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COVID-19 PANDEMIC AND CHANGES IN THE SIZE AND STRUCTURE OF AGRICULTURAL PRODUCTION IN POLAND[2]

Key words: agriculture, COVID-19, agricultural production, purchase of agricultural products, food consumption

ABSTRACT. The aim of the article is to present the changes that have occurred in agricultural production during the COVID-19 pandemic. The subject of the research were the changes in household expenses, food exports and imports, purchases and the volume of agricultural production. The study covers the years 2017-2021, of which the years 2020-2021 constitute the period of the COVID-19 pandemic. Data on GDP, the size and structure of household consumption, exports and imports of food, purchase of agricultural products and agricultural production, as well as prices of food products come from the Central Statistical Office. The study analyzed the structure and dynamics of selected values characterizing households and the agri-food sector. The results obtained indicate that changes in the functioning of the economy, as well as sanitary and administrative restrictions imposed on society during the COVID-19 pandemic may have contributed to an increase in the volume and value of agricultural production and to a change in its product structure. The greater beneficiary of this crisis situation was plant production, where the level of demand from households was relatively consistent with the intensity of the pandemic. However, a negative effect of the pandemic was an increase in the risk of conducting agricultural activities. Changes in consumer preferences related to changes in the severity of the effects of the pandemic and sanitary restrictions on the trade in food products have reduced the level of stability in running farms and exposed them to potential losses resulting from, among others, the inability to sell the produced production.

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INTRODUCTION

The COVID-19 pandemic was the source of the greatest crisis in the global economy since the global financial crisis of 2007-2009. It contributed to a serious slowdown and, in some periods, a complete suspension of economic activity in most countries, including Poland. The effects of the pandemic were so serious that, according to the International Monetary Fund, from the day the pandemic was announced, to the end of March 2021, global public spending on supporting health care systems and helping enterprises and households reached USD 16 trillion [IMF 2021]. The sectors that suffered the greatest losses were: hotel and tourism, retail and commercial real estate, and the annual declines in their global turnover in the second quarter of 2020 amounted to 80%, 60% and 50%, respectively [IMF 2020]. In the first months of the pandemic, the need to undergo long-term quarantine, limited social mobility and disruptions in the functioning of supply chains and sales channels of finished products seriously limited economic activity, mainly in the SME sector [Alves et al. 2021]. The pandemic also severely disrupted agricultural activities [Stephens et al. 2020, Adelodun et al. 2021, Coopmans et al. 2021] and posed a threat to maintaining food security [Torero 2020, Laborde et al. 2021].

RESEARCH MATERIAL AND METHODOLOGY

In Poland, the emergence of the pandemic has had many negative effects on the entire economy, including the production and agricultural sectors. In the first quarter of 2020, uncertainty as to the companies' future ability to conduct profitable business activities resulted in a 46% fall of the WIG broad market index on the Warsaw Stock Exchange and the WIG-Spożywczy covering food sector by 19% [GPW 2023]. In order to stop the downward trends in the economy, pursuant to the Act on special solutions related to the prevention, counteracting and combating of COVID-19 public aid was implemented, addressed specifically to micro and small entrepreneurs [Journal of Laws, 2020.695 and Journal of Laws, 2020.374]. Aid for farms was aimed at reducing their losses and maintaining the continuity of their operations and was implemented through the Agency for Restructuring and Modernization of Agriculture [Journal of Laws, 2020.1467].

On the other hand, the analysis of market data indicates [Szczepaniak et al. 2020] that although the agricultural sector was particularly affected by the crisis during the pandemic but was not threatened by a wave of bankruptcies of enterprises. The increase in demand for food in Poland and abroad, as well as lower costs of agri-food production compared to Western European countries allowed for maintaining the upward trend in the volume of agricultural production. Similarly, Paweł Kraciński [2020] points to the positive effect of the pandemic on fruit and vegetable production and states that to meet the increased

demand for these products, domestic and foreign customers introduced new "contactless" forms of purchasing fruit and vegetables, including: via the Internet, sales platforms and even parcel lockers.

