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COMPETITIVENESS ON THE GLOBAL OILSEEDS MARKET

Numerous factors influence competitiveness in the global oilseed market, including technological innovations, trade policies, consumer preferences, and pricing strategies.

This article emphasizes the need for further research in this field to enhance understanding and optimize competitiveness in the dynamic oilseed industry. Over the past 25 years, global oilseed production has doubled due to increasing demand for vegetable oils driven by factors such as rising food consumption in developing countries, industrial utilization of vegetable oils, dietary shifts favoring plant-based oils, and biofuel adoption. Oilseeds are not only important for human nutrition but also serve as oilseed meal being crucial for animal nutrition.

The objective of this research is to assess the competitiveness of major oilseed exporters in the market using the Competitiveness Growth Index. The article tests the hypothesis that "the competitiveness of Brazil's soybean exports continues to surpass that of the United States between 2010 and 2020." Empirical methods are used to substantiate this hypothesis, such as revealed comparative advantage and comparison of country values.

The Competitiveness Growth Index is utilized to evaluate the competitiveness of oilseed exports collectively and for each major oilseed among the top six exporters. Through the calculation of the competitiveness growth index, the article demonstrates the increasing competitiveness of Brazilian oilseeds and the declining competitiveness of the United States over a 10-year period. Brazil has emerged as the world's largest oilseed exporter, competing directly with the United States in soybean exports.

In the context of growing trade liberalization, globalization, and reduced agricultural subsidies, the competitiveness of the oilseed sector holds strategic importance. As competition among producer regions intensifies, the significance of competitiveness further amplifies. Ongoing research in this area will contribute to a better understanding of the factors impacting competitiveness in the oilseed market and facilitate strategic decision-making for industry participants.

Key words: Agricultural trade, oilseeds, competitiveness, Brazil, global oilseed market, supply, and demand.

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Әлемдік майлы дақылдар нарығындағы бәсекеге қабілеттілік

Майлы дақылдардың әлемдік нарығындағы бәсекеге қабілеттілікке көптеген факторлар әсер етеді, соның ішінде технологиялық инновациялар, сауда саясаты, тұтынушылардың қалауы және баға стратегиялары.

Бұл мақалада майлы дақылдардың қарқынды дамып келе жатқан саласында бәсекеге қабілеттілікті түсіну мен оңтайландыруды жақсарту үшін осы салада қосымша зерттеулер жүргізу қажеттілігі атап өтіледі. Соңғы 25 жылда дамушы елдерде азық-түлік тұтынудың өсуі, өсімдік майларын өнеркәсіптік пайдалану, Өсімдік майларының пайдасына диетаны өзгерту және биоотынды енгізу сияқты факторларға байланысты өсімдік майларына сұраныстың артуына байланысты әлемдік майлы дақылдар өндірісі екі есе өсті. Майлы дақылдар адамның тамақтануы үшін ғана емес, сонымен қатар жануарлардың тамақтануы үшін де маңызды.

Бұл зерттеудің мақсаты бәсекеге қабілеттіліктің өсу индексін пайдалана отырып, нарықтағы майлы дақылдардың негізгі экспорттаушыларының бәсекеге қабілеттілігін бағалау болып табылады. Мақалада «2010-2020 жылдар аралығында Бразилиядан соя экспортының бәсекеге қабілеттілігі АҚШ-тың бәсекеге қабілеттілігінен асып түседі»деген гипотеза тексеріледі. Бұл

гипотезаны негіздеу үшін эмпирикалық әдістер қолданылады, мысалы, анықталған салыстырмалы артықшылық және елдердің құндылықтарын салыстыру.

Бәсекеге қабілеттіліктің өсу индексі алты ірі экспорттаушы арасында майлы дақылдар экспортының жиынтықта және әрбір ірі майлы дақылдар бойынша бәсекеге қабілеттілігін бағалау үшін пайдаланылады. Бәсекеге қабілеттіліктің өсу индексін есептеу арқылы мақалада Бразилиялық майлы дақылдардың бәсекеге қабілеттілігінің артуы және АҚШ-тың 10 жылдық кезеңдегі бәсекеге қабілеттілігінің төмендеуі көрсетілген. Бразилия соя экспортында АҚШ-пен тікелей бәсекелесетін майлы дақылдардың әлемдегі ең ірі экспорттаушысы болды.

