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Grain And Oilseeds Exports from Ukraine: Implications for U.S. Markets

Introduction

Global agricultural export rankings shift annually, but Ukraine's position among the world's top exporters remains remarkably stable. It is one of the largest exporters of sunflower oil and meals, and it ranks No. 3 and No. 6, respectively, in corn and wheat exports (Delmy, 2024). In the pre-war 2021 calendar year, agricultural exports totaled $27.8 billion, accounting for 41% of the country's $68 billion total exports (State Customs Service of Ukraine, 2023). In addition, Ukraine traditionally plays a vital role in supplying sunflower oil and grains to the European Union (EU) market, Africa, and Asia.

Russia's invasion in February 2022 has significantly impacted the Ukrainian economy, agricultural production and exports in particular. A growing body of literature investigates the variety of consequences that Ukraine and the world have faced since early 2022. For example, the volatility of wheat futures prices on the Chicago Board of Trade (CBOT): Due to concerns about supply interruptions, wheat futures on CBOT increased from $7.8/bu. on Feb.15, 2022, to $14.25/bu. on March 7, 2022 (Patel, 2024).

This publication illustrates the changing trends of food exports from Ukraine and the conditions caused by the 2022 Russian invasion. We analyze key events and dynamics of Ukrainian grain exports. Agricultural production patterns affected by logistics costs along with price influence are briefly covered as well. Lastly, details of the legal issues relevant to Ukrainian grain exports are reviewed. Given the Ukraine-EU negotiations for membership starting in 2024, we briefly address the ongoing disputes and farmers' actions, including the situation on EU-Ukrainian borders. Our goal is to shed light on the major challenges for Ukrainian grains and sunflower oil exports in the short- and medium-term horizon. Thus, we briefly address the possible effects on U.S. export grain markets[1] and some foreseeable actions.

[1] **Disclaimer:** due to the martial law in Ukraine, official statistics information is often restricted, or absent in case of the temporally occupied territories. Our assumptions and estimates are based on publicly available information, farmers surveys, and interviews with the key market players and are valid only at the date of publication.

Key Events of Ukrainian Grains and Sunflower Oils Exports, 2021-2024

A considerable body of literature has grown around the changes in grain trade patterns caused globally by the disruptions in Ukraine. To forecast the impact on the world market and U.S. export grain supplies, it is essential to understand the background, scope of affected commodities and logistics chains involved. Below we provide a brief overview and inferences from our analysis of Ukraine grain exports starting from the 2020/21 marketing year (MY) until MY2023/24. This information is followed by forecasts of Ukrainian grain exports and possible price changes under different scenarios.

While pre-war MY2020/21 was considered relatively successful in terms of grain export volumes and profitability in Ukraine, the situation reversed in the following MY2021/22. Due to the Russian invasion, Ukraine temporarily lost its major seaports on the Sea of Azov while ports in the Black Sea basin were under a naval blockade. To address this, traders shifted their logistics strategies toward inland shipments across the EU borders by railway and trucks.

In May 2022, the EU Commission implemented the "Solidarity Lanes Action Plan" that establishes alternative logistics routes via rail, road and inland waterways, defined as Solidarity Lanes. This plan also exempted Ukrainian grain exports and some strategic food products exported to the EU from import tariffs and quotas. The regulation was extended in 2023. In 2024, the EU approved the continuation of the "Solidarity Lanes Action Plan" until June 5, 2025. The regulation covers essential agricultural products (maize, oats, groats, poultry, eggs, sugar and honey). Under this plan, import tariffs are automatically reinstated if the import volumes exceed the average levels recorded from mid-2021 through 2023.

Limited or no access to Black Sea ports from the end of February 2022 had to be compensated by creating alternative logistics channels. Starting in March 2022, multimodal transportation schemes, combining truck and barge shipments to the ports of Izmail and Reni, located in the Danube River basin, were implemented. However, these ports are considered shallow waters by international standards. Only low-capacity ships are allowed (maximum deadweight tonnage [DWT] to 6,000 tones), greatly affecting the choice of final export destinations. Romania's Port of Constanta on the Black Sea emerged as an alternative shipping route, capable of handling large Panamax vessels, despite significantly higher logistics costs. The port's strategic importance was evident in 2022, when it achieved record-breaking grain exports for the decade, with Ukrainian grain accounting for 40% of total shipments (Reuters, 2024).

