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DISTRIBUTION OF THE MANUFACTURED AGRICULTURAL PRODUCTS IN ASPECT OF THE WORLD POPULATION NUTRITION

DYSTRYBUCJA PRODUKOWANYCH ARTYKUŁÓW ROLNYCH W ASPEKCIE WYŻYWIENIA LUDNOŚCI ŚWIATA

Summary: *In the present paper, the world food situation, with the particular consideration of production of cereals, sunflower, corn(maize), rape and soya has been presented. The mentioned above products have the greatest impact on the nutrition of the world population. It has occurred that Ukraine has a considerable effect on food ensuring what is aimed at avoiding the occurrence of the nutrition problems in many countries in different world parts. The discussed situation was revealed after the outbreak of the war in Ukraine. About 20 million tons of Ukrainian cereals, as being stored in harbours of Ukraine have been blocked against the possibility of sale to the customers in different countries of the world where – in the case of lack of the mentioned product – the phenomenon of hunger is expected. Ukraine is the leading producer of rape and sunflower oil.*

Keywords: *food safety, world nutrition, cereal production, sunflower production, Ukraine, supply of cereals*

Streszczenie: *W artykule przedstawiono światową sytuację żywnościową, ze szczególnym uwzględnieniem produkcji zbóż, słonecznika, kukurydzy, rzepaku oraz soi. Produkty te mają największy wpływ na wyżywienie ludności świata. Okazuje się, że Ukraina ma znaczący wpływ na zabespieczenie żywności dla uniknięcia wystąpienia problemów wyżywienia wielu krajów w różnych regionach świata. Sytuacja ta wyraźnie wyszła na jaw po wybuchu wojny na Ukrainie. Około 20 milionów Ukraińskiego zboża składowanego w portach Ukrainy zostało zablokowane przed możliwością sprzedaży do odbiorców w różnych krajach świata, gdzie w razie braku tego zbaża wystąpi zjawisko głodu. Ukraina jest czołowym producentem rzepaku oraz oleju słonecznikowego.*

Słowa kluczowe: *bezpieczeństwo żywnościowe, wyżywienie świata, produkcja zbóż, produkcja słonecznika, Ukraina, dostawa zbóż*

Introduction

Cereal production belongs to the most important branches of total agricultural production. Cereals – as being known for the centuries – have been cultivated all over the world. They constitute a basis for food supply for the considerable population of the world. The failure in the cereal crops would mean the failure of food, hunger. Therefore, the cereal market is precisely analysed and the stocks are built. The cereals are one of the most valuable raw materials all over the world. The present article contains the general data which may illustrate, in the best way, the mean production over the years. Cereal production is not constant and it is dependent on atmospheric and economic conditions.

If we wanted to develop a production coefficient according to the area of the country, Poland would be found, in majority of the data, in the close leading group, although as it is, we are now in the first "10" or immediately after it in all important rankings of cereal production. When taking into consideration only the European Union, we may notice that the greatest production in the EU agriculture comes from Germany, France and Poland. Certain statements include also Spain or Italy. When speaking about the while Europe, we have also mention Russia, Ukraine, Belarus and Turkey.

Poland is the important agricultural producer although due to the area of the cultivated land, we cannot keep up with Russia, China or the USA.

The main cereal producers at the world markets outside Europe are China, India, Pakistan, The United States of America, Canada, Australia and Egypt, Argentina and Brazil. The last three countries did not appear in the mentioned data; nevertheless, they are the leaders at their continents and also belong to the major participants of the world cereal production market.

We should remember that other cultivated plant crops are also important for the world production of food. Rice is the fundamental product in China or in India – the sates which are inhabited by ca 2.7 billion people. Sugar, which is produced from sugar cane or from beetroots, plays a significant role at the world markets. The same concerns sorgo in African countries.

