known: supply chain woes are highly disruptive. According to its State of Supply Chain Disruption Survey,¹ the rising cost of ingredients is pushing consumer packaged goods (CPG) companies to reformulate recipes or create new products altogether.

Reflecting on the survey, TraceGains CEO Gary Nowacki said: "This survey sheds light on the problem directly from a CPG brand's perspective and lets other food and beverage companies know they're not alone in this fight. Forward-thinking brands have used this unfortunate time as a wake-up call to modernise antiquated operations and those who already have are much better positioned to mitigate disruptions with as little impact as possible."

The TraceGains survey was based on responses from more than 300 food and beverage brands measuring the impact of macroeconomic conditions like ingredient availability among, other top concerns.

Lessons learned

The ongoing impact of the global Covid-19 pandemic has also greatly affected supply chains. China, a major manufacturing hub for companies in the West, had a strict 'Zero Tolerance' Covid policy. Reports of infections moving swiftly through factory floors, left many plants well understaffed and unable to meet scheduled production deadlines. It has been reported that, as of early 2023, China has relaxed that policy¹, only subtly abating concerns about keeping up with production deadlines in 2023.²



READ MORE: Most food businesses are placing inflationary costs on consumers, survey finds (Click image)

The TraceGains survey pointed to lessons learned for the future, including diversifying suppliers and using back up contract manufacturers to better mitigate future supply chain disruption.

Respondents to the TraceGains survey reported that increasing supplier diversity is, "the most important strategic shift followed by leveraging contract manufacturers, or third-party manufacturers that make certain components or products over a specified period of time".

Forward-thinking companies should prepare a list of alternate production locations – both near and far – in case there's a need to relocate operations quickly should their original supplier be unable to meet demand. According to the July 2022 TraceGains survey, nearly 70% of respondents planned to expand their supplier networks in the next 24 months. Another 25% of respondents indicated they would reshore their supply base to deal with continued instability, while another 41% would change or eliminate product offerings altogether.

Cyber threats and agroterrorism





CYBER security issues impact every business sector, with the food and beverage industry being no exception. Last year saw many cyberattacks on the food and beverage supply chain (also called third-party or value-chain attacks).

Citing a report from Trustwave, a leading data security firm, Capstone Logistics states that the food and beverage industry was among the most compromised industries — rated number three after retail and hospitality — accounting for 10% of all cyberattacks.¹

Called agroterrorism, food and beverage cyberattacks are meant to cause harm to a population, incite terror, and interrupt business operations. For example, in December 2021 in the UK, some 300 Spar stores were forced to close temporarily after an online attack hit the IT systems of its wholesale supplier, James Hall & Co.² A cyberattack affected 13 H.P. Hood Dairy, makers of Lactaid, dairy-free milk. The hack led to a fresh milk shortage not only in stores, but also in at least one US school district.³

To reduce the risk of an attack, experts advise food and beverage manufacturers shore up



defences in the supply chain by aligning their cyber security strategy with their business strategy, including engaging with third parties to strengthen their cybersecurity postures.⁴

With no definitive answer as to when the supply chain issues will ease, there are mitigating steps food and beverage professional can consider. This could be a combination of more than one tactic from bringing manufacturing back closer to home, to forming closer relationships with third-party experts in cyber security to reformulating with alternative ingredients.

Introducing Fi Webinar Series 2023

The Fi Webinar Series 2023 covers key food and beverage market topics, offering attendees the opportunity to get up to speed on marketing strategies, sourcing of ingredients and product applications.

10 live webinar days covering 5 key themes will feature live discussions and Q&A with topic experts. The sessions will cover market updates, consumer insights, regulatory updates, sourcing tips, innovation updates and relevant startups.

Who will be tomorrow's winners in plant-based?



Sugar, salt, and fat reduction: New developments and technologies



Sourcing challenges and ingredient substitutions



Gut health in the focus of food and beverage brands



Building sustainable brands: From product development to marketing strategies



CLICK TO FIND OUT MORE AND REGISTER NOW!

