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MEDI-BEEB

COUNTRY REPORT ON THE STATE OF THE ART ON BEEKEEPING AND BEE PRODUCTS IN POLAND

**Project Result ID – 01 - MEDI-BEEB - Medicinal beekeeping for
Beekeepers eLearning/training digital materials**

Authors: Dr. Narnara Król, assoc. prof.

Dr. Maja Słupczyńska



**WROCLAW UNIVERSITY
OF ENVIRONMENTAL
AND LIFE SCIENCES**



1. General beekeeping information

Beekeeping in Poland has a very long tradition, ranging from the production of Slavic mead, to outstanding beekeepers famous on a global scale - such as the father of Polish beekeeping, Jan Dzierżoń, who first discovered parthenogenesis in bees.

The first known honey hunting regulations came from the reign of Kazimierz III the Great.

Modern beekeeping took shape at the beginning of the 19th century. At that time, bees were bred in logs or kettles. The post-war years in Poland slightly divided the country in terms of the characteristics of apiaries. In the eastern and south-eastern areas, from Masuria to the Bieszczady Mountains, almost every farmer had several hives and in some regions this tradition continues till today. In the west of Poland, to the left of the Vistula, towards the border with Germany, the interest in beekeeping took a slightly different form: There were definitely fewer beekeepers, but they had dozens or even hundreds of



FIGURE 1. THE FATHER OF MODERN BEEKEEPING
- JAN DZIERŻON

bee colonies, and were also familiar with modern beekeeping management. In 1982, on the basis of the Act of October 8, 1982 on socio-professional organizations of farmers the Polish Beekeeping Association (PZP) has been established. It is a voluntary, independent, self-governing, operating in the area of beekeeping in Poland. The aim of the association is to represent the interests of the union's member organizations and their members, and to protect their dignity and reputation, to integrate beekeeping environments and improving the qualifications of beekeepers, and to develop of beekeeping as an integral part of agriculture and environmental protection, legal protection of the name "honey" and other bee products.

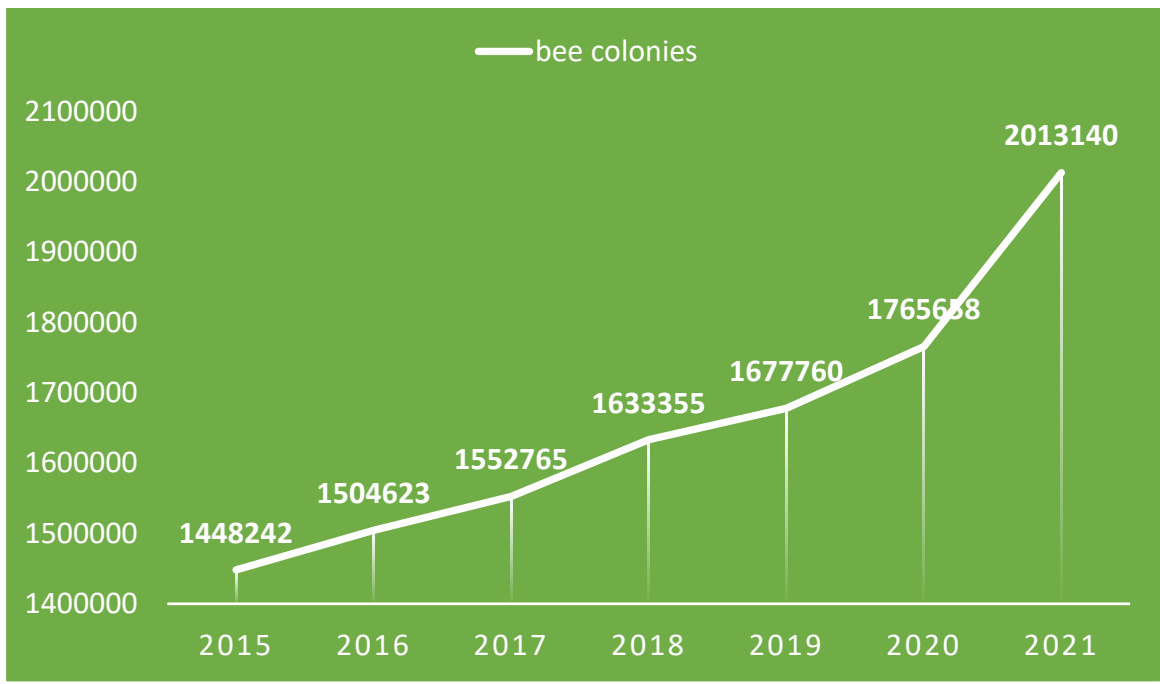


FIGURE 2. NUMBER OF BEE COLONIES IN POLAND (2015-2021)