The presented problems motivate to conduct a study to identify the impact of the COVID-19 pandemic on the volume and product structure of agricultural production in Poland. To achieve this goal, it was decided to recognize and assess the changes taking place in Poland during the COVID-19 pandemic in the volume and structure of domestic consumption, exports and imports of food products, purchase of agricultural products and the volume and structure of agricultural production. The research concerns the economic situation of agriculture in Poland in 2017-2021, including 2020-2021, which is the period of the COVID-19 pandemic. The main source of data are publications of the Central Statistical Office, including: household budgets surveys and statistical yearbooks of agriculture.

RESEARCH RESULTS

The COVID-19 pandemic had the strongest negative impact on the Polish economy in the second quarter of 2020. The partial or complete suspension of economic activity by numerous enterprises resulted in the annual GDP growth falling from 3.1% in the first quarter to -7.3% in the second quarter of 2020 year [GUS 2022b]. In the following quarters, the intensity of the pandemic decreased significantly, especially after the implementation of the vaccination program against SARS-CoV-2 in the first quarter of 2021. The excess demand for consumer goods and services released in these conditions contributed to achieving annual GDP growth of 8.7% in the fourth quarter of 2021.

Agricultural production also responded in different ways to the social and economic effects of the pandemic. The transmission channel of this impact was largely the demand from the food industry and households, as well as the export and import of food products. A positive drive for the increase in the volume of agricultural production was a significant increase in the share of food in household expenses in 2020 and 2021. Restrictions on movement and the popularization of remote work and education of children and adolescents contributed to a reduction in the demand of households for clothing and footwear, public transport, recreation and restaurants and hotels. As a consequence, between 2019 and 2021, the value of expenditure *per capita* on food and non-alcoholic beverages increased by approximately 11% and their share in total expenditure from 25.1% to 26.4% (Table 1). At the same time, spending on alcoholic beverages increased by 14%, raising their share in total spending from 2.5% to 2.8%.

In 2020-2021, the pandemic also led to a change in the structure of food consumption by households (Table 2). Decrease in consumption, among others bread (-10%) was accompanied by increases in the consumption of flour (7%), butter (14%), cheese and

Table 1. Average monthly expenses per person in households and their share in total expenses in 2017-2021

Specification	Expenses, current prices [PLN]					
	2017	2018	2019	2020	2021	change 2019/2021 [%]
Total expenses	1,176.44	1,186.86	1,251.73	1,209.58	13,16.09	5.1
– share [%]	100	100	100	100	100	-
Food and non-alcoholic beverages	286.4	294.5	314.4	334.8	347.4	10.8
– share [%]	24.3	24.8	25.1	27.7	26.4	-
Alcoholic drinks	28.1	29.6	31.7	34.8	36.2	14.0
– share [%]	2.4	2.5	2.5	2.9	2.8	-
Clothing and footwear	62.2	58.5	60.5	50.1	58.0	-4.3
– share [%]	5.3	4.9	4.8	4.1	4.3	-
Health	64.8	59.4	64.3	64.0	73.7	14.6
– share [%]	5.5	5.0	5.1	5.3	5.6	-
Transport	102.0	124.0	121.4	106.7	123.6	1.8
– share [%]	8.7	10.5	9.7	8.8	9.4	-
Recreation and culture	81.7	76.9	82.5	69.5	79.6	-3.6
– share [%]	6.9	6.5	6.6	5.7	6.0	-
Education	11.3	12.3	18.8	12.3	14.9	-20.5
– share [%]	1.0	1.0	1.5	1.0	1.1	-
Restaurants and hotels	53.7	58.9	61.4	46.5	54.1	-11.9
– share [%]	4.6	5.0	4.9	3.8	4.1	-
Other expenses	139.6	140.6	146.0	135.1	142.5	-2.4
– share [%]	11.9	11.8	11.7	11.2	10.8	-

Source: own study based on Central Statistical Office data [GUS 2022a]

cottage cheese (9%) and yogurt (7%). The consumption of other popular products also decreased, such as: potatoes (-10%), sugar (-6%), rice (-7%), poultry (-5%), and cold meats and meat products (-3%). Such directions of changes in the product structure of household consumption could result in restrictions on the movement of society, reduced consumption in bars and restaurants, as well as an increase in the amount of consumed food products prepared independently. These changes allow us to conclude that the COVID-19 pandemic has reoriented consumers' food behavior and their demand for food products, which consequently influenced the level of global agricultural production.