Өсу либерализация жағдайында сауданы, жаһандану және ауылшаруашылық субсидияларының қысқаруы жағдайында майлы сектордың бәсекеге қабілеттілігі стратегиялық маңызға ие. Өндіруші аймақтар арасындағы бәсекелестік күшейген сайын бәсекеге қабілеттіліктің мәні одан әрі артады. Осы саладағы ағымдағы зерттеулер майлы дақылдар нарығындағы бәсекеге қабілеттілікке әсер ететін факторларды жақсырақ түсінуге ықпал етеді және сала қатысушыларының стратегиялық шешімдер қабылдауын жеңілдетеді.

Түйін сөздер: ауылшаруашылық саудасы, майлы дақылдар, бәсекеге қабілеттілік, Бразилия, майлы дақылдардың әлемдік нарығы, сұраныс пен ұсыныс.

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Конкурентоспособность на мировом рынке масличных семян

На конкурентоспособность на мировом рынке масличных культур влияют многочисленные факторы, в том числе технологические инновации, торговая политика, потребительские предпочтения и стратегии ценообразования.

В этой статье подчеркивается необходимость дальнейших исследований в этой области для улучшения понимания и оптимизации конкурентоспособности в динамически развивающейся отрасли масличных культур. За последние 25 лет мировое производство масличных культур удвоилось из-за увеличения спроса на растительные масла, обусловленного такими факторами, как рост потребления продуктов питания в развивающихся странах, промышленное использование растительных масел, изменение рациона питания в пользу растительных масел и внедрение биотоплива. Масличные семена важны не только для питания человека, но также имеют решающее значение для питания животных.

Целью данного исследования является оценка конкурентоспособности основных экспортеров масличных культур на рынке с использованием индекса роста конкурентоспособности. В статье проверяется гипотеза о том, что «конкурентоспособность экспорта сои из Бразилии в период с 2010 по 2020 год продолжает превосходить конкурентоспособность США». Для обоснования этой гипотезы используются эмпирические методы, такие как выявленное сравнительное преимущество и сравнение ценностей стран.

Индекс роста конкурентоспособности используется для оценки конкурентоспособности экспорта масличных культур в совокупности и по каждой крупной масличной культуре среди шести крупнейших экспортеров. Путем расчета индекса роста конкурентоспособности в статье показано повышение конкурентоспособности бразильских масличных культур и снижение конкурентоспособности США за 10-летний период. Бразилия стала крупнейшим в мире экспортером масличных культур, напрямую конкурируя с США в экспорте сои.

В условиях растущей либерализации торговли, глобализации и сокращения сельскохозяйственных субсидий конкурентоспособность масличного сектора имеет стратегическое значение. По мере усиления конкуренции между регионами-производителями значение конкурентоспособности еще более возрастает. Текущие исследования в этой области будут способствовать лучшему пониманию факторов, влияющих на конкурентоспособность на рынке масличных культур, и облегчат принятие стратегических решений участниками отрасли.

Ключевые слова: Торговля сельскохозяйственной продукцией, масличные культуры, конкурентоспособность, Бразилия, мировой рынок масличных культур, спрос и предложение.

Introduction

Since the beginning of this century, the growth of agricultural trade has been facilitated by the reduction of agri-food tariffs, reforms of producer support, and the signing of several trade agreements. Agricultural trade has also been supported by strong economic growth in emerging countries, particularly China, and rising demand for biofuels as countries seek to reduce their carbon footprint and dependence on fossil fuels. This expansion of trade contributed to a more efficient distribution of agricultural production between countries and regions. One of the most dynamic parts of world agriculture was the oilseeds sector. Continued developments in biotechnology and genetic engineering, as well as conventional breeding, provide high-quality seed production that contributes to a significant increase in oilseed production.

The importance of this research lies mainly in pointing out the main exporters in the market for oilseeds and their competitiveness. The topicality of the work is related to the current rising prices of oilseeds, which are influenced by several factors influenced by current geopolitical events.

Materials and methods

The aim of this contribution is to evaluate the competitiveness of the largest exporters on the market for oilseeds using the competitiveness growth index. To achieve this goal, we set the following hypothesis (H):

H: Brazil's Soybean Export Competitiveness Steadily Grows at the Expenditure of US Exports 2010-2020

In our research, we used several general as well as specific research methods. In the results of the work, we mainly drew on the monthly reports for oilseeds issued by the United States Department of Agriculture (USDA). In addition to the USDA, we also drew on data from other international institutions, such as the UN specialized agency, the Food and Agriculture Organization (FAO), and the World Bank. Based on the obtained statistical data, we identified the situation of demand and supply on the market for oilseeds. To achieve results in competitiveness, we used a one-factor indicator, namely the competitiveness growth index (RCA 1), to assess the development of the competitiveness of oilseed exports as a group and then each main oilseed separately, for the six most important oilseed exporters. This index is used in the international economy to calculate the relative advantage or disadvantage of a certain country in a certain class of goods or services.