Source: Beekeeping sector in Poland 2015-2021

Since 2015, a systematic increase in the number of bee colonies in Poland has been observed. In the registers kept by the Veterinary Inspection in 2021 there were over 2 million bee colonies, which was 39% more than in 2015 (Figure 2.).As it results from the analyzes of data contained in the database of the Veterinary Inspection, the number of bee colonies in each

analyzed group of apiaries has clearly increased in the last 7 years. The number of bee colonies kept in the smallest apiaries up to 5 bee colonies in 2021 increased by 65% compared to 2015. It was the largest recorded increase in the number of bee colonies in all analyzed sizes of apiaries, which may indicate a clear

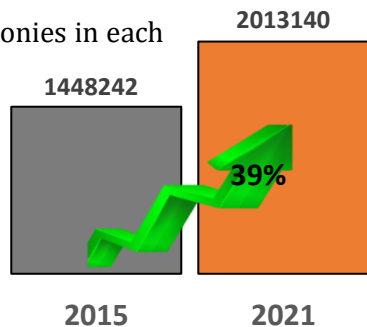


FIGURE 3. INCREASE IN NUMBER OF BEE COLONIES IN POLAND (2015-2021)

increase in interest in hobby beekeeping grown for own needs. In the analyzed years, there was also a high increase in bee colonies kept in medium-sized apiaries with 51-80 bee colonies - an increase by 49% and in professional apiaries with 151-300 hives - an increase by 45% (Figure 4).

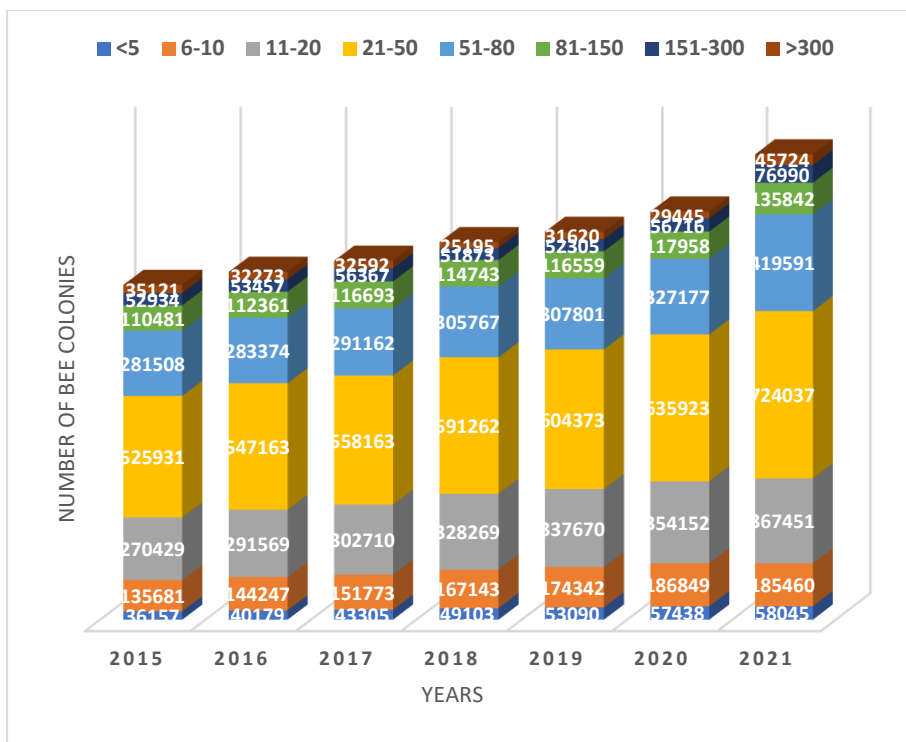


FIGURE 4. NUMBER OF BEE COLONIES RELATED TO THE STRUCTURE OF APIARIES (2015-2021)

Source: Beekeeping sector in Poland 2015-2021

As it results from the analysis of the percentage share of the number of bee colonies in relation to the structure of apiaries in 2015-2021, their share in subsequent years changed slightly, and the number of bee colonies in each apiary size in relation to all bee colonies in 2015-2021 remained at a similar level. level (Figure 5.)