Table 2. Average monthly consumption per person in households for 2017-2021

Specification	Consumption per person					
	2017	2018	2019	2020	2021	change 2019/2021 [%]
Rice [kg]	0.15	0.15	0.15	0.15	0.14	-6.7
Bread [kg]	3.31	3.15	2.98	2.75	2.67	-10.4
Flour [kg]	0.63	0.60	0.59	0.70	0.63	6.8
Meat [kg], including:	5.28	5.20	5.08	5.09	4.97	-2.2
– raw meat, including	3.00	2.96	2.87	2.90	2.83	-1.4
– poultry	1.56	1.52	1.53	1.55	1.45	-5.2
– cold cuts and meat products	2.04	2.00	1.97	1.96	1.91	-3.0
Fish and seafood [kg]	0.29	0.28	0.27	0.27	0.28	3.7
Milk [litters]	2.99	2.94	2.87	3.06	2.90	1.0
Yogurts [liter]	0.52	0.52	0.54	0.57	0.58	7.4
Cheese and cottage cheese [kg]	0.86	0.87	0.89	0.95	0.97	9.0
Eggs [pcs.]	11.42	11.09	10.99	11.04	10.80	-1.7
Oils and fats [kg], including	1.11	1.07	1.05	1.08	1.02	-2.9
– butter	0.26	0.25	0.28	0.32	0.32	14.3
Fruit [kg]	3.64	3.75	3.79	3.86	3.95	4.2
Vegetables [kg], including	8.24	7.92	7.61	7.72	7.43	-2.4
– potatoes	3.16	2.97	2.75	2.68	2.47	-10.2
Sugar [kg]	0.93	0.94	0.80	0.84	0.75	-6.3
Mineral waters [liter]	5.16	5.70	5.78	5.83	5.93	2.6
Juices (fruit and vegetables) [liter]	0.97	0.99	1.04	1.11	1.14	9.8

Source: own study based on Central Statistical Office data [GUS 2022a]

The results of agricultural farms during the COVID-19 pandemic were significantly influenced by the increased export and import activities of enterprises. As a result, between 2019 and 2021, the value of exports and imports of food products increased by 27% and 30%, respectively. During this time, unlike the industrial processing sector, the food sector recorded an increase in the value of exports of over twenty billion zloty, while maintaining the current product structure. At the end of 2021, among the main export products, the most important goods, with a share of 16%, were products made of cereals, flour, starch or milk and confectionery, followed by products made of meat, fish or crustaceans, molluscs and

Table 3. Exports and imports of major groups of food products in 2017-2021

Specification	Exports and imports in years					
	2017	2018	2019	2020	2021	change 2019/2021 [%]
	Export [PLN billion]					
Preparations of cereals, flour, starch or milk, confectionery	9.9	10.5	12.0	13.1	14.5	21
– share [%]	16.7	16.2	16.8	16.1	16.0	-
Preparations of vegetables, fruit, nuts or other plant parts	5.2	5.9	6.0	6.2	7.3	23
– share [%]	8.8	9.1	8.4	7.6	8.0	-
Preparations of meat, fish or crustaceans, molluscs and other aquatic invertebrates	6.7	7.3	7.7	8.8	9.9	28
– share [%]	11.3	11.2	10.8	10.8	10.9	-
The remaining	37.5	41.2	45.8	53.4	59.1	29
– share [%]	63.2	63.5	64.1	65.5	65.1	-
	2017	2018	2019	2020	2021	change 2019/2021 [%]
	Import [PLN billion]					
Preparations of cereals, flour, starch or milk, confectionery	3.6	3.6	3.8	4.3	5.0	31
– share [%]	10.9	10.3	10.1	9.8	10.2	-
Preparations of vegetables, fruit, nuts or other plant parts	3.1	3.3	3.6	4.0	4.5	25
– share [%]	9.4	9.4	9.5	9.1	9.2	-
Preparations of meat, fish or crustaceans, molluscs and other aquatic invertebrates	1.0	1.0	1.2	1.5	1.7	36
– share [%]	3.0	2.9	3.2	3.4	3.5	-
The remaining	25.2	27.1	29.2	34	37.9	30
– share [%]	76.6	77.4	77.3	77.6	77.2	-