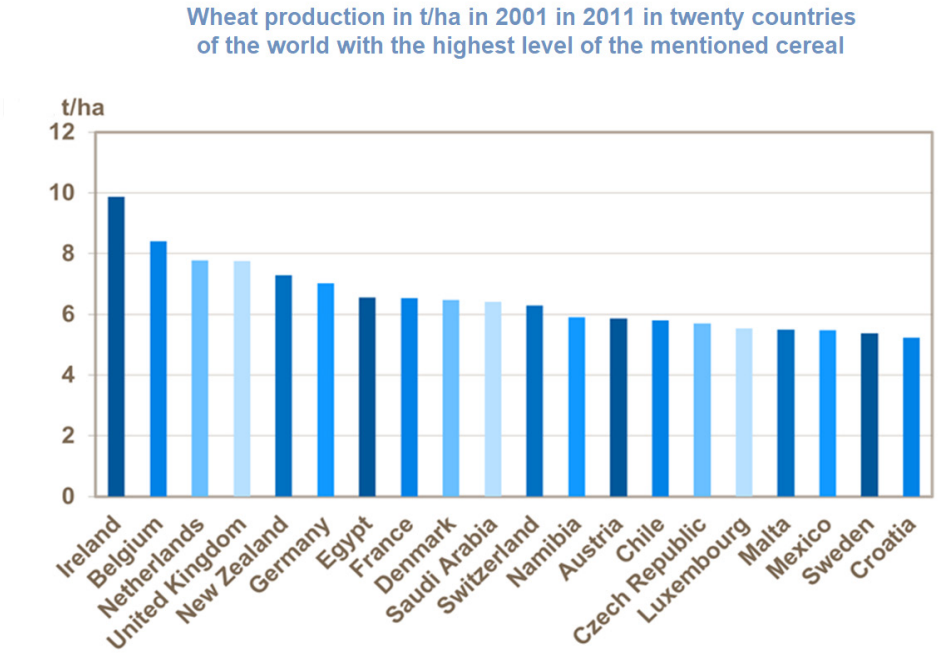

Fig. 1. Wheat yields (t/ha) obtained in twenty countries of the world with the highest production of the discussed grain (2011)
Source: Faostats

China is the greatest cereal producer globally all over the world. It produces 612 170 193 tons annually. The USA are found at the second place with the annual production of 467 951 140 tons. India occupies the third place and its annual cereal production is equal to 318 320 00 tons.

France is the greatest producer of cereal grain in the EU – its production amounts to 67.3 million tons what constitutes 22% of the total EU production. Germany has produced 47.8 million tons of grain what is the 16-% participation in the EU production.

Poland occupies the third place in the mentioned ranking with production of 28.5 million tons, what makes the 9% participation in the EU. Spain is immediately after Poland and its production is equal to 25.4 million tons of cereals.

Wheat production in t/ha in 2001 in 2011 in twenty countries of the world with the highest level of the mentioned cereal is given in Fig.1.

The global wheat yields are very much differentiated between the particular Continents. A moderate climate of the central and north Europe creates the conditions favourable for obtaining very high crops, with the simultaneous occurrence of extreme conditions such as draught and frost. The range of the crops all over the world amounts from 9.86 t/ha in Ireland to 0.31 t/ha in Venezuela. The current world record in respect of the harvested crop was reached in New Zealand in March 2020 – 17.389 t/ha. The present problem concerns the level of the obtained yields in many countries as nowadays, assurance of the appropriate food quantity in the light of constantly increasing population is a big challenge. To obtain the high cereal crops, it is necessary to employ the modern cultivation technology. It is illustrated in Fig.2.

As it was reported by USDA, the world market of wheat production is dominated by the following countries: EU (150.969 million tons), China (126 million tons); India (95 850 million tons);

Fig. 2. Cereal fungicides ensure the effective cereal disease control and result in crops of a good quality
Source: Faostats

USA (55 238 million tons) and Russia (59 million tons). The Ministry of Agriculture of Russia estimates at present cereal crops at the level of 100 million tons, including 56 million tons of wheat, in spite of the fact that the American forecasts inform about higher quantities (59 million t).

From the top five world producers of wheat, only USA, EU and Russia are the exporters. High crops of low quality wheat have caused a decrease in the grain prices. The increase in the export by 1.0 million tons in the case of Canada, EU and by 0.5 million tons from Brasilia and Kazakhstan due to greater stocks, was recorded.