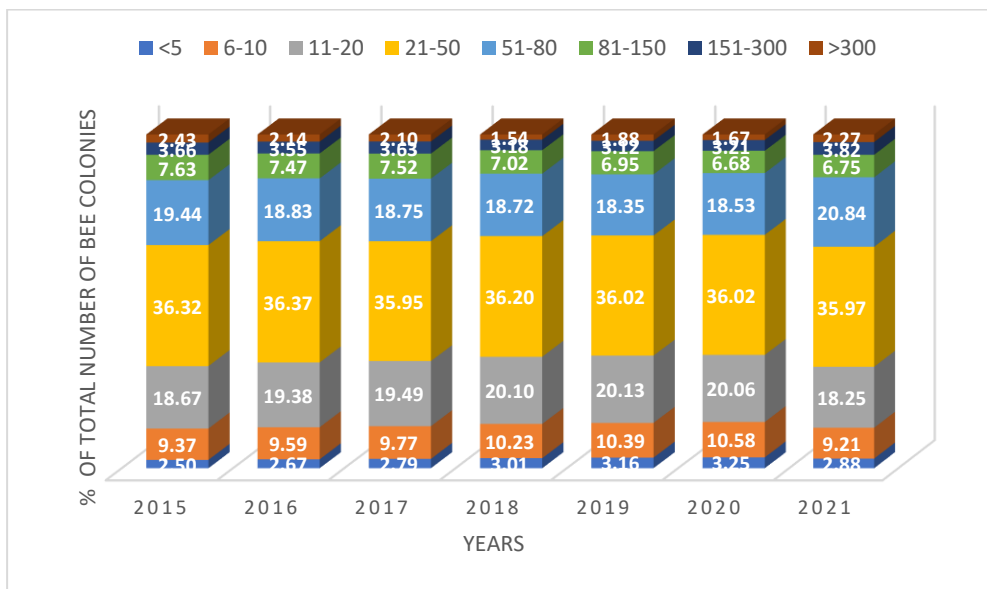


FIGURE 5. PERCENTAGE SHARE OF BEE COLONIES RELATED TO THE STRUCTURE OF APIARIES (2015-2021)



Over the last 7 years, an increase in the number of bee colonies in Poland has been observed every year, which was reflected in a significantly higher number of bee colonies in individual provinces. As a result, in 2021 there was a 39% (564,898 bee colonies) higher number of bee colonies than in 2015. In several voivodeships, a clearly higher increase was recorded compared to the average value for this period. In the Małopolskie, Śląskie, Świętokrzyskie and Podlaskie voivodeships it was respectively: 49.9%, 48.5%, 45.4% and 64.0%. In turn, the largest increase in the number of bee colonies was recorded in the Lubelskie and Małopolskie voivodeships, respectively: 47,763 and 62,943 hives (Figure 6.)

