

Dr hab. inż. Jadwiga TOPCZEWSKA

Dr inż. Małgorzata ORMIAN

Dr inż. Anna AUGUSTYŃSKA-PREJSNAR

Department of Animal Production and Poultry Products Evaluation, Collage of Natural Sciences, University of Rzeszow, Poland

Zakład Produkcji Zwierzęcej i Oceny Produktów Drobiarskich, Kolegium Nauk Przyrodniczych, Uniwersytet Rzeszowski, Polska

## TRADE IN SELECTED RAW MATERIALS OF ANIMAL ORIGIN IN THE EU®

### Obrót wybranymi surowcami pochodzenia zwierzęcego w UE®

**Key words:** trade, meat, milk.

*The aim of the work presented in the article was to assess the scale of trade in raw materials of animal origin as part of trade between the European Union and third countries. The research material consisted of data published by the European Union in 2016–2020 within the TRACES system and trade data of the World Bank (World Integrated Trade Solution). Meat trade in the world far outweighs other raw materials and products of animal origin. It has accounted for no less than 43% of trade in recent years. Meat exported from the European Union is mainly beef, pork and poultry. The world dairy market is dominated by a small number of countries, with EU member states accounting for more than a third of world exports. It should be noted that international trade in animal raw materials, which amounted to 152 billion euros in 2018, is dominated by exports from several countries, including the EU.*

**Słowa kluczowe:** handel, mięso, mleko.

*Celem pracy przedstawianej w artykule była ocena skali obrotu surowcami pochodzenia zwierzęcego w ramach wymiany handlowej między Unią Europejską a krajami trzecimi. Materiał badawczy stanowiły dane publikowane przez Unię Europejską w latach 2016-2020 w ramach systemu TRACES oraz dane handlowe Banku Światowego (World Integrated Trade Solution). Obrót mięsem na świecie zdecydowanie przeważa nad innymi surowcami i produktami pochodzenia zwierzęcego. Stanowił on w ostatnich latach nie mniej jak 43% wymiany handlowej. Mięso eksportowane z Unii Europejskiej to głównie mięso wołowe, wieprzowe oraz drobiowe. Światowy rynek produktów mleczarskich jest zdominowany przez niewielką liczbę krajów, a państwa członkowskie UE mają udział w ponad jednej trzeciej światowego eksportu. Należy podkreślić, że międzynarodowy handel surowcami pochodzenia zwierzęcego, który w 2018 roku wynosił 152 mld euro, jest zdominowany przez eksport z kilku krajów, w tym z UE.*

## INTRODUCTION

The transport of raw materials and products of animal origin is one of the greatest logistic challenges, mainly because consumer safety depends on its proper organization. The transport of raw materials and animal products is one of the most important logistical challenges, mainly because consumer safety depends on its correct organisation. It must be carried out efficiently, in a timely manner and in compliance with the legal requirements [9]. In connection with many regulations on the transport of raw materials and animal products, the transport must take into account a number of devices and systems that protect the products during transport and marketing [10, 12]. The European Union is the world's leading exporter of animal products (32.4 billion euros in 2018 or 23% of total agro-food exports) [2].

The aim of this study was to assess the scale of trade in selected raw materials of animal origin, as part of the trade of the European Union.

## MATERIALS AND METHODS

The research material consisted of data published by the European Union from 2016 to 2020 and trade data from the World Bank [13]. In terms of data from the TRACES system, the number of export certificates issued and import veterinary certificates for raw materials of animal origin, such as meat and milk, was used. TRACES is an IT system for control and notification of movements of live animals and products of animal origin across the territory of the member states of the European Union. At the same time, the system is a centralized database maintained by the Directorate General for Health and Consumer Protection of the European Commission (EC). TRACES makes it possible to certify and monitor trade [14]. It makes it possible to track the movement of live animals, raw materials and products of animal origin both from third countries and within the EU. It is a database of information for border inspection posts, allowing the exchange of data, including veterinary information, between authorized