Based upon the data from the Ministry of Agriculture of Russia, USDA informs that in August, Russia exported a record number i.e. 4.7 million tons of cereals and in the whole cycle 9.9 million tons, including 8.9 million tons of wheat. The Americans anticipate that Russia may reach the historical maximum in 2022

in respect of cereal export and may close the agricultural season with the result of 30 million tons of the exported cereals whereas in the previous year, the mentioned quantity was equal to 26 million tons. The increase in the export of wheat from Russia was affected by a low quality of the cereals at the European and Ukrainian market. In Russia, good results of cereals are expected – until now, 75 million tons have been harvested, it is however possible to reach crops at the level of 104 million tons.

Wheat production in Australia had dropped by 0.5 million tons due to the draught in the greatest producing regions in this country. The successive important changes in the increase of wheat production concern Morocco (0.4 million t) and Algeria (1.0 million t). In Algeria, in spite of the growth in wheat production, the increase of import has been recorded.

According to IGC, wheat prices in Europe are still dropping due to a high production; there is no great demand, therefore, the prices are lower. The international wheat trade has increased because of the increased import by Algeria, Pakistan and Iran.

Distribution of agricultural products at the world markets, including Ukraine

Poland is a meaningful food exporter, including also cereals. In Poland, 28–35 million tons of cereals in total are produced every year. Export is dependent on the situation in a given year, from 4.8 million tons to ca. 9 million tons in the record year 2020. Import accounts for 2–3 million tons. The percentage import of cereals from Ukraine in 2020 by the particular countries of the worlds is given in Fig. 3.

In the opinion of experts, the problem of cereal supplies has been found in the centre of attention on geopolitics after the invasion of Russia on Ukraine. The international data indicate that in 2020, Ukraine was the second (after USA) exporter of cereals in respect of their value. For certain countries of Africa and Asia, Ukraine is the greatest supplier of the discussed products; for Iraq or Lebanon, it is the greatest supplier of vegetal and animal fats.

Table 1 shows the greatest importers of Ukrainian cereals in 2020, in millions of USD.

The President of the leading Ukrainian food enterprise MHP said when talking with "Financial Times" that he was afraid of this year's spring season of seeding which has a key meaning not only for the domestic supplies in Ukraine but also for the great quantities of cereals and vegetal oils intended for export. The mentioned above conflict has a great influence on the capacity of Ukraine and Russia in respect of supplying the world. He added also that the success of the seeding season would be determined by the run of military operations. He warned that it will be endangered if the Russian army will enter the western regions of the country. Ukraine is one of the top producers and exporters of agricultural crops. After the invasion of Russia, the authorities of Ukraine introduced the export restrictions. At present, there is a ban on export of barley, rye, millet and buckwheat and also, sugar, salt and meat in Ukraine. The export authorizations are valid for export of wheat, corn and sunflower oil. According to Food and Agriculture Organization of the United Nations (FAO), due to the war, started by Russia, even 30% of cultivable areas will be not sown this year.

According to the statistics of the International Trade Centre (ICT) for 2020 (the newest data available) China was then the greatest importer of Ukrainian products (all, not only agricultural crops) (All data cited in this paper come from ITC basis). Value of