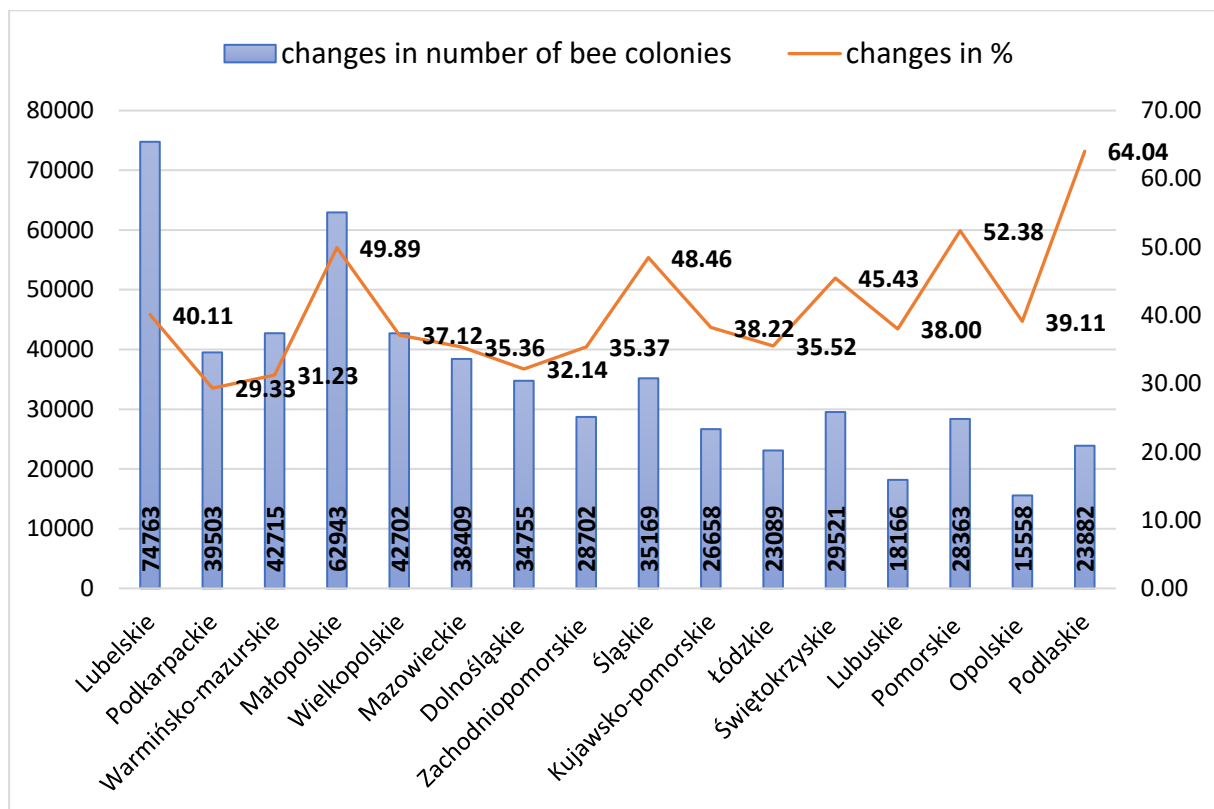


FIGURE 1. CHANGES IN NUMBER OF BEE COLONIES IN INDIVIDUAL PROVINCES – 2015-2021



nvariably, up to 7 years, the largest number of bee colonies is maintained in the eastern part of Poland in the Lubelskie, Małopolskie, Podkarpackie and Warmińsko-Mazurskie voivodships (Figure 7.). In 2021, 261156 bee colonies were kept in the Lubelskie Voivodeship, which constituted approx. 13% of all bee colonies in Poland. Approximately 9.25% of all bee colonies registered in Poland were recorded in the Małopolskie voivodeship, and approx. 8.7% in the Podkarpackie and Warmińsko-Mazurskie voivodships. The smallest number of bee colonies was found in Podlaskie and Opolskie voivodships and it was respectively: 3.0 and 2.7% of all bee colonies in Poland.

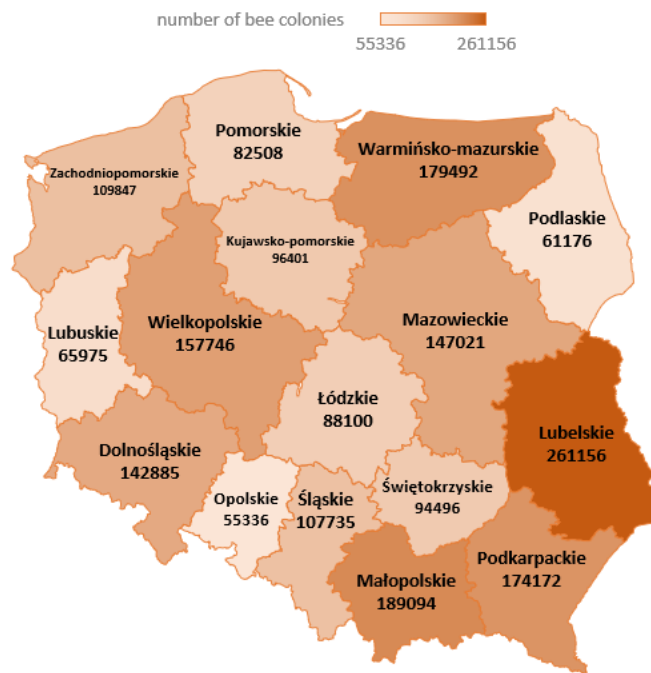


FIGURE 7. NUMBER OF BEE COLONIES IN INDIVIDUAL PROVINCES IN POLAND - 2021

The clear increase in the total number of bee colonies observed over the last 7 years, with the area of the country and individual regions unchanged, was reflected in the systematically increasing degree of sealing in recent years. In the period from 2015 to 2021, the number of bee colonies per 1 km² increased from 4.6 to 6.4, of which the most dynamic increase was recorded between 2020 and 2021, when the number of bee colonies per 1 km² increased by 0.8 bee colony (Figure 8).