To prove the hypothesis that "Brazil's competitiveness in the export of soybeans is constantly growing at the expense of exports from the USA," we used empirical methods, namely methods of revealed comparative advantage and comparison, to compare the resulting values of countries. In the thesis, the results are clearly displayed in the form of two tables. Export data were obtained from the database of the International Trade Center (ITC). We worked with the obtained data using the MS Excel program, where all calculations took place. Within this work, export data were classified based on the harmonized system (HS is a standardized numerical method of classifying traded products. Customs authorities worldwide use it to identify products when determining duties and taxes and collecting statistics (ITA, 2022), namely at the two-level level HS 2 in table 3 and table 4, where we used the more detailed tariff classifications HS 4 and HS 6. The calculation of the RCA 1 index looked as follows (Balassa, 1965):

$$\textbf{RCA 1} = (Xic / \sum X.c) / (Xiw / \sum Xw) \quad (1)$$

where: Xic – export of country "c" in commodity group "i"

$\sum Xc$ – total export of country "c"

Xiw – world exports in commodity group "i"

$\sum Xw$ – total world export

If: RCA 1 > 1, then we are talking about an uncovered comparative advantage for country "c". The country is specialized in the export of the given commodity, the higher the index, the greater the advantage.

RCA 1 < 1, then we are talking about a comparative disadvantage for country "c". The country is not specialized in the given commodity, the lower the index, the greater the disadvantage,

RCA = 1, neutral competitiveness, it means no advantage or disadvantage.

In the analysis of comparative advantages, the data of individual countries are referred to another country, a reference group, or the world. As part of this work, we decided to name the data of the selected country as "world data". The Balassa index is based exclusively on export data and indicates the ratio between the specialization of the selected country and, in our case, the specialization of the world. The monitored period was determined to be from 2010

to 2020. First, we quantified the values of RCA 1 for the six largest exporters of oilseeds for each year separately in the specified period. Subsequently, for the same countries, we calculated the RCA 1 values of all seven major oilseeds in 2010 and 2020. In this way, we obtained two resulting tables that revealed comparative advantages for the largest exporters of oilseeds in the observed decade. To evaluate the results, we used the methods of comparison, induction, and deduction.

Literature Review

In recent decades, the demand for vegetable oils has grown, leading to a doubling of the world production of oilseeds in the last 25 years. After cereals, oilseeds are the second-most important crop. The relationship between supply and demand in the overall market for oilseeds influences the price dynamics of basic oilseeds on the international market. Among the main driving forces involved in the increasing interest in oilseeds are the growth of food demand in developing countries, the increased use of vegetable oils for industrial purposes, the replacement of animal fats with vegetable oils in the human diet, the widespread use of biodiesel, and the intensification of animal production. The main component of oil crops is oil, which in many cases represents up to 80% of the value of the crop. Oils are an important source of energy in the human diet. However, in addition to their importance for human nutrition, albeit to a lesser extent, many vegetable oils are used in industry mainly as raw materials for the production of biodiesel. Oil-free meal provides additional value as a by-product of oil extraction and is very important in animal nutrition due to its high protein content (Knežević, 2012). Among oilseeds, soybeans are the major contributor to the world economy, followed by canola, cotton, peanuts, and sunflower. The most important tropical oilseeds include coconut, palm kernel, and peanut. They are grown throughout the world in a variety of climates, but the main oilseed-producing areas are in temperate zones. China is a dominant importer of oilseeds as well as vegetable oils, while Brazil is a major exporter. Both import and export of oilseeds and their oils have seen an increasing trend due to increased demand and supply of these commodities (Sharma, 2011).

According to Porter, the fundamental source of sustainable competitive advantage is long-term above-average performance. The competitiveness of the food industry is defined by Porter as: "the sustained ability to make a profit and maintain market share in domestic and export markets in which the industry is active."

Over the past two decades, trade in oilseeds has more than doubled, and competition between producing regions in the global oilseed sector is increasing. Therefore, we can expect that the further liberalization of world markets, increasing globalization, and reduction of subsidies in the agricultural sector will further emphasize the importance of competitiveness in agriculture. In the context of this development, the competitive production of oilseeds is growing in importance. Competitiveness on commodity markets reflects the influence of many different factors, such as relative resources and agro-climatic conditions, macroeconomic and sector-specific policies, infrastructure, supporting institutions, and a number of other factors determining the relative efficiency of the production of various goods and, consequently, the country's comparative advantage in international trade (Parhomenko, 2004).