Note: share – means the share of a given group of products in the total amount of exports or imports of food products

Source: own study based on Central Statistical Office data [GUS 2022b]

other aquatic invertebrates (11%) and processed vegetables, fruits, nuts or other plant parts (8%). Among the imported food products, the most important items were also products made of cereals, flour, starch or milk and confectionery (10%), as well as products made of vegetables, fruit, nuts or other parts of plants (9%).

Changes in food prices were important for changes in the volume and product structure of global agricultural production during the COVID-19 pandemic (Figure 1). Both in the case of animal and plant products, the increase in prices of most types of products was higher than the average increase in prices of consumer goods and services in the first year of the pandemic, i.e. in 2020. It can be concluded that the easing of most sanitary and administrative restrictions has become a source of additional demand for durable goods and services and contributed to a greater increase in their prices compared to food products.

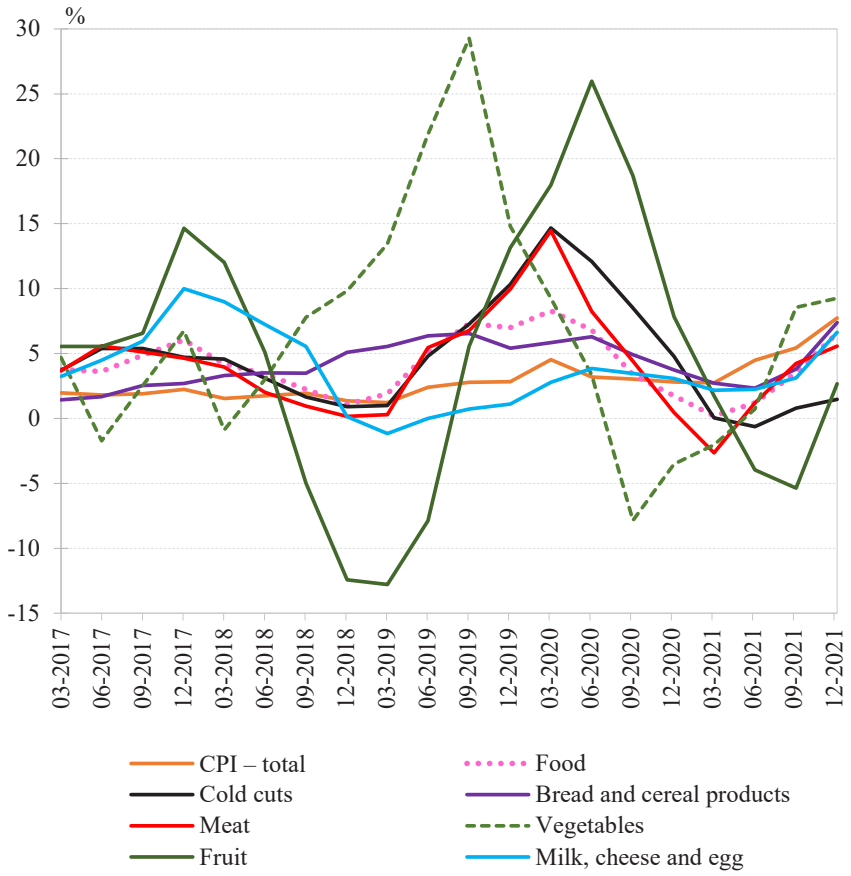

Figure 1. Consumer price index of food products in 2017-2021

Source: own study based on Central Statistical Office data [GUS 2022b]

The COVID-19 pandemic, by stimulating consumer demand as well as the export of food products, has led to significant changes in the volume and structure of the purchase of agricultural products. In 2020, its value increased by 2% compared to the previous year, with an increase of 10% in the case of plant products and a decrease of 1% in the case of animal products (Table 4). Among plant products, the demand for basic cereals increased the most, including triticale (an increase of 54%) and barley (28%), legumes