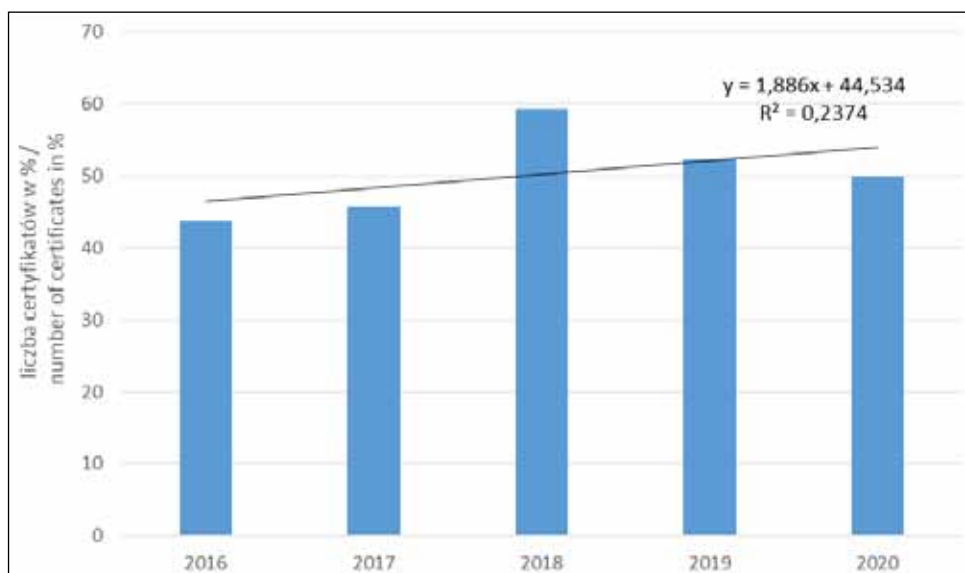
entities [6]. The World Bank's trade software, on the other hand, allows searching international trade databases [13]. The study determined the direction of the change and its magnitude by determining the trend line and the fit index. Statements were made using the Excel package.

## RESULTS AND DISCUSSION

Analysis of raw material and animal product exports shows that EU animal product exports are mainly dairy products (52% of the total in 2018) and pork (22%). The evolution of the parity between different currencies affects the EU's ability to market (or not) its products internationally. For example, the value of the Brazilian real and the Argentine peso has fallen against the euro. Both countries have been subject to constant currency devaluation for many years, giving them an export advantage. However, the euro/dollar exchange rate has changed significantly during the period, from 0.86 in January 2002 to 1.57 in July 2008, 1.07 in January 2017, and 1.21 in December 2020 [2].

Meat is by far the most traded commodity and animal product in the world. It has accounted for no less than 43% of trade in recent years (Fig. 1). Meat exported from the European Union is mainly beef, pork and poultry Bulkowska [1], analyzing the position of animal products in the agro-food trade in Poland, found that restrictions resulting from the embargo imposed by Russia in 2014, among others on meat and dairy products, and the suspension of Polish pork imports by Asian countries as a result of the detection of ASF in Poland, affected the pork sector to the greatest extent and led to a reduction in Polish exports of this type of meat.

Approximately two-thirds of EU animal product exports are directed to no more than 15 countries. China has become the largest customer in the European Union [13], with imports increasing tenfold between 2000 and 2018 (€7.8 billion). The country represented 24% of EU exports of animal products in 2018. This ratio is approximately 31% for pork, 26% for dairy products, 12% for poultry meat, and 17% for beef [2].