Since competitiveness is a broad term and there is no general agreement on how to define it or measure it accurately, studies often adopt their own definitions and choose specific measurement methods. The measurement can identify revealed performance, relying on indicators such as market performance, business success, revealed indicators of comparative advantage, and others (Wijnands, 2015).

The most used indices in the international literature are the Balassa index and its modified versions, as well as different indices related to exports and imports, such as the Grubel-Lloyd index or the trade balance index. All over the world, researchers frequently use revealed comparative advantage (RCA), also known as the Balassa index. The Balassa Index helps link the international trade of theories with competitiveness by using business data to calculate revealed comparative advantage. This index compares the national export share of a given product with the share of international export of the same product in the reference group (Wijnands, 2015). If a country has an RCA value greater than 1, it has a revealed comparative advantage and is assumed to be a competitive producer and exporter of that commodity compared to a country producing and exporting that good at or below the world average. A country with a revealed comparative advantage in each commodity is considered to have the power to export it. The higher a country's RCA value for

a commodity, the higher its export power for that commodity (Unctadstat, 2020).

Following below literature review discusses various aspects of the global oilseed industry, focusing on the dynamics of competition in the production and export of diverse types of oilseeds.

For example, Pilorge (2020) in his paper, provides a comprehensive overview of the sunflower oil sector, highlighting its significant role as the third largest oilseed produced globally. He attributes the sector's resilience to its continuous innovation in genetics, cropping practices, and the pursuit of added value leading to increased market segmentation. Slobodianyk et al. (2021) examine the efficiency of agricultural crop production in Ukrainian enterprises, particularly focusing on sunflower. They observe that price instability hinders the intensification of oilseed yield, increasing risk due to the convergence of price indicators and production costs. The authors advocate for scientifically sound limits on the expansion of the oil and fat industry. Brewin (2021) maintains a positive outlook on the Canadian grains and oilseeds sector despite the COVID-19 pandemic, citing its record farm income in 2020. Factors such as global demand and the absence of significant new trade barriers in cereals and oilseeds contributed to this success.

Tandra (2022) concentrates on the global palm oil trade, noting that despite its central role in various industries, it is characterized by intense competition and complex trade dynamics. Factors determining competitiveness in this sector include population size and imports of other animal or vegetable fats and oils. Dey and Gautam (2023) explore the groundnut sector in India, noting its high nutritional value and economic importance. They observe that despite a decline in the crop's significance over the years, India remains one of the leading exporters of peanuts, with a high potential to export more and strengthen its position in the global groundnut market.

Padilla et al. (2023) focus on the competitiveness of the United States in the export of major agricultural crops including corn, soybean products, cotton, wheat products, and tree nuts. They underline the challenge posed by emerging competitors like Argentina and Brazil and the potential effects of the U.S.'s absence from new free trade agreements since 2012.

These papers collectively underscore the need for continuous innovation, strategic trade agreements, effective marketing strategies, and sound economic policies in ensuring competitiveness in the global oilseed sector.

Results and discussion

Based on data from the FAO organization, we know that in the 2019/2020 marketing year, the total production of oilseeds in the world reached a value of 584.3 million tons (the marketing year combines annual crops harvested in the Northern Hemisphere in the second part of the first year with annual crops harvested in the Southern Hemisphere at the beginning of the second year. For tree crops that are grown throughout the year, production for the second calendar year is used (FAO, 2022). South America had the largest share of production (200.9 million tons), namely Brazil, which produced oilseeds in volumes of up to 128 million tons. Argentina, Paraguay, and Uruguay are also important producers in South America. With a production volume of 144.8 million tons of oilseeds, Asia ranked second. In Asia, the following three countries produced the most oilseeds: China (64.1 million tons), India (41.4 million tons), and Indonesia (13.3 million tons). The next continent with the largest production after South America and Asia is North America, with a volume of 133.5 million tons. The USA (107.7 million tons) and Canada (25.9 million tons) participated in this production. Europe produced 79.1 million tons of oilseeds in 2019/2020. Of this, 30.5 million tons were produced in the European Union, 22.2 million tons in Russia, and 23.4 million tons in Ukraine. In Africa, most notably Nigeria, production was at a level of 20.9 million tons. Smaller shares of world production are observed in Central America and the Caribbean, namely 2 million tons, of which Mexico accounted for more than half, and in Oceania, where production was 3.1 million tons. Of this, Australia produced 2.7 million. tons of oilseeds (FAO, 2021). On the figure 1, we can follow the world's top exporters and importers of oilseeds.