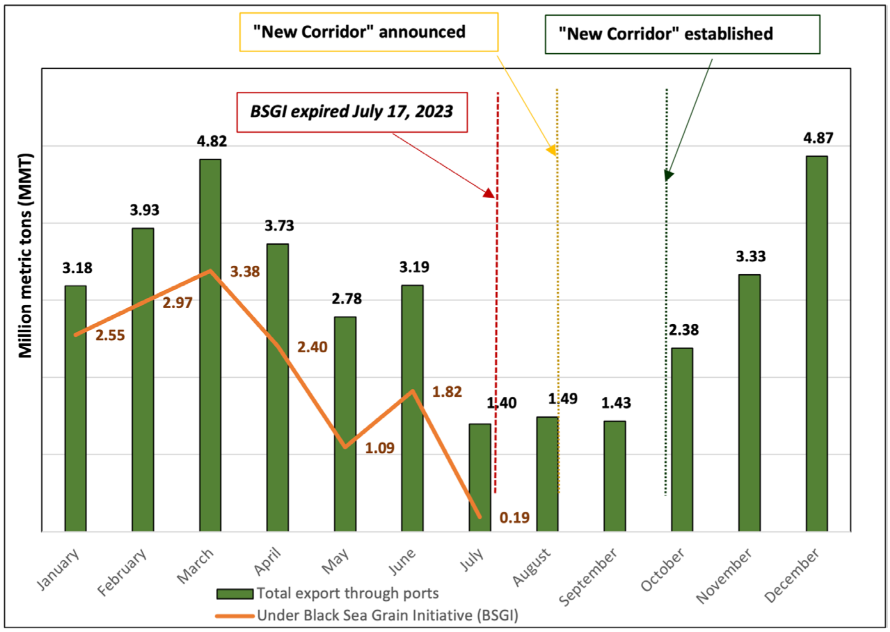
Before Russia's invasion, more than 90% of Ukrainian grain exports traveled by sea. When this option became restricted, inland transportation proved inadequate for handling Ukraine's massive export volumes at competitive prices. The resulting strain on land-based shipping led to a sharp rise in grain truck freight rates during the 2021/22 marketing year, primarily due to limited vehicle availability. While companies invested in expanding their grain truck fleets both for internal use and commercial services, alternative inland routes still could not handle the majority of remaining grain stocks from 2020/21 or the anticipated 2022 harvest. This transportation bottleneck ultimately forced farmers to accept lower prices for their grains.

The Black Sea Grain Initiative (BSGI), established through two separate agreements between UN-Turkey-Ukraine and UN-Turkey-Russia, created a temporary solution for maritime shipments through the Black Sea. This coordination effort, launched in late July 2022, increased agricultural export volumes from 2.8 million metric tons (MMT) in July 2022 to approximately 7 MMT by September-October 2022 (Ministry of Agrarian Policy and Food of Ukraine, 2024).

Four months after the BSGI's launch, Russia began undermining its effectiveness through various tactics. Russian inspectors and naval forces created artificial delays through bureaucratic obstacles, such as suspending the Joint Commission's work, which forced ships to wait extended periods for customs clearance and logistics procedures. These delays proved extremely costly, particularly for vessels carrying sunflower oils. In late 2022, operational delays lasting 1-2 months incurred demurrage fees of $30,000 per day for charterers. The initiative ultimately collapsed on July 17, 2023, when Russia refused to extend the agreement or guarantee the security of shipping vessels (Figure 1). Despite these events, the BSGI has been considered a highly efficient measure that reopened Ukrainian exports to its traditional markets in Africa, the Middle East and Asia (including China). A total of 32.9 MMT of agricultural produce (including 0.7 MMT of grains) had been exported during its functioning (Ukrinform, 2023).

The Russian invasion prompted many insurance companies to cancel their coverage of agricultural shipments due to war-related risks. This forced exporters to purchase separate war-related insurance, increasing costs from 0.1% to as high as 2.5-3% of the commodity's value. These heightened insurance costs ultimately led a few international grain trading companies to suspend their Ukrainian export operations.