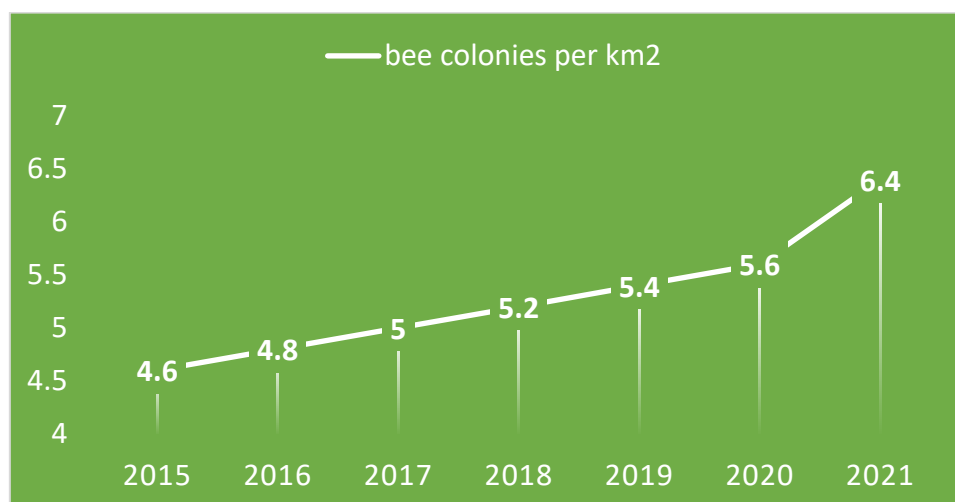


FIGURE 8. NUMBER OF BEE COLONIES PER 1 KM² IN POLAND - 2015-2021



Over the last 7 years, an increase in the number of bee colonies per 1 km² in Poland was observed every year, which was reflected in a clearly higher number of bee colonies per 1 km² in individual voivodeships. As a consequence, in 2021, the number of colonies per 1 km² was higher by 39% (2 colonies per 1 km²) than in 2015. In several voivodeships, a clearly higher increase was recorded compared to the average value for this period. In the Małopolskie, Pomorskie and Podlaskie voivodships it was respectively: 50.5%, 50.0% and 66.7%. In turn, the highest increase in the number of bee colonies per 1 km² was recorded in the Małopolskie and Lubelskie voivodeships, an increase by: 4.2 and 3.0 hives per 1 km², respectively (Figure 6.)