In terms of imports, Asia is the largest importer of oilseeds. For the year 2019/2020, it imported 131.3 million tons of oilseeds from a total import amount of 179.6 million tons. The Asian country that imports the most oilseeds is China. In the monitored period, it imported up to 98.8 million metric tons of oilseeds. Other importers from Asia, although with a significantly smaller share, are Japan (6.1 million tons), Turkey (3.7 million tons), Malaysia (3.1 million tons), and Thailand (3 million tons). After Asia, Europe imports the most oilseeds, especially the European Union, which imported up

to 22.9 million tons of oilseeds from the total import of Europe, which was at the level of 25.9 million tons. As we can see on graph 1.3, Egypt and Mexico are among the other important importers. From the opposite point of view, when it comes to the export of oilseeds, South America is the most important exporter. 99.4 million tons of oilseeds were exported from South America, of which Brazil exported 80.1 million tons, followed by Argentina at 9.5 million tons, Paraguay at 6.5 million tons, and Uruguay at 3 million tons. South America is followed by North America in terms of the volume of exports of oilseeds, with exports worth 63.8 million tons. Of this, 48.8 million were exported to the USA, and the remaining 15 million were exported by Canada. Looking at graph 1.3, in addition to North and South America, we can identify the two largest exporters of oilseeds: Australia, which exported oilseeds in a volume of 1.4 million tons, and Ukraine, with a volume of 5.9 million tons. The export of oilseeds from Ukraine accounted for half of the total export of oilseeds from Europe (FAO, 2021). The following table 1 summarizes the ten largest producers, exporters, and importers of oilseeds for the year 2019/2020.

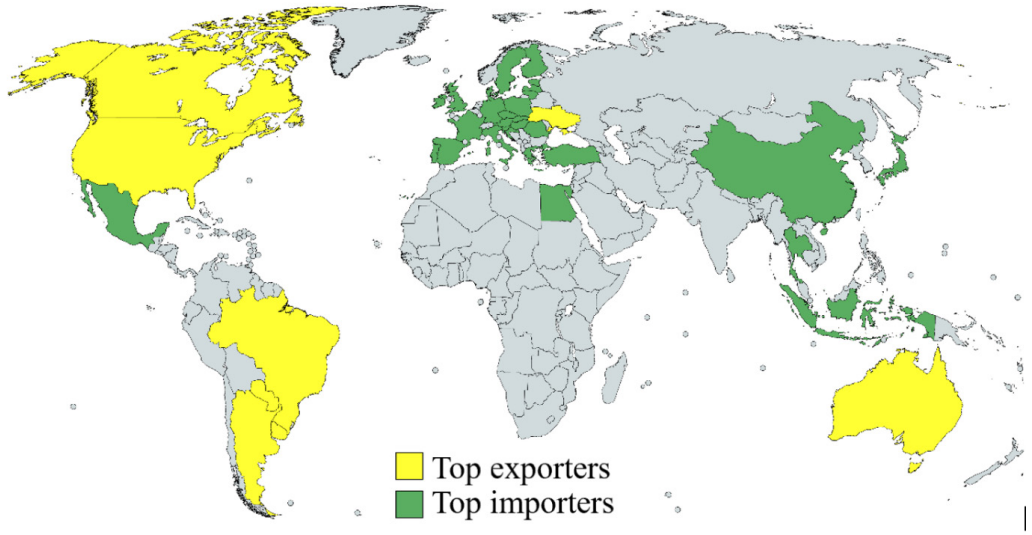

Figure 1 – The world's top exporters and importers of oilseeds in 2020
Note: author's own processing based on data from FAO (2021)

Table 1 – TOP 10 producers, importers, and exporters for the marketing year 2019/2020 (in millions of tons)

	Production		Import		Export	
Order	**Producer**	**Volume**	**Importer**	**Volume**	**Exporter**	**Volume**
1.	Brazil	128	China	98.8	Brazil	80.1
2.	USA	107.7	EU	22.9	USA	48.8
3.	China	64.1	Mexico	7,8	Canada	15
4.	Argentina	55.3	Japan	6.1	Argentina	9.5
5.	India	41.4	Argentina	4	Paraguay	6.5
6.	EU	30.5	Turkey	3.7	Ukraine	5.9
7.	Canada	25.9	Malaysia	3.1	Uruguay	3
8.	Ukraine	23.4	Thailand	3	Mask	2.7
9.	Mask	22.2	Indonesia	2.9	Australia	1.4
10.	Indonesia	13.3	Iran	2.4	India	1.3
Note: author's own processing based on data from FAO (2021).						