Table 4. Purchase value of agricultural products

Specification	Purchase value, current prices [PLN million]					
	2017	2018	2019	2020	2021	change 2019/2021 [%]
Total	65,308	64,243	65,594	67,114	75,843	15.6
Plant products, including:	19,545	19,080	19,152	21,124	24,246	26.6
– wheat	5,165	4,392	3,923	5,124	5,489	39.9
– rye	505	487	522	710	770	47.5
– barley	522	498	493	633	752	52.5
– oat	60	80	64	91	85	32.8
– triticale	488	604	589	914	979	66.2
– corn	1,317	1,629	1,573	1,873	2,581	64.1
– legumes for consumption	39	40	26	40	33	26.9
– potatoes	673	735	909	868	947	4.2
– sugar beets	1,408	1,560	1,539	1,450	1,811	17.7
– rapeseed and turnip rape	2,728	2,463	2,582	3,103	3,501	35.6
– vegetables	1,808	2,208	2,220	1,781	2,087	-6.0
– fruit	3,299	2,923	3,271	3,504	3,955	20.9
– other plant products	1,533	1,461	1,441	1,033	1,256	-12.8
Animal products, including:	45,763	45,162	46,442	45,989	51,596	11.1
– cattle	5,957	5,941	5,065	4,968	5,630	11.2
– calves	64	58	53	36	46	-13.2
– pigs	11,388	10,628	11,597	11,940	12,232	5.5
– sheep	13	16	17	18	23	32.0
– poultry	11,606	11,884	12,731	11,474	13,546	6.4
– cow milk	15,731	15,633	15,999	16,738	19,087	19.3
– chicken eggs	206	164	188	120	233	23.9
– other animal products	798	838	792	696	799	0.9

Source: own study based on Central Statistical Office data [GUS 2022b]

(54%) and rapeseed (20%). The reason for the decrease in the purchase of animal products was, among others, a reduction in demand for chicken eggs by 36%, calves by 32% and poultry by 10%.

The purchase of animal products intensified significantly in the second year of the pandemic, i.e., in 2021, and its annual increase amounted to 12%, and approached the increase in the purchase of plant products of 15%. The purchase value of chicken eggs increased the most, by 94%. The values of purchased calves, poultry, milk and cattle increased by 27%, 18%, 14% and 13%, respectively. However, the value of pigs purchased in 2021 remained almost unchanged compared to the previous year. The effect of changes in the purchase structure of agricultural products in 2020-2021 was an increase in the share of plant products in the total value of purchased agricultural products from 29% to 32%. Among individual products, a significant increase in the share in the total purchase value of products such as: wheat (up to 7.2%), corn (up to 3.4%) and milk (up to 25%) should be noted. However, a significant decrease in the share of purchases during the pandemic was recorded for pigs (up to 16%) and poultry (up to 18%). The share in total purchases of other agricultural products has not changed noticeably during the pandemic.

When assessing the changes in the volume structure of the purchase of agricultural products, it should be concluded that they were of a similar nature to changes in the value structure of the purchase. In 2020, the largest increase was observed in the quantities of purchased cereals, including primarily triticale (60%), oats (54%), rye (46%) and barley (36%). In the volume terms, changes in the purchase of animal production were also much less favorable than those of plant production (Table 5). Among others, the purchase volume of chicken eggs decreased by 36% and calves by 20%. However, the dynamics of changes in the volume of purchased animal products reversed in the second year of the pandemic, when, compared to the previous year, 68% more chicken eggs and 10% more pigs were purchased. In 2021, the volume of purchased plant products decreased, which, among others, was related to a decrease in the purchase of legumes by 31%, rapeseed by 20%, rye by 19%, triticale by 19%, wheat by 17% and oats by 15%. The decline in the volume of purchases of plant products was mitigated by increases in purchased fruit by 22%, vegetables by 8% and potatoes by 7%.