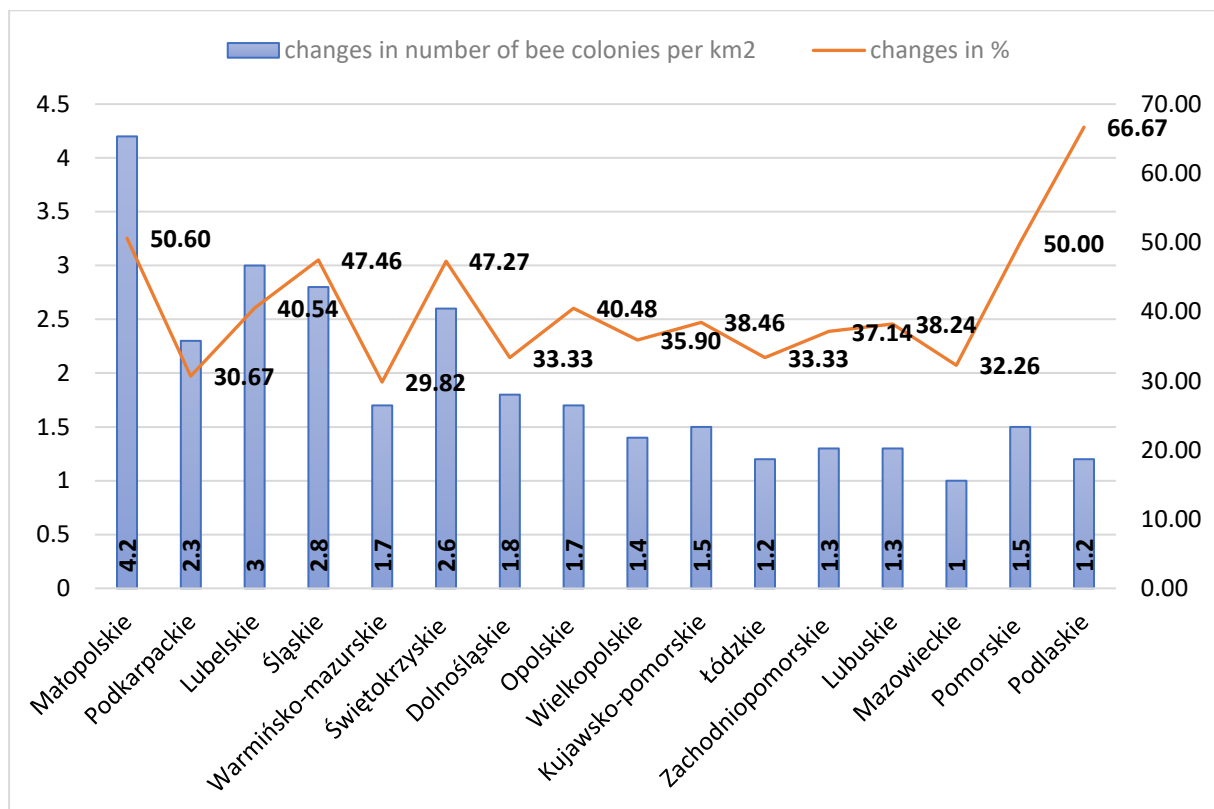


FIGURE 9. CHANGES IN NUMBER OF BEE COLONIES PER 1 KM² IN INDIVIDUAL PROVINCES – 2015-2021



In particular regions of Poland, the number of families per 1 km² varies greatly. The highest number of bee colonies per 1 km² was recorded in south-eastern Poland in the following voivodships: Małopolskie (12.5), Lubelskie (10.4) and Podkarpackie (9.8). The regions with the smallest number of bee colonies per 1 km² was Podlaskie Voivodeship, where 3.0 colonies per 1 km² were (Figure 10).

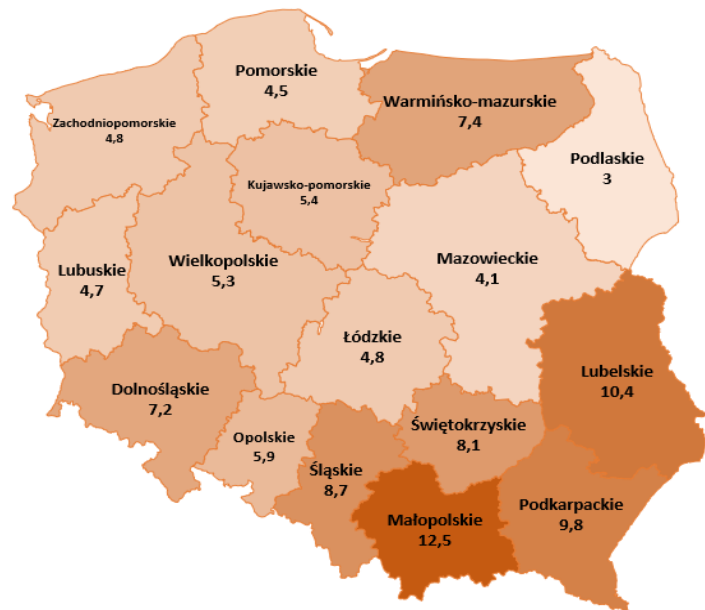


FIGURE 10. THE NUMBER OF BEE COLONIES PER 1 KM² IN INDIVIDUAL PROVINCE IN POLAND - 2021

Since 2015, a systematic increase in the number of people with bee colonies in Poland has been observed. In the registers kept by the Veterinary Inspection in 2021 there were 87,096 beekeepers and it was approx. 39% (24,521 beekeepers) more than in 2015 (Figure 11.).