Flavour and colour innovations across the beverages market



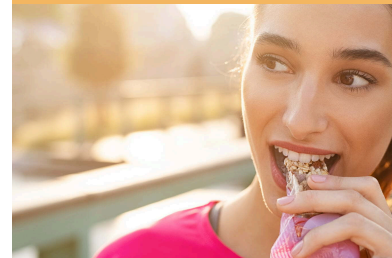
Dairy alternatives: From consumer insights to plant-based NPD



Food safety and contamination control



Healthy snacking: From healthy indulgence to 'mood food'



Plant-based meat and fish alternatives: Taste and texture



Key takeaways



- The war in Ukraine continues to disrupt the supply of commodities such as wheat, sunflower oil, and soy. Protectionist actions such as country-wide ingredient export bans and temporary halts of in-demand ingredients are further straining the global supply chain.
- Food security experts predict the food system will be in a state of permacrisis in coming years due to the worsening climate crisis.
- This could lead to reshoring of manufacturing facilities and building back-up relationships with contract manufacturers to better ensure fewer disruptions.
- Manufacturers should avoid relying on one supplier or even one country of origin for key ingredients to increase their supply chain resilience.
- The threat of potential cyberattacks is real and can be severely disruptive. Food industry stakeholders should shore up IT infrastructure, working with third-party operators if necessary.





References

[1] www.statista.com/statistics/1089009/russia-sunflower-seed-oil-production/

[2] www.statista.com/statistics/1089009/russia-sunflower-seed-oil-production/

[3] www.dtnpf.com/agriculture/web/ag/crops/article/2023/01/19/six-key-challenges-facing-ukrainian

[4] www.cnn.com/2022/05/17/politics/us-ukraine-grain/index.html

[5] www.nytimes.com/2023/01/02/us/politics/russia-ukraine-food-crisis.html

[6] Colussi, J., et al. "Wheat Outlook After Five Months of War in Ukraine." *farmdoc daily* (12):112, August 1, 2022. <https://farmdocdaily.illinois.edu/2022/08/wheat-outlook-after-five-months-of-war-in-ukraine.html>

[7] www.thehill.com/homenews/nexstar_media_wire/3781452-will-the-supply-chain-troubles-get-any-better-in-2023/#:~:text=In%20a%20survey%20conducted%20in,the%20second%20half%20

[8] www.poultryworld.net/the-industrymarkets/market-trends-analysis-the-industrymarkets-2/malaysia-confirms-poultry-export-ban-remains/

[9] www.economicstimes.indiatimes.com/news/economy/foreign-trade/govt-will-take-appropriate-decision-in-march-april-on-lifting-wheat-export-ban-dgft-chief/articleshow/96939226.cms

[10] www.advisory.kpmg.us/articles/2020/economic-nationalism-supply-chain-covid-19.html

[11] www.advisory.kpmg.us/articles/2020/economic-nationalism-supply-chain-covid-19.html

[12] www.prnewswire.com/news-releases/new-study-sheds-light-on-root-cause-of-higher-food-prices-measuring-true-impact-of-supply-chain-disruption-for-food-and-beverage-cpgs-301585961.html

[13] www.bbc.com/news/world-asia-china-63855508

[14] [\[chains-biggest-fear.html\]\(#\)](https://www.cnbc.com/2023/01/27/another-covid-surge-in-china-is-the-global-supply-</p></div><div data-bbox=)

[15] "Risky Business: Cyberattacks on the Food Supply," Capstone Logistics. www.capstonelogistics.com/blog/risky-business-cyberattacks-on-the-food-supply/

[16] www.securiwiser.com/news/more-than-300-spar-convenience-stores-are-forced-to-close-due-to-a-cyber-attack/

[17] www.xitx.com/2022/03/hood-dairy-farms-cyber-attack/

[18] "Manufacturers ramp up cyber defenses as supply-chain bottlenecks—and vulnerabilities—deepen," PWC. www.pwc.com/us/en/industries/industrial-products/library/cyber-supply-chain.html

Image Credits

© iStock/[xavierarnau](#)

© iStock/[Tippapatt](#)

© iStock/[Shaiith](#)

© iStock/[agrobacter](#)

© iStock/[South_agency](#)

© iStock/[dusanpetkovic](#)

© iStock/[Smederevac](#)

© iStock/[imantsu](#)

© iStock/[eric1513](#)

© iStock/[U.Ozel.Images](#)

© iStock/[Mindful Media](#)

© iStock/[Delpixart](#)

© iStock/[shaunl](#)

Thank you for reading

Supply Chain Solutions 2023, Part 1: Ingredient shortages, climate change, and cyber threats