Based on the data from Table 1, we can conclude that Brazil and the USA are the two most important world producers and exporters of oilseeds. According to the exported quantity, we can see that these two countries export a large part of their production. Furthermore, Canada exports more than half of its oilseed production. On the contrary, China is the third-largest producer but exports only a minimal number of oilseeds and is also the largest importer of oilseeds. A similar scenario as in the case of China is also observed with the EU and India.

Major players operating in the global oilseed processing market are mainly American companies, and as we can see in Table 2, they are specifically companies such as Archer Daniel Midland Company, Bunge Limited, Cargill, CHS Inc., and Ag Processing Inc. These companies focus on increasing their market presence through expansions and investments, mergers and acquisitions, partnerships, joint ventures, and agreements. They have a strong presence in North America and Europe. They also have manufacturing plants in these regions along with strong distribution networks (Ashmita, 2017).

Table 2 – TOP 10 producers, importers, and exporters for the marketing year 2019/2020 (in millions of tons)

Company name	Origin	Year of origin	Company type
Archer Daniel Midland Company	USA	1902	Agricultural and processing company
Bunge Limited	USA	1818	Agricultural and food company
Cargill	USA	1865	Private food company
CHS Inc. _	USA	1931	A global agricultural enterprise
Ag Processing Inc	USA	1943	Agricultural cooperative
Richardson International Limited	Canada	1857	Private agricultural and food company
Wilmar International Ltd. _	Singapore	1991	Food holding company
ITOCHU Corporation	Japan	1858	Sogo shosha*
Louis Dreyfus Company BV	France	1851	Global trader and processor of agricultural products
EFKO GROUP	Mask	1941	Agricultural and industrial company
Note: author's own processing based on data from FAO (2021).			

*The marketing year combines annual crops harvested in the Northern Hemisphere in the second part of the first year with annual crops harvested in the Southern Hemisphere at the beginning of the second year. For tree crops that are grown throughout the year, production for the second calendar year is used (FAO, 2021).

Within North America, we also include the Canadian company Richardson International Limited. Wilmar International Ltd. is one of the major companies in the oilseeds market originating from Asia. And ITOCHU Corporation. Wilmar International Limited is an agricultural company based in Singapore and is the leading palm oil company in the world in terms of market capitalization (STATISTA, 2021). In Europe, important players are the French merchant Louis Dreyfus Company B.V. and the Russian company EFKO GROUP (fortunebusinessinsights.com, 2020).

Based on the RCA 1 index calculation methodology, we calculated the values for the most important exporters of oilseeds between 2010 and 2020. Table 3 shows the results.

Based on the calculated values of the RCA indicator, we can conclude that the highest comparative advantage of the main six exporters of oilseeds is achieved by Paraguay, followed by Brazil, Argentina, and Ukraine, and the smallest values were obtained for the export of oilseeds from the USA and Canada. However, all countries achieved values above 1, which only proves their competitiveness in the export of oilseeds. It is also interesting to look at the development of the RCA 1 index and compare when the given countries reached the highest values and when they reached the lowest values for the specified period. We can see that in 2010, Brazil had the lowest value, and in 2018, it reached the highest value for that decade. At the same time, the USA and Argentina were in the exact opposite situation in those years. It is

precisely related to the significant increase in the export of soybeans from Brazil, which reduced the competitiveness of the export of soybeans from the USA and Argentina. As we already mentioned in the thesis, the export of soybeans makes up more than 80% of the total export of oilseeds from these three countries. Canada and Paraguay had a share of soybeans in the export of oilseeds of approximately 60%, and we follow almost the same trend as the previous exporters, but slight fluctuations in the years caused the impact of other oilseeds on the competitiveness of Canada and Paraguay. Unlike other major exporters, Ukraine recorded the opposite trend and had the highest value of the index in 2019 and the lowest in 2011. Soybeans make up only 4% of oilseed exports from Ukraine, and therefore the RCA 1 index near Ukraine influenced the development of rapeseed and sunflower seeds.

Table 3 – Index of growth of competitiveness of oilseeds in the years 2010-2020

Year	Brazil	USA	Canada	Argentina	Paraguay	Ukraine
2010	12.37	3.81	3.1	17.37	56,78	4.68
2011	14.39	3.16	3,4	15.42	67.97	4.63
2012	14.49	3.78	3.6	9.34	45.09	5.02
2013	18.53	3.20	3	11.37	51.73	6.05
2014	19.93	3.34	3	11.53	47.55	5.86
2015	20.76	2.94	3.1	15.65	37.97	7.24
2016	18.75	3.39	3.3	11.80	39.68	7.50
2017	21.38	3.05	3.3	9.69	45,43	8.49
2018	26.89	2.59	3.2	5.54	48.76	7.94
2019	22.92	2.82	2.4	12,21	42.71	9.98
2020	22.10	3.44	3.1	9.92	42,47	5.94

Note: author's own processing based on data from the International Trade Center (ITC, 2022).