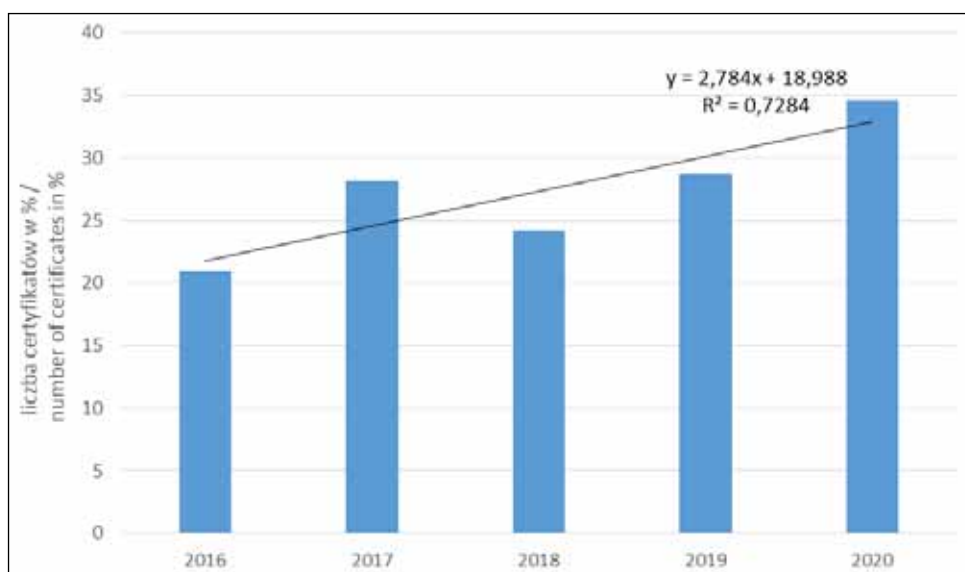


**Fig. 1. TRACES certificates for meat exports from 2016 to 2020 (%).**

**Rys. 1. Świadectwa w systemie TRACES dla eksportu mięsa w latach 2016-2020 (%).**

**Source:** Own elaboration based on [14]

**Źródło:** Opracowanie własne na podstawie [14]



**Fig. 2. TRACES issued veterinary certificates for milk exports from 2016 to 2020 (%).**

**Rys. 2. Świadectwa weterynaryjne wystawione w systemie TRACES dla eksportu mleka w latach 2016-2020 (%).**

**Source:** Own elaboration based on [14]

**Źródło:** Opracowanie własne na podstawie [14]

The United States is the second largest customer in terms of animal products from the European Union, accounting for 8% of total European exports. More than 55% are dairy products and 23% are pork. Japan is third (7% of EU exports), mainly due to imports of pork (65% of purchases) and dairy products (26%). Russia, on the other hand, has lost importance in trade with the EU due to the embargo [3].

Europe's milk exports have been a success, with the number of veterinary certificates issued increasing by more than 20% in five years to almost 35% and maintaining an

upward trend (Fig. 2). The European Union is a very important milk producer in the world. The cow population decreased by an average of 0.5% in the European Union in 2017 compared to 2004, which could be due to restructuring processes in the agriculture of many countries. It is estimated that mainly owners of small farms gave up milk production, while this decrease was offset by an increase in milk yields of cows. The increase in milk exports may be due to the healthy lifestyle and awareness of nutrition of consumers. Another aspect that may affect the increase in milk exports is the growing demand for milk in China and other Asian or African countries [8]. The global dairy market is dominated by a small number of countries, mainly the EU (34% of global exports by value in 2018), New Zealand (20%) and the United States (10%) [2]. In 2019, the largest exporters of dairy products for the milk and cream category (by weight) are the Netherlands (\$245,180.24 thousand, 233,773 thousand kg), Saudi Arabia (\$201,286.89 thousand, 216,226 thousand kg), Germany (\$123,753.27 thousand, 384,184 thousand kg), Belgium (\$61,349.75 thousand, 41,335,700 kg [13]. The United States, which has historically exported small amounts of dairy products, has expanded its exports primarily to neighboring countries, including Mexico [8].

International trade and the movement of goods and people allow the worldwide movement of animal diseases and zoonotic pathogens [5, 11]. Trade in animal material and live animals carries the risk of reintroduction of previously eradicated animal diseases into the European Union, since significant amounts of food products of animal origin (POAO) from endemic countries are continuously legally and illegally imported into the EU. At the same time, these products may be potential carriers of new foodborne zoonoses that pose a public health risk due to morbidity and significant mortality. Research by Jansen et al. [5] showed that *Listeria monocytogenesi* and *Staphylococcus aureus* were the pathogens most commonly detected in illegally imported meat and meat products (5% and 4.3%, respectively) and *S. aureus* in milk and milk products (7.4%). The most likely source of these zoonotic pathogens in illegally imported POAO is cross-contamination and inadequate hygiene measures during milk handling, processing and storage.

International trade in animal products, which amounted to € 152 billion in 2018, is dominated by exports from several countries, including the EU, the US, New Zealand, Brazil, and Australia. Exporters' strategies vary; for example, Brazil or New Zealand, are successful in terms of "price competitiveness", while others, including EU member states, aim to strengthen "nonprice competitiveness" (e.g., high quality or regional and/or traditional products, degree of product processing, etc.). With a trade balance of €23 billion

in animal products in 2018, the EU contributes to the supply of Asian countries, which have a large deficit in this area (minus €63 billion).

Forward-looking analyses by the OECD and FAO to 2029 highlight in their projections for the global livestock sector [7] that the annual growth rate will decline over the next 10 years compared to the last decade. This will be driven by global population growth, while varying between continents and countries and being higher in developing countries. Possible changes in annual per capita calorie intake due to dietary changes are also indicated.