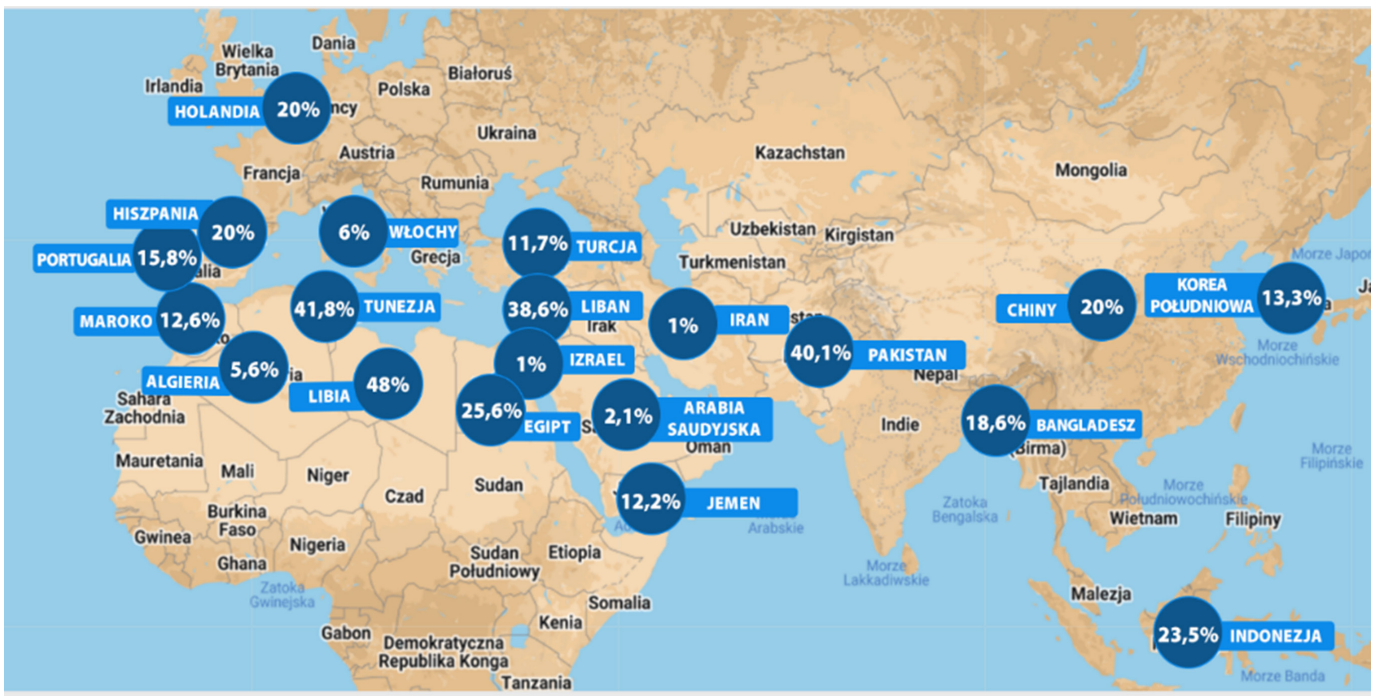

Fig. 3. Percentage of imported cereals in 2020 came from Ukraine (the greatest importers are considered)
Source: ITC/Trade Map

Table 1. The greatest importers of Ukrainian cereals in 2020
Source: ITC/Trade Map

Country	value, in mln USD
China	1855
Egypt	1120
Indonesia	547
Spain	543
the Netherlands	519
Turkey	473
Tunisia	347
Bangladesh	317
South Korea	282
Libya	265
Pakistan	258
Morocco	256
Israel	230
Iran	228
Lebanon	184
Italy	160
Saudi Arabia	155
Algeria	153
Yemen	144
Portugal	130

export from Ukraine to China amounted to 7.1 billion US dollars. Poland was found at the second place – value of the purchased products was equal to 3.4 billion US dollars. The remaining crucial trade partners of Ukraine were: Russia, Turkey, Germany, India, Italy, the Netherlands, Egypt and Belarus.

The role of Ukraine in the world nutrition

Ukraine is one of the world leaders in trade of the following categories of products: cereals, fats and oils of vegetal and animal origin. The cereals sold by Ukraine in 2020 constituted 7.9% of the world export whereas vegetal and animal fats accounted for 5.6% of the mentioned trade. Ukraine is the leader in export of sunflower oil. In 2020, it exported 6.2 million tons of the last mentioned product at value of 4.7 billion dollars. In export of rape, Ukraine occupies the second place in the world ranking. In 2020, its export of rape was equal to 2.4 million tons at the value of more than 1 billion US dollars.

Moreover, Ukraine is the fourth world exporter of corn (maize) – in respect of the quantity as well as price of the exported product. In 2020, Ukraine exported almost 28 million tons of corn at the value of 4.9 billion dollars. It is the fifth world exporter of wheat. In 2020, it exported more than 18 million tons of wheat at the price of 3.6 billion dollars. Ukraine occupies the second place in respect of the quantity and the fourth place in respect of the obtained price of barley. In 2020, the Ukrainian farmers produced more than 5 million tons of barley, sold for the sum of 877 million dollars. Ukraine is the seventh world exporter of soya – export in 2020 amounted to 1.8 million tons and its value was 690 million dollars. Ukraine exported almost 81 thousand tons of honey in 2020, at the price of 139 million dollars what was the second result in the world in respect of the quantity and the fifth place in respect of the obtained price. India is the greatest importer of Ukrainian fats. Value of their sale to the mentioned country exceeded 1.4 billion dollars. China is found at the second place. It bought fats from Ukraine at the value of 1.1 billion dollars. The remaining greatest importers on the discussed category are: the Netherlands (529 million dollars), Spain (342 million dollars), Iraq (325 million dollars) and also, Italy, Poland, France, Great Britain and Egypt.