Table 4 shows us the RCA indices for the main oilseeds in 2010 and 2020 for the main oilseed exporters. All major exporters achieved a comparative advantage in soybeans. Paraguay, Argentina, and Brazil had the highest RCA values for soybeans, and Brazil had the highest value increase over the decade. Other countries either saw a decrease or only a slight increase. For peanuts, Argentina had the largest values and an increase in value compared to 2010. A comparative disadvantage for peanuts was recorded in 2010 in Paraguay and Ukraine. As for canola, the highest comparative advantages are achieved by Canada and Ukraine. In 2010, Brazil had a comparative disadvantage in the export of canola, but in 10 years, it turned into a comparative advantage. The opposite scenario was seen in Paraguay, whose RCA value was decreasing. The USA and Argentina had a comparative disadvantage in canola exports in both years. For sunflower seeds, Paraguay and Ukraine have the biggest comparative advantage, but so do Argentina and Brazil. The export of copra, palm kernel, and cotton seed from the countries of the most important exporters of oilseeds is less important. Data were not published in the ITC database for several years and countries. Data for dill were only available for Brazil and the USA, and in both cases, they were at a comparative disadvantage. For palm kernels in 2020, three countries had a value higher than 1, namely the USA, Brazil, and Canada. Also, for cotton seeds, comparative advantages were revealed for Brazil, the USA, and Argentina. On the contrary, Canada and the USA will be at a disadvantage in the export of sunflower seeds in 2020.

Explanations: the sign "-" means that no data were published for the given year for the given country; ´10 and ´20 are abbreviations for 2010 and 2020.

Based on the nomenclature of the Harmonized System (HS), we assigned codes to the main oilseeds: 1201 – Soybeans, 1202 – Peanuts, 1203 – Copra, 1205 – Rape, 1206 – Sunflower seed, 120710 – Palm kernel, 120720/120729 – Cottonseed, whose code 120720 was used until 2012 and after 2012 code 120729 was used (ITA, 2023).

Table 4 – Index RCA 1 of the main oilseeds of the largest exporters in 2010 – 2020*

Country	Brazil		USA		Canada		Argentina		Paraguay		Ukraine	
Year	‘10	20	‘10	20	‘10	20	‘10	20	‘10	20	‘10	20
1201 Soybeans	20.9	37.3	5.5	4.9	1.3	1.4	27.7	11.7	92.4	68.9	1.3	3.8
1202 Peanuts	2,3	6.5	1.6	1.7	2.6	0.9	28.1	66.6	0.6	2.8	0.4	13.7
1203 Dill	0	0	0.4	0	-	-	-	-	-	-	-	-
1205 Rape	0.1	4.6	0.2	0.1	80	51	0.3	0.3	3,4	0.3	24	32.2
1206 Seed sunflowers	1	4.1	1,2	0.6	0.5	0.3	8	7.2	4.9	32.3	21.8	4.9
120710 Palm kernel	-	14	-	24	0	29	-	0	-	-	-	-
120720/9 Seed cotton	1.3	2.5	4.3	4.4	-	0	1.5	3.3	-	0	-	-
Note: author’s own processing based on data from the International Trade Center (ITC, 2022).												

From the perspective of an exporting country, we can note that Brazil has the largest comparative advantage in soybean exports, and this advantage is still increasing. The USA also has the highest RCA values for soybeans, but unlike Brazil, the value has decreased. Canada has the largest comparative advantage in canola, and its value has decreased over the period under review. The highest RCA values in Argentina were recorded for peanuts, which increased compared to 2010. The situation is similar for Ukraine, whose advantage in the export of rapeseed is the highest and growing. Paraguay was found to have the highest comparative advantage in the export of soybeans.

The hypothesis states that Brazil‘s oilseed export competitiveness is constantly growing at the expense of US exports. By calculating the competitiveness growth index, we have demonstrated the increasing value of the competitiveness of oilseeds from Brazil and, at the same time, decreasing values for the USA. Even in the monitored decade, the USA reached its lowest value when Brazil reached its highest, and vice versa. For a closer analysis, we looked directly at soybean export values since soybean exports account for more than 90% of total oilseed exports in both countries. The two countries are each other‘s biggest competitors in soybean exports. In 10 years, Brazil‘s competitiveness has increased significantly, while US values have decreased. Brazil has become the largest exporter of oilseeds in the world. Based on the above statements, we accept this hypothesis.