According to estimates, global meat production is expected to increase by approximately 12% by 2029. For dairy products, the increase in world production will be about 16%. The world meat trade is projected to increase by about 12% during the same period. In the dairy sector, trade growth is expected to be higher, with a continued high share of the three main export zones (EU, New Zealand and the United States) [2]. This is due in part to projections of population growth. The global population is projected to grow to 9.7 billion by 2050, an increase of approximately one-third compared to 2015 [4].

## CONCLUSION

The analysis of the scale of trade in animal products in the European Union from 2016 to 2020 indicated differences between the different types of items entered in TRACES and fluctuations in the scale of trade. Meat exported from the European Union is mainly beef, pork, and poultry. The world market for dairy products is dominated by a small number of countries, with EU member states accounting for more than one third of world exports. It should be noted that in international trade in animal products, which amounted to 152 billion euros in 2018, EU member states had a significant share.

## PODSUMOWANIE

Analiza skali obrotu produktami pochodzenia zwierzęcego w Unii Europejskiej w latach 2016-2020 wskazała na różnice między poszczególnymi rodzajami pozycji wpisywanych w system TRACES oraz wahaniami skali obrotu. Mięso eksportowane z Unii Europejskiej to głównie mięso wołowe, wieprzowe oraz drobiowe. Światowy rynek produktów mleczarskich jest zdominowany przez niewielką liczbę krajów, a państwa członkowskie UE mają udział w ponad jednej trzeciej światowego eksportu. Należy podkreślić, że w międzynarodowym handlu produktami zwierzęcymi, który w 2018 roku wynosił 152 mld euro, państwa członkowskie Unii Europejskiej miały znaczący udział.

## REFERENCES:

- [1] **BULKOWSKA M. 2017.** „Pozycja produktów pochodzenia zwierzęcego w polskim handlu rolno-spożywczym”. Roczniki Naukowe Stowarzyszenia Ekonomistów Rolnictwa i Agrobiznesu 5: 54–59.

## REFERENCES

- [1] **BULKOWSKA M. 2017.** “Pozycja produktów pochodzenia zwierzęcego w polskim handlu rolno-spożywczym”. Roczniki Naukowe Stowarzyszenia Ekonomistów Rolnictwa i Agrobiznesu 5: 54–59.

- [2] CHATELLIER V. 2021. "International trade in animal products and the place of the European Union: main trends over the last 20 years." *Animal* 15: 100289.
- [3] CHEPTEA A., C. GAIGNÉ. 2020. "Russian food embargo and the lost trade". *European Review of Agricultural Economics* 47: 684–718.
- [4] HENCHION M., A.P. MOLONEY, J. HYLAND, J. ZIMMERMANN, S. MCCARTHY. 2021. "Review: Trends for meat, milk and egg consumption for the next decades and the role played by livestock systems in the global production of proteins". *Animal* 15: 1–14.
- [5] JANSEN W., A. MUELLER, N.T. GRABOWSKI, C. KEHRENBERG, B. MUYLKENS, S. AL DAHOUK. 2019. "Foodborne diseases do not respect borders: zoonotic pathogens and antimicrobial resistant bacteria in food products of animal origin illegally imported into the European Union". *The Veterinary Journal* 244: 75–82.
- [6] KLETER G., S. MCFARLAND, A. BACH, U. BERNABUCCI, P. BIKKER, L. BUSANI, E. KOK, K. KOSTOV, A. NADAL, M. PLA, B. RONCHI, M. TERRE, R. EINSPANIER. 2018. "Surveying selected European feed and livestock production chains for features enabling the case-specific post-market monitoring of livestock for intake and potential health impacts of animal feeds derived from genetically modified crops". *Food and Chemical Toxicology* 117: 66–78.
- [7] ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT (OECD) and Food and Agriculture Organization (FAO) (OECD-FAO). 2020. *OECD and FAO Agricultural Outlook 2020–2029*. OECD Publishing, Paris, France.
- [8] PARZONKO A., P. BÓRAWSKI. 2021. "Global changes in international dairy trade in 2005-2018 with special emphasis on Poland. W: Challenges in the milk market (investments, disruptions, logistics, competitiveness, prices, and policy)". Pod red. Bórawski P., Parzonko A., Żuchowski I. Wydawnictwo Ostrołęckiego Towarzystwa Naukowego im. Adama Chętnika, Ostrołęka: 15–34.
- [9] ROZPORZĄDZENIE RADY (WE) NR 1/2005 z dnia 22 grudnia 2004 r. w sprawie ochrony zwierząt podczas transportu i związanych z tym działań oraz zmieniające dyrektywy 64/432/EWG i 93/119/WE oraz rozporządzenie (WE) nr 1255/97.
- [10] ROZPORZĄDZENIE (WE) nr 853/2004 Parlamentu Europejskiego i Rady z dnia 29 kwietnia 2004 r. ustanawiającego szczególne przepisy dotyczące higieny w odniesieniu do żywności pochodzenia zwierzęcego (Dz. Urz. UE L 139 z 30.04.2004)

