

Agriculture conditions in the areas of Russia-Ukraine war Conflict

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ABSTRACT

The conflict between Russia and Ukraine has had extensive repercussions extending beyond its immediate political and humanitarian implications. Agriculture has emerged as a crucial sector significantly affected by this war, with ongoing hostilities disrupting farming practices, displacing populations, and causing substantial harm to agricultural infrastructure and assets. Resolving the agricultural crisis in the conflict-affected regions necessitates a comprehensive approach encompassing urgent humanitarian aid, the restoration of infrastructure, and assistance in rebuilding livelihoods. In the long run, efforts should concentrate on reconstructing agricultural systems, advocating sustainable practices, and revitalizing local economies. These measures are crucial for fostering resilience and ensuring food security within the affected communities. This paper aims to offer a succinct summary of the agricultural situation in the areas impacted by the Russia-Ukraine war.

Key words: Russia-Ukraine war, Conflict, Agriculture, Food security, Rehabilitation

Introduction

According to Leon *et al.* (2022), the military intervention carried out by Russia in Ukraine since February 24th, 2022, has resulted in widespread casualties, property damage, asset loss, and infrastructure destruction within Ukraine. As a result, a severe humanitarian crisis has emerged, rapidly becoming the largest refugee crisis in Europe since World War II. According to McKenna (2022), the ongoing conflict has caused significant disruptions in agricultural operations in both countries, which are important players in global agricultural commodity production. This disruption has had a major effect on the global food supply chain, especially for countries that heavily depend on sunflower oil, maize, and wheat. According to Horton *et al.* (2022), the recent imposition of sanctions and trade restrictions on

agricultural products from Russia and Belarus, supported by the United States, European Union, and their allies, has resulted in a scarcity of essential food commodities like wheat and cooking oil. Furthermore, this situation has led to an escalation in prices for both food and fuel. It is important to note that Russia plays a significant role as a gas supplier to Europe. The combined impact of the ongoing conflict and the implemented sanctions has caused a substantial increase in energy prices, reaching three to four times their previous levels.

According to Alderighi *et al.* (2022), the COVID-19 pandemic and the Russia-Ukraine conflict have had extensive global impacts across various sectors. These shocks have also influenced land use, and different countries have responded differently to these challenges, as observed by Aslund *et al.* (2020), based on their internal strategies. The COVID-19

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pandemic, for instance, has affected military-political interactions and health assistance conditions in specific contexts, as noted by Ayvazyan (2021) and Bagci *et al.* (2022), respectively. It has also had an impact on medical research and business models, as discussed by Butenco *et al.* (2020) and Klimanov *et al.* (2021), respectively. The Russia-Ukraine crisis has further complicated these global contexts, particularly concerning various aspects of human health, as highlighted by Chaaya *et al.* (2022) and Devi (2021). The healthcare sector, in particular, is expected to face significant negative consequences due to this conflict, with a particular emphasis on the Ukrainian population, as emphasized by Ramirez *et al.* (2022) and Uwishema *et al.* (2022). Understanding the potential far-reaching and long-lasting consequences of disruptions in global food and fertilizer markets caused by the conflict is crucial for comprehending the overall impact on global food security. Additionally, the repercussions of the ongoing war on food systems and supply chains worldwide highlight the urgency and necessity of conducting a timely review. However, assessing the effects of the war on food security is challenging due to the uncertain extent of its overall impact. Therefore, this study aims to investigate the direct and indirect impacts of the Russia-Ukraine war on global food security. In this context, the primary focus of this paper is to analyze the implications of the Russia-Ukraine conflict on food security. It seeks to investigate the potential consequences and explore viable solutions and strategies to alleviate the impact on food security. The underlying hypothesis of this research posits that the conflict between Russia and Ukraine will significantly affect the efficiency and adaptability of global food supply chains.