The war in the Ukraine may deepen a crisis at the global food market. In the media of the whole world, we may find more and more frequent alarming comments of economists and experts dealing with agriculture that invasion of Russian in Ukraine may have severe consequences in the countries situated thousands of kilometres from the war zone. Wheat and other cereals have again been found at the centre of attention of geopolitics after the invasion of Russia in Ukraine. Since 2020, the prices of cereals and oil plants all over the world have increased what was one of the main factors, causing a general increase in the food prices. It results, first of all, from dry weather conditions in the South America and Indonesia which caused poor crops, and from the increasing demand on cereal food products in China and India. Just before the invasion in Ukraine, as compared to the analogical period of 2021, the prices of the products were already increased: corn – by 21%, wheat – by 35%, soya – by 20% and sunflower oil – by 11%. It caused that the prices in 2021 were very high. The food crisis, caused by the Russian invasion may occur to be greater problem for the world the crisis at the energy market. In the rich regions – such as the Northern America and Europe – the rises of the prices will be painful but in the most cases bearable. It may be so because the consumers in the developed countries do not spend a prevailing part of their incomes for food. In the poorer countries where the expenditure for food is the enormous part of the family budget, so the shock connected with it may be more serious.

Since the outbreak of the war in Ukraine, the efforts of the EU, including Poland are undertaken in favour of increasing the capacity of land transport of, *inter alia*, cereals from Ukraine. The mentioned activity is indispensable in order to help Ukraine. The discussed transport is performed, inter alia, via territory of Poland.

Recently, the Ministry of Agriculture and Rural Development has observed the increased import of cereals from Ukraine, in particular of corn (maize).

According to the data of the State Treasure Administration (in Polish: KAS), since February 24 until June 6, the following products were, *inter alia*, imported to Poland:

- 520 thousand tons of maize from Ukraine, in comparison to ca. 1 thousand tons in analogical period of 2021;
- 528 tons of wheat as compared to ca. 1.4 thousand tons in the analogical period of 2021.

A considerable increase of cereal transit via Poland from Ukraine has been also recorded. The data of KAS state that the transit transport from the beginning of the war until 15 May of the present year was as follows:

- 421 thousand tons of corn (increase of transit by 44776% in realtion to the analogical period of 2021;
- 52.3 thousand tons of soya (increase by 6159%);
- 4.9 thousand tons of sunflower (increase by 2496%);
- 396 tons of wheat (decline by 68%).

Table 2 contains the greatest trade partners of Ukraine in respect of all products, being the object of exchange; value of export is given in USD.

Table 2. Trade partners of Ukraine, value of export is given in US dollars
Source: ITC/Trade Map

Country	value, in US dollars
China	7107
Poland	3443
Russia	2707
Turkey	2416
Germany	2097
India	1972
Italy	1931
the Netherlands	1813
Egypt	1618
Belarus	1339
Hungary	1259
Spain	1253
Romania	1087
United States	982
The Czech Republic	823
Indonesia	734
Saudi Arabia	719
Moldova	682
Great Britain	668
France	602

Summing up

We may expect the following situation which may happen in the regions adjacent to Ukraine:

- decrease of demand of the cereals-purchasing entities, due to, *inter alia*, the storage situation and the need to prepare to the purchase of cereals from this year's harvest;
- inflow of the cereals from Ukraine may contribute to the increase of production at the market and supply at the market and decline of prices;
- unstable run of purchase of Polish cereal grain;
- receipt and issuance of not every amount of domestic cereal;
- increase of purchasing activity at the local markets.

The complete unblocking of 20 tons of cereals stored at Ukrainian harbours is a necessity. It must be transported by sea and land to the users in different countries of the world as they need this product very much.

The entities which deal with the purchase of cereals are preparing to the new season of harvesting and the state of storehouses in certain collecting sites is equal to a half of their capacity.

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