

IMPACT OF THE WAR IN UKRAINE ON FOOD SECURITY**Pecheniuk A.***PhD, Associate Professor, Higher Educational Institution «Podillia State University»,
Kamianets-Podilskyi, Ukraine***Korzhnivska N.***Dr.Econ.Sci., Professor, Higher Educational Institution «Podillia State University»
Kamianets-Podilskyi, Ukraine***Evtushok V.***Senior teacher of the Department of Tactical and Special Physical Training
Kharkiv National University of Internal Affairs**Kharkiv, Ukraine*<https://doi.org/10.5281/zenodo.12073442>**Abstract**

The main aspects of food security in connection with the war in Ukraine are considered. In this context, it was noted that the world is moving away from the goal of ending hunger. Based on analytical data from the Food Price Index, a high level of influence of the war in Ukraine on price changes has been established. This situation is threatening for poor countries where people spend most of their income on food. Given this, it was important to reorient Ukrainian exports to alternative routes. In this way, even in conditions of war, Ukraine remains the guarantor of food security in the world. The prospects of Ukraine's food supply and the restoration of agricultural exports will depend on the timing of the end of active hostilities on our territory.

Keywords: food security, war in Ukraine, food crisis, agricultural export

Introduction. The Russian-Ukrainian war after the COVID-19 pandemic has become a new global challenge to world food security. Due to the suspension of Ukrainian exports, record prices for food and deterioration of the access of the population of certain countries of the world to food products were observed.

Ukraine is the largest country in Europe with unique chernozems and rich natural resources. Almost 70% of the territory of Ukraine is agricultural land. This determines its specialization as an industrial-agrarian country with a predominance of raw material exports. One of the leading industries is agriculture, which provides about 40% of the country's foreign exchange earnings.

As a leading grain exporter, Ukraine has experienced a sharp drop in its exports, leading to serious food security challenges for millions of people around the world.

The purpose of the article is to determine the impact of the war in Ukraine on world food security.

Results. Russian military aggression against Ukraine has resulted in human casualties and had a significant and lasting impact on the global food market. As a result of the war, Ukrainian producers lost their financial and commodity liquidity, because commodity lending stopped, and the export of products became much more difficult. This situation is a threat to global food security.

According to the definition of the Food and Agriculture Organization of the United Nations (FAO), food security is clearly defined as a functioning system that provides the population with food according to accepted physiological norms due to its production and the necessary level of import of those products, for the production of which there are no internal conditions [1].

According to the UN report for 2022, about 2.3 billion people in the world experienced moderate or severe food insecurity. About 45 million children in the world under the age of 5 suffered from severe wasting in 2021. 149 million children under the age of 5 had stunted growth and development due to a chronic lack of vital nutrients in their diet [2]. This means that the world is moving away from the UN goal of ending hunger in the world by 2030.

All this is very bad, especially for poor countries, where people spend most of their income on food. The situation is especially difficult in countries in arid regions - in the Middle East and North Africa. They import more than 90% of all food, and the closest suppliers for them are Russia and Ukraine.

Russia is the largest exporter of wheat in the world, it sells about 33 million tons per year. Ukraine supplies 20 million tons of wheat to the world market.

The difficult situation in the world with vegetable oil. Disruptions in supplies have already caused prices to rise. Millions of people in poor countries are abandoning traditional fried food at home and switching to street food cooked with old oil. Russia and Ukraine provide 57% of the world's supply of sunflower oil. Large importers of this oil, in addition to the EU countries, are India, China, Iran, and Turkey.

However, famine threatens only the poorest countries where conflicts continue, for example, Yemen and Afghanistan.

To assess the situation, we will use the FAO Food Price Index, which reflects changes in international food prices [3]. Analytical data indicate a significant increase in the Food Price Index in 2022 compared to previous years for almost all commodity items, which indicates a high level of influence of the war in Ukraine on changes in world prices.

Table 1.

FAO Food Price Index						
	Food Price Index	Meat	Dairy	Cereals	Vegetable Oil	Sugar
2019	95,1	100	102,8	96,6	83,2	78,6
2020	98,1	95,5	101,8	103,1	99,4	79,5
2021	125,8	107,7	119,6	131,2	164,9	109,3
2022	144,7	118,8	149,5	154,7	187,8	114,5
2023	124,7	114,7	123,7	130,9	126,3	130,0

A key logistical problem at the start of a large-scale invasion was the blockade of seaports. Given this, it was important to reorient Ukrainian exports to alternative routes. Thanks to European partners, the "Paths of Solidarity" program was launched. As a result, during the 10 months of the war, it was possible to export 39 million tons of agricultural products. Thanks to the "Paths of Solidarity", the main sales market for Ukrainian products has become the country of the European Union.

It is also important to note that at the end of November, the humanitarian food program Grain from Ukraine was launched, within the framework of which Ukrainian grain is exported to countries in Africa and Asia, which suffer the most from the food crisis and need urgent help. More than 30 donor states (EU countries, USA, Canada, Great Britain, Japan, Korea,

Qatar) and international organizations have already joined this program. Almost 200 million dollars were involved. contributions In this way, even in conditions of war, Ukraine remains the guarantor of food security in the world. As part of this program, Ethiopia and Somalia have already received 80,000 tons of humanitarian wheat. Donations were made by France, Finland, Germany and Japan. Another 330,000 tons of food was sent to the UN World Food Program for countries such as Ethiopia, Afghanistan, and Yemen.