Immediate Effects of the Conflict on Food Security

The military operations in Ukraine have the potential to have both short-term and long-term consequences for the transportation of agricultural goods within and outside the country. This is particularly true if port facilities and railways are destroyed. Already, the war has had an immediate impact on Ukraine's grain exports, especially maize, which is typically shipped during the spring and early summer. It is worth noting that approximately 95% of Ukrainian grain exports rely on sea transportation through ports such as Odessa, Mariupol, and Kherson, all of which have suffered significant damage. Furthermore, the blockade of all Black Sea ports

has effectively halted most Ukrainian exports. Even if the inland transportation infrastructure remains intact, shipping grain via rail would be challenging due to the non-functioning railway system.

The ongoing conflict has already impeded farmers from carrying out agricultural work, and the conscription and displacement of people have resulted in labor shortages. Moreover, disruptions to vital public services are expected to have negative effects on agricultural activities. Adding to the difficulties, there is limited access to and availability of essential agricultural inputs, such as fertilizers, as highlighted by the FAO (2022). As a result, the war is likely to disrupt the current spring planting season and potentially affect the upcoming winter crop harvesting, which typically takes place in June/July, as stated by the FAO (2022).

According to the FAO (2022), the imposition of economic sanctions on Russia has introduced uncertainty regarding its future export prospects. Although Russian Black Sea ports are currently operational with no immediate disruptions predicted for agricultural production, the financial sanctions have resulted in a significant devaluation of the Russian currency. This sustained devaluation could hinder productivity, impede development, and increase the costs of agricultural output, as highlighted by Dongyu *et al.* (2022). Additionally, Russia's announcement in April 2022 to limit agricultural and food exports to "friendly" nations in response to Western sanctions, as reported by Politico Russia (2022), would worsen the existing global food supply shortage. Rice *et al.* (2022) suggest that the ongoing war and the continued imposition of sanctions are likely to drive up prices and weaken food security for millions of people worldwide.

Impact on Food Production, Processing, and Storage

Since the beginning of the war, Ukraine's agricultural sector has been significantly impacted, leading to concerns about food security. The FAO (2022) highlights challenges such as disrupted winter harvesting and spring planting, limited availability of agricultural labor, difficulty accessing inputs, crop damage, and infrastructure destruction. These factors have caused food shortages for the local population and have also affected the export economy in the short and medium term. Currently, the main food security issue in Ukraine is related to food access rather than availability, as food stocks exceed

annual demand. The reduced availability of workers due to the war has contributed to this issue, leading the Ukrainian government to grant exemptions to farmers from mandatory military service, as reported by Traspaderne *et al.* (2022).

According to the FAO (Borrell, 2022), a significant portion (approximately 20-30%) of designated areas for winter cereal, maize, and sunflower seed production in Ukraine will not be harvested or planted during this spring. The scarcity of fertilizers and pesticides will also impact crop yields. While there is an adequate supply of seeds, particularly for vegetable crops, for the 2022 planting season due to existing stocks and limited import requirements, logistical challenges may arise, and there is an expected shortage of maize and sunflower seeds. (FAO, 2022)

Russia and Ukraine play significant roles in global food supply chains, particularly in the production and export of key commodities. Ukraine is a major player in wheat production, accounting for 3.2% of global production and exporting 9.1% of the world's wheat. Russia, on the other hand, is the largest global exporter of wheat. Ukraine also contributes significantly to maize production (2.6% of global production) and is the fifth-largest exporter. In barley production, Ukraine holds 4.9% of the global share and is the second-largest exporter. Moreover, Ukraine dominates global sunflower oil production (29.1% of global production) and is the largest exporter of sunflower seeds. These agricultural supplies are crucial for countries that depend on them, including India, China, Middle Eastern countries, Egypt, Libya, Lebanon, Ethiopia, Yemen, Lithuania, and more. While other countries may increase production to compensate for reduced availability from Ukraine and Russia, the European Union has relaxed land cultivation requirements to address current pressures.