Taking into account the results of the work and the evaluated hypotheses, we would take a closer look at the current geopolitical situation and measure the short-term impact of the conflict in the Black Sea on commodity markets. The information system about the agricultural market (Agricultural Market Information System, or AMIS) issued a report on the agricultural market at the beginning of April 2022, which focuses on the most important agricultural commodities, namely wheat, corn, rice, and soybeans.

On the graph 1, we can see the current conditions for growing soybeans for the largest exporters. In Brazil, harvesting takes place in mixed conditions. Compared to last season, yields are expected to decrease due to the lack of precipitation associated with high temperatures during the reproductive stages in the southern region.

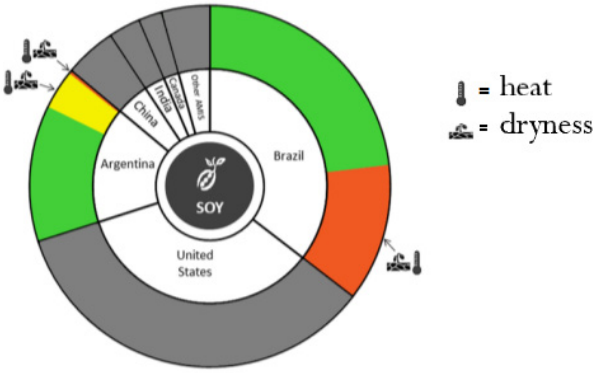

Figure 1 – Conditions for growing soybeans
Note: compiled by the author based on the source AMIS (2022)

In the current situation, countries are also starting to deal with the issue of food self-sufficiency. An example is the Slovak Republic, where in 2022, a memorandum of understanding and cooperation in the production of edible oil from rapeseed was adopted in order to ensure the production of oil in Slovakia. It is related to the fact that only 3% of the total annual consumption of edible oils is produced

in Slovakia. At the same time, up to 440,000 tons of rapeseed are grown annually in Slovakia. They believe that by signing this memorandum, Slovakia will get rid of its dependence on food oils from abroad and become an oil-sufficient country (SITA, 2022).

Conclusion

Based on established research, we used the competitiveness growth index to evaluate the competitiveness of the largest exporters on the market for oilseeds in the period under review, and we came to the following results.

The growing demand for biofuels, especially in China, during the period under review greatly aided agricultural trade, considering that many nations were attempting to reduce their carbon footprint and reliance on fossil fuels. Among the largest producers in the period under review were Brazil, the USA, and China. China, the EU, and Mexico were the biggest importers, while Brazil, the USA, and Canada were the biggest exporters.

Based on the competitiveness index, we came to the conclusion that Paraguay, Brazil, Argentina, and Ukraine achieved the greatest competitiveness in the monitored period. Also, we have shown the increasing value of comparative advantages in the export of soybeans, whereas, on the contrary, the values fell significantly in the monitored period for the USA.

At the same time, we can state that, input costs for arable farmers are also increasing as sanctions against Belarus and Russia have a major impact on fertilizer supply chains. The importance of the Black Sea region for the production of cereals and oilseeds and the disruption of trade flows cause an increase in prices for food companies.

Due to their heavy reliance on supplies of cereals and oilseeds, businesses in the food industry, bakery industry, breweries, and producers of vegetable oils and spreads will be the main victims of higher prices. In some cases, companies will look to possibly reformulate products by replacing sunflower oil with palm oil, for example, to maintain production.

When we talk about the impact of the conflict, it is clear that it has a predominantly negative impact on food and agricultural societies. On the other hand, however, this leads to greater demand and higher prices for cereals and vegetable oils from other regions. For example, Asian producers and suppliers of palm oil and Argentine suppliers of sunflower oil recorded increased demand. It seems reasonable to assume that during the next marketing year of 2022/2023, producers worldwide will certainly be looking for ways to increase production and provide an alternative to declining supply. Increased fertilizer costs, along with availability constraints, pose a real risk to producers from declining crop yields.

Another problem is rising energy prices, which put more pressure on food producers. In the short term, food producers will try to pass on higher energy costs. For companies that are relatively dependent on gas, it may be useful to prepare for a scenario in which energy supplies from Russia to Europe are interrupted (Geiler, 2022). A sharp increase in energy prices could ultimately make investments in energy efficiency more attractive and stimulate companies to switch from gas-powered production processes to other energy sources. It will also depend on whether governments respond with more favorable policies and subsidies. Together, these facts make it difficult to predict future crop prices, which also leads to greater market volatility.

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