In Ukraine, due to the operation of the grain corridor, the situation in the grain market improved, but the state lost at least 1 billion dollars in 2022 in the form of wheat collected by Russia in the occupied territories. This is demonstrated by the map of the harvest in the occupied territories from NASA Harvest [4].

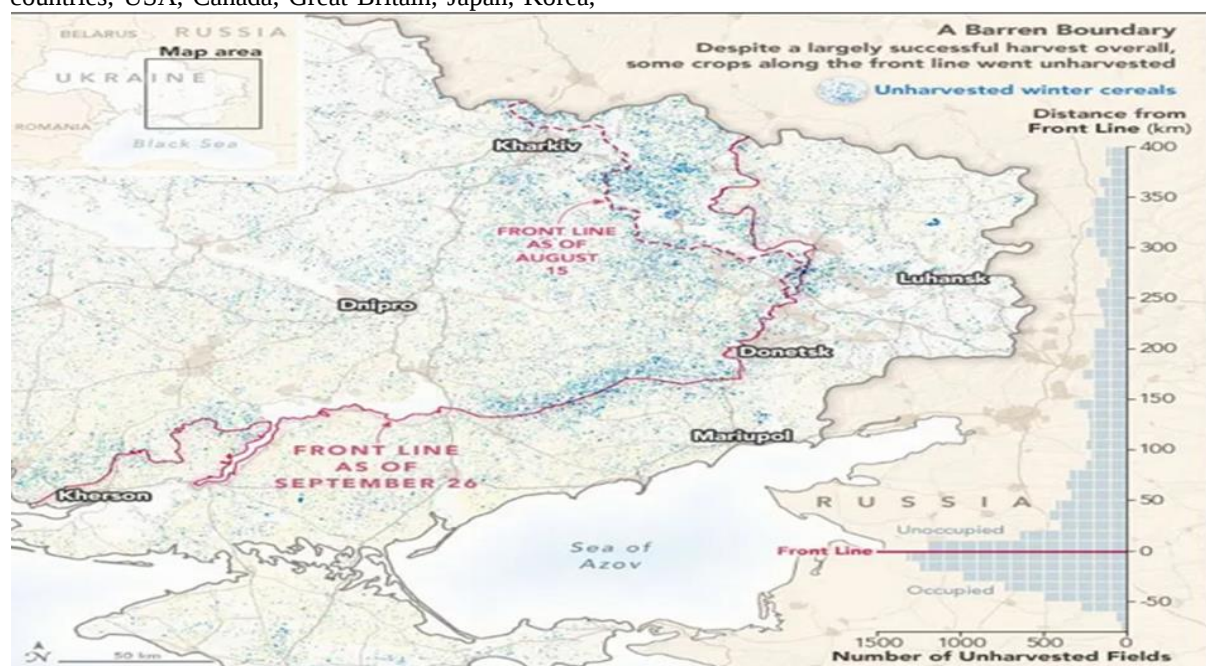


Fig. 1. Map of the harvest in the occupied territories (data for 2022). NASA Harvest.

According to NASA Harvest, almost 6 million tons of wheat were collected from territories not controlled by Ukraine. Russian ships were previously reported to be exporting grain taken from the occupied areas to various countries, including Libya and Iran, but it is difficult to estimate the respective volumes as the shippers hide the origin of the cargoes.

In 2022, Ukraine exported food products worth \$23.4 billion, i.e. 16% less than in 2021. It is worth noting that the total revenue from the export of meat and dairy products, potatoes, and frozen vegetables increased. On the other hand, the incomes of exporters for the vast majority of names of fruit and vegetable

products, eggs, honey, grain processing products, and various confectionery products decreased.

In the pre-war period, Ukraine constantly increased the volume of agricultural exports. About 90% of the product structure of our exports is occupied by grains, oil crops, residues of the processing industry, oils and fats, meat, and by-products. Russia's military invasion has seriously threatened the food supply of both Ukraine and other countries of the world.

Table 2 characterizes export volumes in 2022 by types of products, million tons. As you can see, sunflower seeds were sold the most.

The volume of exports during the war period by types of products:

Production	Physical weight, million tons
Corn	15,6 млн тонн
Wheat	8,6 млн тонн
Sunflower oil	3,3 млн тонн
Turnip	3 млн тонн
Sunflower seeds	2,7 млн тонн
Feed additives	2,2 млн тонн
Barley	1,7 млн тонн
Soybeans	1,7 млн тонн
Soybean oil	188 тыс. тонн

Ministry of Agrarian Policy and Food of Ukraine [5]

Ukraine also exports animal feed. A reduction in exports will hurt the livestock industry in the world. The consequences of the cessation of feed exports will begin to be felt gradually. Already the least efficient producers in the countries of the Middle East, North Africa, and Asia have begun to reduce herds. This will affect the price of meat [6].