- [2] CHATELLIER V. 2021. "International trade in animal products and the place of the European Union: main trends over the last 20 years." *Animal* 15: 100289.
- [3] CHEPTEA A., C. GAIGNE. 2020. "Russian food embargo and the lost trade". *European Review of Agricultural Economics* 47: 684–718.
- [4] HENCHION M., A.P. MOLONEY, J. HYLAND, J. ZIMMERMANN, S. MCCARTHY. 2021. "Review: Trends for meat, milk and egg consumption for the next decades and the role played by livestock systems in the global production of proteins". *Animal* 15: 1–14.
- [5] JANSEN W., A. MUELLER, N.T. GRABOWSKI, C. KEHRENBERG, B. MUYLKENS, S. AL DAHOUK. 2019. "Foodborne diseases do not respect borders: zoonotic pathogens and antimicrobial resistant bacteria in food products of animal origin illegally imported into the European Union". *The Veterinary Journal* 244: 75–82.
- [6] KLETER G., S. MCFARLAND, A. BACH, U. BERNABUCCI, P. BIKKER, L. BUSANI, E. KOK, K. KOSTOV, A. NADAL, M. PLA, B. RONCHI, M. TERRE, R. EINSPANIER. 2018. "Surveying selected European feed and livestock production chains for features enabling the case-specific post-market monitoring of livestock for intake and potential health impacts of animal feeds derived from genetically modified crops". *Food and Chemical Toxicology* 117: 66–78.
- [7] ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT (OECD) and Food and Agriculture Organization (FAO) (OECD-FAO). 2020. *OECD and FAO Agricultural Outlook 2020–2029*. OECD Publishing, Paris, France.
- [8] PARZONKO A., P. BORAWSKI. 2021. "Global changes in international dairy trade in 2005-2018 with special emphasis on Poland. W: Challenges in the milk market (investments, disruptions, logistics, competitiveness, prices, and policy)". Pod red. Borawski P., Parzonko A., Zuchowski I. Wydawnictwo Ostrołęckiego Towarzystwa Naukowego im. Adama Chętnika, Ostrołęka: 15–34.
- [9] ROZPORZĄDZENIE RADY (WE) NR 1/2005 z dnia 22 grudnia 2004 r. w sprawie ochrony zwierząt podczas transportu i związanych z tym działań oraz zmieniające dyrektywy 64/432/EWG i 93/119/WE oraz rozporządzenie (WE) nr 1255/97.
- [10] ROZPORZĄDZENIE (WE) nr 853/2004 Parlamentu Europejskiego i Rady z dnia 29 kwietnia 2004 r. ustanawiającego szczególne przepisy dotyczące higieny w odniesieniu do żywności pochodzenia zwierzęcego (Dz. Urz. UE L 139 z 30.04.2004)

- [11] **TRUSZCZYŃSKI M., Z. PEJSAK. 2011.** „Analiza ryzyka w odniesieniu do zdrowia w związku z importem zwierząt i produktów zwierzęcych”. *Życie Weterynaryjne* 86: 763–766.
- [12] **USTAWA z dnia 16 grudnia 2005 r.** o produktach pochodzenia zwierzęcego (Dz.U.2020.1753)
- [13] WITS, <https://wits.worldbank.org>, dostęp w dniu 16.01.2022
- [14] [https://ec.europa.eu/food/animals/traces\\_en](https://ec.europa.eu/food/animals/traces_en), dostęp w dniu 16.01.2022

- [11] **TRUSZCZYŃSKI M., Z. PEJSAK. 2011.** „Analiza ryzyka w odniesieniu do zdrowia w związku z importem zwierząt i produktów zwierzęcych”. *Życie Weterynaryjne* 86: 763–766.
- [12] **USTAWA z dnia 16 grudnia 2005 r.** o produktach pochodzenia zwierzęcego (Dz.U.2020.1753)
- [13] WITS, <https://wits.worldbank.org>, dostęp w dniu 16.01.2022
- [14] [https://ec.europa.eu/food/animals/traces\\_en](https://ec.europa.eu/food/animals/traces_en), dostęp w dniu 16.01.2022