Figure 1. Ukrainian grain and oilseeds maritime exports volumes and stages, 2023 (MMT)



Source: Ministry of Agrarian Policy and Food of Ukraine (2023); Delmi, 2024

The situation was improved in November 2023 when the UNITY insurance program for marine commercial shipments in Ukraine was launched. This program was the result of negotiations between Ukrainian government, U.S.-based Marsh & McLennan Companies, Inc. and Lloyd's of London. Eventually, insurance rates for commercial shipments decreased to about 0.75% of vessel value (Ministry of Economy of Ukraine, 2024). Freight rates declined simultaneously.

Immediately after the BSGI was formally over, Russia launched a series of rocket and drone attacks deliberately pointed at the logistics grain infrastructure located at the Black Sea ports. Supported by Great Britain, the US and the EU, Ukraine provided a military answer with its naval forces. Ukraine took control of its maritime export destiny in October 2023 by establishing the New Corridor through the Black Sea (Figure 1). This independent shipping route, operating under Ukrainian Navy protection, has provided a secure alternative for agricultural exports. In a significant expansion of operations, Ukrainian officials secured approval from the Ukrainian Navy to begin 24-hour operations along the corridor starting March 2024 (Interfax-Ukraine, 2024).

MY2023/24 was expected to improve and level up the grain export indicators. However, freezing temperatures in May 2024 and abnormal heat and dryness in June and July impacted harvest in terms of volume and quality. This is relevant to oilseeds (sunflower, soybeans, rapeseeds) as well as grain crops, corn in particular. The country's central region, southeast and southern parts were short of rain for 30-60 days, resulting in only 40-65% of the annual rainfall norm (Tulainova, 2024). Those developments are expected to affect Ukraine's major crop export volumes for the 2024/25 marketing year.

The situation is further complicated by reported reductions in harvesting areas, particularly in regions near active combat zones. According to Ukrainian-based trading company managers, these uncertainties make it possible to forecast market conditions only in the short term. Export projections at the end of 2024 have sparked debate within Ukraine's business community. For instance, while the USDA's World Agricultural Supply and Demand Estimates (WASDE) Report (Nov. 8, 2024) forecasted Ukrainian corn exports at 23 MMT for MY 2024/25, domestic estimates by the Ukrainian Grain Association (UGA), (UGA, 2024) project a more conservative figure of no more than 20.5 MMT. Similar discrepancies exist for other major crops.

It is important to note that because of raised logistics costs and costs of production inputs, farmers' shares in the final export price during the MY2021/22 were reduced. From 2022 to 2023, the spread for wheat and corn — between Ukrainian farm-level prices and global prices — narrowed. This spread indicates that Ukrainian export logistic costs to ship wheat and corn to the global market fell from 2022 to 2023 but remained above pre-war levels (Delmi, 2024). Thus, logistics costs have quickly become the No. 1 factor influencing farmers' profitability and overall export dynamics from Ukraine (UCAB, 2023). In 2024, the U.S. Agency for International Development (USAID) under the "Agri-Ukraine Program" provided 300 new grain wagons to 11 Ukrainian grain exporters. It marked a development in supporting the country's agricultural export capacity (USAID, 2024). A future study will investigate the values and costs of grain supply chains in Ukraine with implications on world markets.

Many countries rely on Ukrainian and Russian food supplies, including those that fall into the category of the Low-Income Food-Deficit Countries (LIFDCs). For these countries, there is a growing concern that trade disruptions might impact food security, trade volumes, or pricing for essential grain products. To illustrate, the Organisation for Economic Co-operation and Development (OECD) released data in their Agricultural Outlook 2022-2031. It suggests scenarios that might impact international wheat prices, calculated by the Aglink-Cosimo Model. Provided reductions in Ukraine and

Russia's wheat exports, all the scenarios report growth in global wheat prices from 2% to 34%, depending on the type of restrictions imposed (OECD, 2022).

Analysis of Ukrainian Grain Export Patterns

As one of the world's top agricultural exporters, Ukraine possesses a developed export-oriented infrastructure. There are 13 seaports located at the Black Sea and Sea of Azov basins and the Danube River delta. Ports on the Azov (i.e., Mariupol, Berdiansk) had been destroyed and temporarily lost due to the Russian invasion. The major ports located in the Black Sea basin include ports of "Greater Odesa" — Pivdenniy, Chornomorsk and Odesa. The Mykolaiv seaport, which is one of the biggest Ukrainian seaports, is still blocked and mined, at the moment of this publication. Besides the functioning of the New Grain Corridor, the seaports of the Mykolaiv basin are locked from shipments due to significant military risks.