The geography of supplies from Ukraine of agricultural raw materials and value-added products before the full-scale war was almost entirely focused on the Asian region (about 50%), European countries (30%), the African continent (15%), and the CIS countries (5%). As a result of the war, there was a reorientation of supplies to Europe 56%, Asia 30%, and Africa 14%.

In connection with the war, the Cabinet of Ministers of Ukraine suspended the export of live cattle, meat and offal, rye, buckwheat, millet, sugar, and salt. At the same time, export licensing of wheat, corn, poultry, eggs, and sunflower oil was introduced. The next step in the conditions of martial law was a temporary ban on the export of nitrogen, phosphorus, and potassium mineral fertilizers from Ukraine.

There are about 40,000 farms in Ukraine. Small and medium-sized producers produce more than 80% of agricultural products, of which up to 30% is used for the domestic market and up to 70% is exported. Some farms suffered as a result of the war. They have been destroyed or are under occupation. Some of them are forced to suspend work. The Russians are purposefully destroying farms. This is evidenced by the number of shelled farms in different regions of Ukraine. Sometimes animals are shot just for fun. As a result of the Russian war, 15% of all livestock in Ukraine has already been destroyed. Direct losses from the war in agriculture, calculated by the Ministry of Agricultural Policy in September 2022, amount to 6.6 billion dollars, and indirect losses - 34.5 billion dollars. So far, more than 20% of the available cultivated area and more than 70% of the irrigated area have been lost. Documentation of crimes and damages continues.

The prospects of Ukraine's food supply and the restoration of agricultural exports will depend on the timing of the end of active hostilities on our territory. The total area on which the planned sowing campaign can be carried out will also play a key role.

It is expected that due to the war, the structure of cultivated areas and the volume of crops will change

significantly. A decrease in the amount of fertilizer application will directly affect the indicators of the gross harvest.

Ukraine will be provided with all food groups for domestic consumption. But the export potential is expected to change. In particular, much less corn will be sown, while it is one of the main grain crops that was exported" [7].

Ukrainian farmers had a very difficult season of agricultural work. Despite considerable risks, they went out into the fields, even under fire. In this way, our country was able to fully provide itself with food for the next year.

However, according to preliminary estimates of the NASA Harvest program, since the beginning of the war, 2.1–2.8 million hectares of agricultural land have been abandoned as a result of hostilities. These abandoned fields make up 6.5 to 8.5% of the total arable land area of Ukraine, and it is not surprising that they are located along the front line. In addition, according to NASA Harvest estimates, in 2023 alone, Ukraine suffered about 2 billion dollars in economic losses due to the loss of crops in fields that had already been sown. According to calculations, this amount of food (cereals and oil) could feed 25 million people during the year! Of course, this affects the food market in the world [8].

Conclusions. Ukraine is one of the important producers of agricultural products in the world. An escalating Russian invasion and the risk of concentration of fertilizers, a key production input in the agricultural process, could disrupt global supply lines and create the worst global food crisis since World War II.

Geopolitical risks, higher production costs, and shortages are all issues plaguing the global food system. At the height of the current crisis, production and exports of major food exporters have been disrupted.

As the world continues to brace for the unexpected costs of Russia's aggression against Ukraine, food and fertilizer shortages are another consequence of the war that consumers, industry, politicians, and investors must consider.

But first of all, we need to stop Russia, which destroys the agricultural industry of Ukraine every day. Only tough sanctions and aid to Ukraine with weapons from partner countries will make it possible to inflict a

crushing defeat on Russia, and therefore save millions of lives around the world. Otherwise, Russian terror will continue, particularly through the food crisis and blackmail by hunger.

References:

1. FAO, IFAD, UNICEF, WFP and WHO. The State of Food Security and Nutrition in the World 2022. Repurposing food and agricultural policies to make healthy diets more affordable. Rome, FAO. 232 p.
2. Food. United Nation. URL: <https://www.un.org/en/global-issues/food>
3. World Food Situation. URL: <https://www.fao.org/worldfoodsituation/foodpricesindex/en>
4. NASA Harvest. URL: <https://nasaharvest.org/>
5. Ministry of Agrarian Policy and Food of Ukraine (2023) Export of grain, legumes, and flour from Ukraine (2023). URL: <https://minagro.gov.ua/investoram/monitoring-stanu-apk/eksport-z-ukrayini-zernovih-zernobobovih-ta-boroshna>
6. The world is threatened by "the worst famine since the Second World War". What does Russia have to do with it and why will it affect everyone? URL: <https://suspilne.media/277606-svitu-zagrozu-najsilnisiy-golod-z-casiv-drugoi-svitovoi-vijni-docogo-tut-rosia-i-comu-ce-zacepit-usih/>
7. Ministry of Agrarian Policy and Food of Ukraine Sown areas in Ukraine will decrease by 7 million hectares. URL: <https://minagro.gov.ua/news/posivni-ploshchi-v-ukrayini-zmenshatsya-na-7-mln-ga>
8. Yulia Korotych. Analytics from NASA Harvest. URL: <https://ifarming.ua/monitoring/analitika-vid-nasa-harvest>