The Influence of the Crisis in Ukraine on the Worldwide Agri-food Markets

The effects of the war on the global market for cereals

Russia and Ukraine play significant roles in the global supply of cereals, including barley, wheat, and maize. Together, they accounted for a substantial portion of global production from 2016/17 to 2020/21. Both countries ranked among the top global exporters of wheat and maize as of 2021. However, economic sanctions create uncertainty for Russia's

future export prospects. The ongoing war poses a threat to agricultural operations in Ukraine, raising concerns about potential decreases in wheat exports. This is significant as wheat is a vital source of nutrition globally, providing essential food for a large portion of the population. The war's impact on upcoming harvests and disruptions in storage capacity could exacerbate the situation. Global stocks and untapped production potential may not be sufficient to compensate for prolonged supply disruptions. Limited wheat supplies in Canada and potential export constraints from the United States and Argentina further contribute to challenges in ensuring sufficient global wheat supply, as highlighted by the FAO (2022) and FAOSTAT (2022).

The effects of the war on the global market for Fertilizers

Fertilizers, including nitrogen, phosphate, and potash, are crucial for agriculture, but their supply is controlled by a few companies. Russia and Belarus play significant roles in potash mining and nitrogen supply. Russia is the top exporter of fertilizers, while Belarus ranks sixth. The war in Ukraine has exacerbated existing strains in the global fertilizer market, such as rising energy costs and trade policies. Fertilizer prices have soared, impacting food supplies. Regions highly reliant on Russia and Belarus for fertilizer imports, such as South and Central America, West Africa, and Europe, have been particularly affected. The dominance of Russia in natural gas exports and its role in nitrogen fertilizer production add complexity to the situation. Increased fertilizer prices may lead to reduced usage and lower yields, posing food security risks, especially in developing countries (Rabobank, 2022; Benton *et al.*, 2022., The Observatory of Economic Complexity Fertilizers in Russia, 2022, S&P Global Market Intelligence, 2022).

The effects of the war on the global market for Vegetable oil

The global market for palm oil, soybean oil, sunflower oil, and rapeseed oil, which make up the majority of vegetable oil sales, has been impacted by tight supplies and high demand, leading to price increases. In 2021, rapeseed oil prices rose by 65% and sunflower oil prices by 63%. Production of soybean, palm, and rapeseed oil has been affected by drought in South America, labor shortages in Malaysia and Canada, and disruptions caused by the war in Ukraine, leading to a significant rise in sun-

flower oil prices since the conflict began. Ukraine and Russia, key players in the sunflower oil market, have been particularly affected.

Limited processing capacity for vegetable oils has resulted in higher costs for consumers and retailers. Some countries, such as the United Kingdom, have imposed restrictions on cooking oil purchases, and grocery chains in Spain, Greece, Turkey, Belgium, and other nations have implemented sales limitations. These circumstances have prompted trade policy reactions worldwide, further constraining supply and increasing costs.

In April 2022, Indonesia banned palm oil exports in response to domestic price increases and potential unrest. Malaysia, the second-largest palm oil producer, continues to struggle with chronic labor shortages, impacting yields and overall output. These factors contribute to the ongoing challenges and uncertainties in the global vegetable oil market. (Glauber, 2022, The New York Times, 2022, The Diplomat, 2022, The Malai Mail Report, 2022).

Conclusion

During the Russia-Ukraine war, it is imperative to prioritize the establishment of a resilient and sustainable food system. A recent report by CGIAR outlines seven key initiatives for policymakers to strengthen resilience and minimize disruptions and price fluctuations in food systems. These initiatives involve real-time analysis to monitor price volatility and assess threats to food security, careful evaluation of market interventions such as farmer subsidies, avoidance of actions that worsen the situation like trade restrictions or panic buying, focus on short-term solutions like removing biofuel subsidies and expanding social safety nets, investment in climate-friendly agricultural research for long-term sustainability, utilization of promising innovations like satellite technology, and investment in policy research to identify effective strategies. Implementation of these initiatives will enable policymakers to build a resilient food system that supports sustainable development goals and ensures food security.

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