The Ukrainian Railways, or Ukrzaliznytsia, connects Ukraine with EU markets, but it is restricted by the logistics bottlenecks on the European Union border. A standard-gauge railway in the European Union is 1,435 mm (4 feet, 8.5 inches); in Ukraine it is 1,520 mm (5 feet). The transshipment costs are increased by an absence of sufficient storage and distribution infrastructure suitable for large grain shipments.

Ukraine's domestic transportation infrastructure offers several cost advantages: rail and truck shipping rates remain well below international standards, and the country possesses an extensive network of Dnipro River waterways historically used for barge transport. The Dnipro River system holds significant potential for efficient and cost-effective grain shipments. However, reaching its potential requires substantial infrastructure investment, particularly to rebuild the destroyed Kakhovska Dam. Safety concerns must also be addressed, including clearing underwater mines and ensuring secure navigation through formerly contested areas.

Because of the EU Solidarity Lanes and the diversion from traditional markets, 57% of Ukrainian agricultural exports in 2023 accounted to the EU market. Between May 2022 and April 2024, the Solidarity Lanes allowed Ukraine to export about 136 million tonnes of goods, including about 70 million tonnes of grain, oilseeds and related products. The total value of trade via the Solidarity Lanes is currently estimated at around €157 billion, with more than €50 billion for Ukrainian exports and around €107 billion for Ukrainian imports (European Union Commission, 2024). Between Russia's invasion and the full resumption of Black Sea maritime operations, the Solidarity Lanes facilitated about 54% of Ukraine's grain exports.

Despite studies showing that Ukrainian grain and food products have minimal impact on EU market prices, Eastern European farmers have mounted significant protests against EU-Ukraine trade agreements. In 2023, Polish farmers blockaded major border crossing points, causing damage to transportation vehicles and spoiling grain shipments. While Polish protesters cited domestic market protection and declining farmer profitability as their main concerns, the Institute of Public Finance (IPF) of Poland reported that Ukrainian grain exports have negligible influence on prices received by Polish farmers (IPF, March 2024). Furthermore, other major Ukrainian agricultural exports to the EU, including poultry, honey, eggs and sugar, constitute only 1-4% of total EU food imports, suggesting minimal price or cost disruption for EU farmers (UCAB, 2024).

NASA satellite observations have revealed that millions of tons of grain are being produced in Ukrainian territories under temporary Russian occupation (Quinn, 2023). While these production volumes are difficult to quantify and are not included in official Ukrainian statistics, they potentially impact regional export prices. Ukrainian authorities are currently investigating have investigated illegal grain shipments from occupied territories, documenting various schemes where Russian traders mix Ukrainian grain with Russian produce or route shipments through third countries.

Evaluation of Damages and Production Trends in Ukrainian Agriculture, 2022-2024

The Ukrainian agricultural sector faces significant challenges due to the ongoing conflict, and recovery timelines for agricultural operations and international trade remain uncertain. The impact on farming infrastructure and natural resources has been extensive. Official estimates indicate that approximately 30% of Ukraine's agricultural capacity has been rendered nonoperational (Ministry of Agrarian Policy and Food of Ukraine, May 2024). Understanding the scale of this disruption, as illustrated in Picture 1, is relevant for evaluating its effects on agricultural production capacity and logistics infrastructure. This assessment helps forecast potential implications for both domestic food security and international agricultural trade.

Multiple studies have assessed the impact on Ukrainian agriculture since 2022, with data coming from both national statistics and regional business reports. Our analysis draws primarily from "Agricultural War Damages, Losses and Needs Review," a comprehensive report prepared jointly by the Center for Food and Land Use Research at Kyiv School of Economics (KSE) and the Ministry of Agrarian Policy and Food of Ukraine (Neyter,

Picture 1. Ukraine: destroyed farm machinery; shelling of agricultural fields.
Source: Maxar; Ministry of Agrarian Policy and Food of Ukraine

Zorya 2024). This document forms part of the broader "Rapid Damage and Needs Assessment" (RDNA3), a collaborative effort supported by the World Bank, the United Nations, the European Union, and the government of Ukraine (World Bank, 2023). While RDNA3 provides an overview of impacts across all sectors, the "Agricultural War Damages, Losses and Needs Review" focuses specifically on agricultural impacts. According to the review, total damages and losses to the agricultural sector reached $80 billion as of February 2024, with physical damage to agricultural assets valued at $10.3 billion (Table 1).