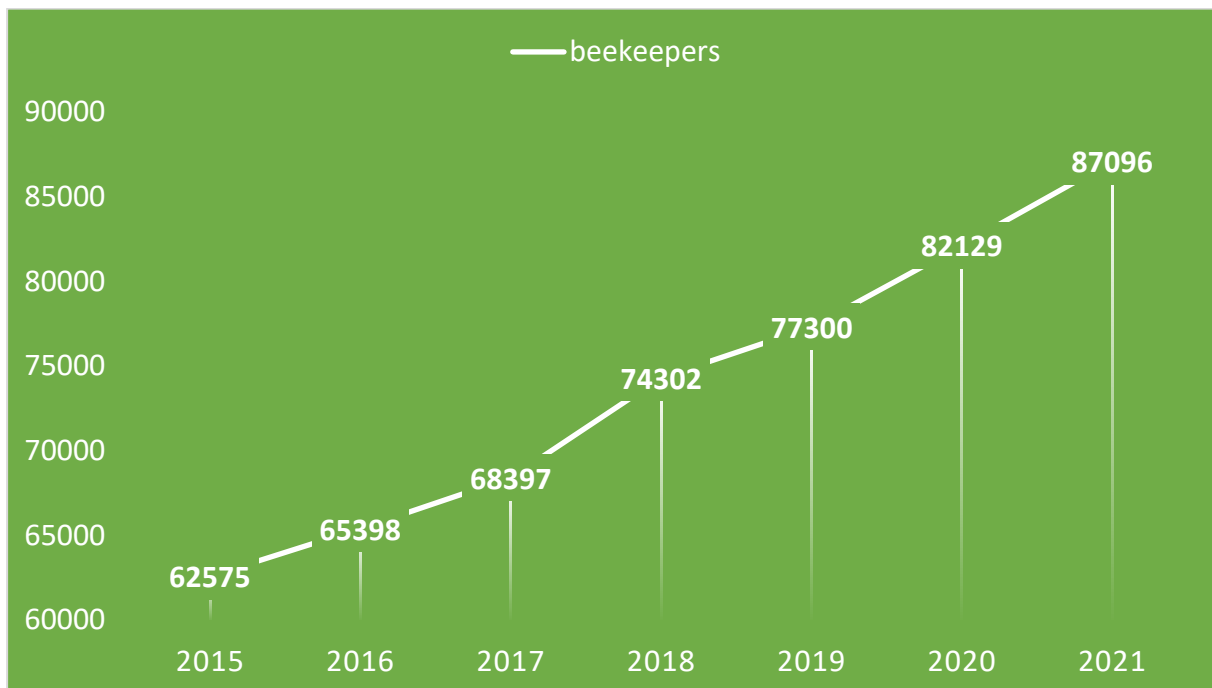


FIGURE 11. NUMBER OF BEEKEEPERS IN POLAND - 2015-2021



Over the past 7 years, an increase in the number of people with bee colonies throughout Poland has been observed every year. In a few voivodships, a clearly higher increase was recorded as compared to the average value for this period. In the Dolnośląskie and Podlaskie voivodships it was, respectively: 68.3 and 56.4%. In turn, the largest increase in the number of beekeepers was recorded in the Małopolskie, Dolnośląskie and Śląskie voivodships, an increase by, respectively: 3,016, 2,553 and 2,538 people (Figure 12.)