Changes in the volume of purchases that took place during the COVID-19 pandemic strongly shaped the volume and structure of global agricultural production. The response of farms to the increase in demand for plant products was to increase their production. This was particularly noticeable in the first year of the pandemic, when the value of plant production increased by 14%, while animal production decreased by 1%. The higher growth rate in the value of plant production (7%) compared to animal production (5%) also continued in the second year of the pandemic. As a result, during the COVID-19 pandemic, the share of plant production in global production increased by 4.5 percentage points, to 52%, and animal products decreased to 48% (Table 6).

Table 5. Volume of purchased major agricultural products

Specification	Purchase volume [thousand tons]					
	2017	2018	2019	2020	2021	change 2019/2021 [%]
Wheat	7,768	6,042	5,423	6,829	5,669	4.5
Rye	922	810	863	1,259	1,019	18.1
Barley	851	729	730	991	960	31.5
Oat	114	134	102	157	133	30.4
Triticale	833	911	907	1,455	1,178	29.9
Corn	2,416	2,623	2,624	3,116	3,209	22.3
Legumes for consumption	17	13	12	13	9	-21.0
Potatoes	1,819	1,727	1,559	1,938	2,081	33.5
Sugar beets	14,724	14,823	14,419	14,242	14,803	2.7
Rapeseed and turnip rape	1,730	1,585	1,657	1,893	1,519	-8.3
Vegetables	1,848	1,831	1,606	1,524	1,643	2.3
Fruit	2,086	3,150	2,746	2,462	3,005	9.4
Cattle	938	904	800	776	738	-7.8
Calves	6	6	5	4	4	-19.2
Pigs	2,255	2,374	2,153	2,329	2,555	18.7
Sheep	2	2	3	3	3	0.0
Poultry	3,144	3,153	3,263	3,264	3,240	-0.7
Cow's milk [million liters]	11,313	11,614	11,828	12,109	12,163	2.8
Chicken eggs [million pcs.]	767	750	823	525	882	7.2

Source: own study based on Central Statistical Office data [GUS 2022b]

The analysis of changes in the production value of individual groups of global agricultural production allows us to conclude that the increased demand during the COVID-19 pandemic, among others, for cereals, rapeseed, legumes and fruit contributed to an increase in the production of total cereals by 50%, wheat by 48%, rye by 23%, industrial plants by 34% and fruit by 36%. In turn, the decreased demand for animal products meant that the value of their production increased only slightly and in the case of slaughter animals and chicken eggs it decreased by 1% and 6%, respectively. Assessing all segments of agricultural animal production, it can be concluded that the COVID-19 pandemic had the strongest negative impact on the production of calves and pigs (decrease by 11% and 10%, respectively), and positively on the production of milk and cattle (increase by 19% and 10%, respectively).

Table 6. Global agricultural production by products

Specification	Production, current prices [PLN million]					
	2017	2018	2019	2020	2021	change 2019/2021 [%]
Global production	115,611	113,150	119,645	126,572	134,821	12.7
Plant production	56,106	52,778	56,832	64,698	70,076	23.3
Cereals, including	18,739	17,315	19,162	22,694	28,663	49.6
–wheat	7,601	6,967	7,877	9,334	11,665	48.1
– rye	1,469	1,294	1,544	1,705	1,901	23.1
– barley	2,193	1,991	2,217	1,817	2,309	4.1
– other cereals	7,476	7,063	7,524	9,838	12,788	70.0
Potatoes	4,686	3,955	5,173	4,262	4,310	-16.7
Industrial plants, including:	7,176	6,413	6,387	8,460	8,569	34.2
– sugar beets	2,355	2,228	1,872	2,103	2,426	29.6
– other industrial	4,821	4,184	4,519	6,357	6,142	35.9
Vegetables	10,077	10,426	11,945	11,558	11,445	-4.2
Fruit	6,092	6,152	6,098	11,087	8,287	35.9
Meadow hay	1,848	1,634	1,628	1,780	1,758	8.0
Other plant products	7,488	6,883	6,439	4,857	7,044	9.4
Animal production	59,505	60,372	62,812	61,873	64,744	3.1
Livestock for slaughter, including:	32,829	33,258	35,644	33,969	35,390	-0.7
– cattle	6,918	7,160	7,048	6,767	7,720	9.5
– calves	78	67	63	47	56	-11.1
– pigs	13,322	12,433	14,041	13,368	12,619	-10.1
– sheep	17	19	23	24	30	30.4
– poultry	12,273	13,374	14,270	13,584	14,777	3.6
Cow milk	18,514	18,556	19,082	19,934	22,747	19.2
Chicken eggs	5,827	6,347	6,371	6,378	5,970	-6.3
Other animal products	2,335	2,211	1,715	1,592	637	-62.9