Ukrainian agriculture has suffered infrastructure damage. Farmers report significant losses to buildings, machinery and equipment, particularly tractors, creating long-term operational challenges due to the difficulty of replacing these essential assets. Additional impacts include reduced revenues, price changes, and increased production costs. These are estimated at $69.8 billion of losses for 2022-2023 (Neyter, Zorya, February 2024) — in particular, reduced annual crop production ($34.3 billion), losses due to lower livestock production ($5.6 billion), losses due to the increase in production costs ($4.4 billion) and revenue shortfalls from export disruptions ($24.1 billion).

These figures exclude damages to irrigation systems, food industry infrastructure, agricultural logistics and land demining costs. Based on interviews with farmers and market operators, the sector faces resource limitations as of November 2024, including scarcity of agricultural machinery and spare parts due to limited distribution networks, alongside significant increases in insurance costs and input supplies. Workforce reductions have emerged, particularly for skilled positions such as tractor drivers, truck drivers, and combine operators, due to military mobilization. In response to these labor challenges, operational roles have expanded to include a more diverse workforce.

The scale of land contamination by mines presents a significant challenge. The Ministry of Defense of Ukraine reports that 30% of national territory was mine-affected as of February 2024. The Ministry of Economy estimates that 500,854 hectares (1.24 million acres) require demining. Despite these challenges and ongoing risks, agricultural operations have adjusted to current conditions, maintaining agricultural production even in areas near conflict zones and on recovered territories. This includes efforts to restore agricultural operations in regions affected by the Kakhovka dam explosion on the Dnipro River (Ukrainer, 2024); (Reuters 2022).

Table 1. Estimated Damages of Agricultural Assets in Ukraine, as of February 2024.

Type	Monetary value, billion USD	Percentage of Total, %
Agricultural machinery	5.80	56.70%
Storage facilities	1.80	17.50%
Outputs and Inputs	1.97	19.10%
Perennial crops	0.44	3.90%
Livestock	0.25	2.50%
Aquaculture and fisheries	0.04	030%
Total estimate	**10.30**	**100%**

Source: Neyter, Zorya (2024); Kyiv School of Economics (KSE)

Studies by the Ministry of Natural Resources and Environmental Protection of Ukraine quantify environmental changes. The research estimates environmental losses at $62.9 billion during the period Feb. 24, 2022, to Sept. 13, 2024. A comprehensive analysis of the impacts on Ukraine's natural resources and global climate implications is available in the study's second edition (Ministry of Environmental Protection and Natural Resources of Ukraine, 2024).

The MY2022/23 season marked a historic downturn, with the sector recording its first operational and income losses in two decades. While profits from 2021 helped partially offset 2022 losses, farms and traders developed alternative export logistics routes under considerable time pressure and rising costs. Production costs for grains and oilseeds have approximately doubled compared to pre-war levels, primarily due to increased costs of fertilizers, fuels, and machinery parts. In response to these challenges, farmers have implemented several adaptive strategies, including the adoption of low-input production methods such as reduced mineral fertilizer usage and low tillage. Crop selection has also shifted, with farmers favoring less technology-intensive crops and introducing niche plants, such as sorghum, millet, sinapis and coriandrum. The MY2023/24 season showed increased production of oilseed crops, which proved profitable, while traditional crops, including corn and non-premium wheat, generated losses.

Production has shifted toward oilseeds because they require less storage space, are more efficient to transport (thus reducing logistic costs), and need fewer production operations compared to crops such as maize. Higher domestic prices for oilseeds, particularly sunflowers, are influencing planting decisions for MY2024/25. Throughout these adaptations, the ongoing military invasion continues to create high uncertainty, significantly affecting both production patterns and marketing decisions in Ukrainian agriculture. These conditions have led to operational adjustments while seeking sustainable operational solutions amid continuing challenges.