Source: own study based on Central Statistical Office data [GUS 2022b]

SUMMARY AND CONCLUSIONS

The COVID-19 pandemic has caused a global economic crisis and negatively affected the Polish economy. In the case of the agricultural sector, the impact of the pandemic varied both in terms of the stage of development of the pandemic and the type of agricultural production.

In the first year of the pandemic, restrictions on movement and the spread of remote work and education contributed to an increase in household expenditure on food, which, combined with an increase in the export of food products, could contribute to an increase in volume and value of purchase and global agricultural production. In turn, the improvement of the sanitary and epidemiological situation released consumer demand for durable goods, weakening the demand for food and, consequently, the growth dynamics of purchase and global agricultural production. These changes were particularly reflected in the significant, in contrast to the decline in the industrial processing sector, increase in agricultural value added in 2020.

The shift in consumer preferences towards food of plant origin, especially noticeable in the initial stages of the pandemic, contributed to an increase in the share of plant production in the purchasing structure and global agricultural production.

The results obtained allow to conclude that the changes in the functioning of society and the economy caused by the pandemic could contributed to the growth, especially in 2020, of volume and value of purchase and global production of the entire agricultural sector. The greater beneficiary of this crisis situation turned out to be plant production, for which demand from households was relatively consistent with the severity of the pandemic.

However, the negative effect of the pandemic was an increase in the risk of conducting agricultural activities. Changes in consumer preferences related to changes in the intensity of the impact of the pandemic or sanitary restrictions in the trade in food products reduced the level of stability in running farms and exposed them to potential losses resulting from, among others, inability to sell the produced production.

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PANDEMIA COVID-19 A ZMIANY WIELKOŚCI I STRUKTURY PRODUKCJI ROLNICZEJ W POLSCE

Słowa kluczowe: rolnictwo, COVID-19, produkcja rolnicza, skup produktów rolnych, spożycie żywności

ABSTRAKT. Celem artykułu jest przedstawienie zmian, które zaszły w produkcji rolniczej w okresie pandemii COVID-19. Przedmiotem badań były zmiany wydatków w gospodarstwach domowych, eksportu i importu żywności oraz skupu i wielkości produkcji rolniczej. Badaniami objęto dane za lata 2017-2021, z których lata 2020-2021 stanowiły okres pandemii COVID-19. Dane dotyczące PKB, wielkości i struktury spożycia w gospodarstwach domowych, eksportu i importu żywności, skupu produktów rolnych i produkcji rolniczej, a także cen produktów spożywczych pochodziły z GUS. Zastosowano analizę porównawczą struktury i dynamiki wybranych wielkości charakteryzujących gospodarstwa domowe i sektor rolno-spożywczy. Wyniki badań wskazują, że zmiany w funkcjonowaniu gospodarki, a także restrykcje sanitarne i administracyjne nałożone na społeczeństwo w trakcie pandemii COVID-19 mogły przyczynić się do wzrostu wolumenu i wartości produkcji rolniczej oraz do zmiany jej struktury asortymentowej. Większymi beneficjentami tej kryzysowej sytuacji były gospodarstwa rolnicze nastawione na produkcję roślinną, w przypadku której poziom popytu ze strony gospodarstw domowych był w miarę spójny z intensywnością pandemii. Negatywnym skutkiem pandemii był natomiast wzrost ryzyka w prowadzeniu działalności rolniczej. Zmiany preferencji konsumentów związane ze zmianami w nasileniu skutków pandemii i obostrzeniami sanitarnymi w obrocie produktami spożywczymi obniżyły poziom stabilności w prowadzeniu gospodarstw rolnych i naraziły je na potencjalne straty wynikające m.in. z braku możliwości sprzedaży wytworzonej produkcji.

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