Legal issues affecting grain exports

Ukraine's financial landscape is currently heavily dependent on foreign aid for social payments. The majority of tax revenue is directed toward military expenses. In response to fiscal pressures, the government is implementing tax policy changes, as evidenced by new legislation draft #11416-d (submitted Aug. 30, 2024) proposing higher taxes for businesses and individuals, scheduled to take effect on Oct. 1, 2024. This fiscal reform affects the agricultural sector, which accounted for 62% of Ukraine's total exports in 2023 (Institute of Agricultural Economics of Ukraine, 2024).

The contribution of agricultural exports, particularly grains and grain products, in Ukraine's economy has prompted heightened scrutiny of trade practices. Studies by the Economic Security Bureau of Ukraine (2023) have identified that approximately 20% of Ukrainian grain exports may be of "unknown origin," suggesting potential "black" or "shadow" exports. Concerns about fraudulent export schemes, particularly those involving failure to repatriate currency from exported products, have led to new legislative measures.

Two key laws (#3706-IX and #3707-IX, both dated May 9, 2024) were enacted, effective July 1, 2024, specifically designed to prevent unauthorized grain exports and offshore revenue retention. The new regulations grant the Cabinet of Ministers of Ukraine expanded authority during martial law to oversee exports of key agricultural commodities, including wheat, corn, barley, rye, oats and oilseeds (sunflower, soybeans and canola). The legislation introduces comprehensive reforms, including new exporter qualification criteria, modified Value Added Tax (VAT) and customs declaration procedures, and perhaps most significantly, the implementation of minimum export prices.

The pricing mechanism utilizes a quantile method based on a 5% percentile, calculated from the lowest-priced contracts from the preceding month. The Ministry of Agrarian Policy and Food of Ukraine is tasked with announcing these minimum prices by the 10th of each month, considering delivery terms according to "Incoterms© 2020". For wheat and corn, these are Free on Board (FOB), Delivered At Place (DAP), Carriage Paid To (CPT); and FOB, Free Carrier (FCA), CPT, DAP for sunflower seeds. The ministry is also to monitor factoring operations in market conditions, price fluctuations and business transaction patterns. This approach reflects Ukraine's commitment to maintaining transparent and legitimate agricultural trade practices while securing export revenues.

The above-mentioned initiatives have been questioned by key agrarian associations, including the American Chamber of Commerce Ukraine (AmCham). In particular, AmCham Ukraine members emphasized the real risks of export disruptions for legitimate exporters, limitation of VAT refund, and restriction of exports to prices deemed acceptable by the government (AmCham Ukraine, 2023). According to AmCham's declaration, exporters should not be held liable for legal violations committed by their agricultural suppliers. Just as price hedging mechanisms and forward contracts between producers and exporters were beginning to recover in Ukraine, these tools for managing market risk and ensuring stable trade relationships are now being called into question, affecting market operations.

Statements from key U.S. diplomatic representatives in Ukraine, including former Special Representative Penny Pritzker and former Ambassador Bridget Brink, emphasized the importance of reforming the State Customs Service and addressing the broader issue of the "shadow" economy across various market sectors (Nedashkivskyi, 2024 August 30).

Take-home Message

The Russian invasion has forced structural changes in Ukraine's agricultural sector and export systems, leading to structural changes in export patterns and operational challenges. Since 2022, Ukrainian agricultural sector has adjusted operations, maintaining critical food supplies for domestic needs while continuing to serve international markets, with agricultural exports representing more than 60% of the country's total exports.

While agricultural exports initially declined in 2022-2023 due to martial law restrictions, the sector has shown signs of recovery following the restoration of maritime shipments. However, the invasion impact has been substantial, with agricultural damages and losses reaching approximately $80 billion as of February 2024. The invasion increased logistics costs significantly compared to pre-2022 levels, and production input costs have increased by roughly 50%. A notable improvement occurred in November 2023 with the reopening of Black Sea ports in the Odesa region: EU market share of Ukrainian exports increased from 31% in 2021 to 57% in 2024, offset by reduced exports to Africa, the Middle East and Asia.

The agricultural sector continues to operate under modified conditions and remains a cornerstone of the national economy. Looking forward, priorities include establishing fair market conditions, supporting legitimate exporters and aligning agricultural legislation with EU membership requirements. This sector's resilience not only supports Ukraine's economic stability but also contributes significantly to global food security during challenging times.

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