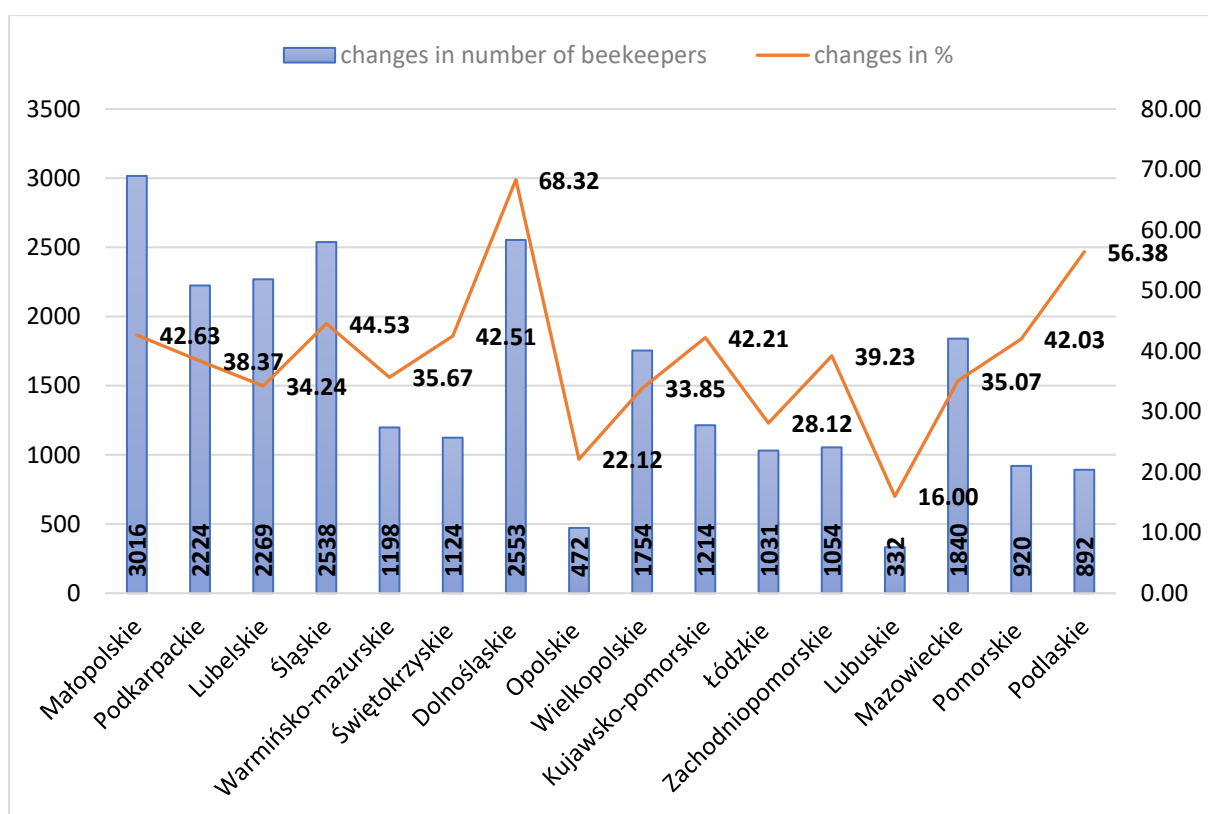


FIGURE 12. CHANGES IN NUMBER OF BEEKEEPERS IN INDIVIDUAL PROVINCES OF POLAND – 2015-2021

In 2021, in individual regions of Poland, the number of people with bee colonies varied greatly. The largest number of beekeepers was recorded in the south-eastern regions of Poland: in Małopolskie 10,091, in Lubelskie 8,896 and in Śląskie and Podkarpackie slightly over 8,000. The regions with the smallest number of beekeepers include the Lubuskie, Opolskie and Podlaskie voivodships, where the number of people with bee colonies was approx. 2.5 thousand. (Figure 13.).



In 2021, every third beekeeper in Poland was over 65 years old and the share of this age group in the total number of beekeepers since 2015 has remained at a constant level since 2015. Since 2015, the largest number of beekeepers has been in the 51-65 age group, but its share in the total number of beekeepers has been systematically decreasing since 2015. Since 2018, the share of beekeepers aged 36-50 years has also been systematically increasing in the age structure, which, given the relatively constant age group <35 years, means that the age structure of beekeepers has slightly rejuvenated (Figure 14.).



FIGURE 13. THE NUMBER OF BEEKEEPERS IN INDIVIDUAL PROVINCES IN POLAND - 2021

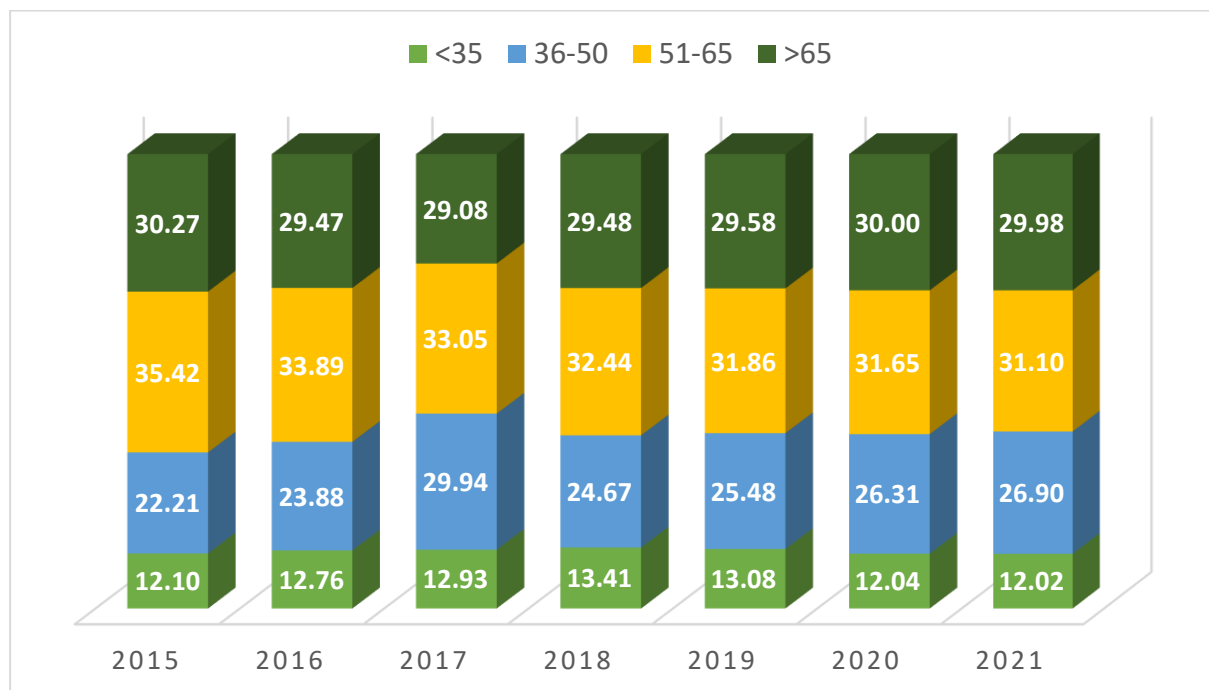


FIGURE 14. AGE STRUCTURE OF POLISH BEEKEEPERS - 2015-2021

Since 2015, a similar average number of bee colonies in an apiary throughout Poland has been observed - about 23. In 2020, the lowest average number of hives per one apiary was recorded, however, the decrease was insignificant (1.7 hives per apiary, which was



approx. 7%) and short-lived, as already in 2021 the average number of bee colonies in an apiary was exactly the same as in 2015 (Figure 15.).

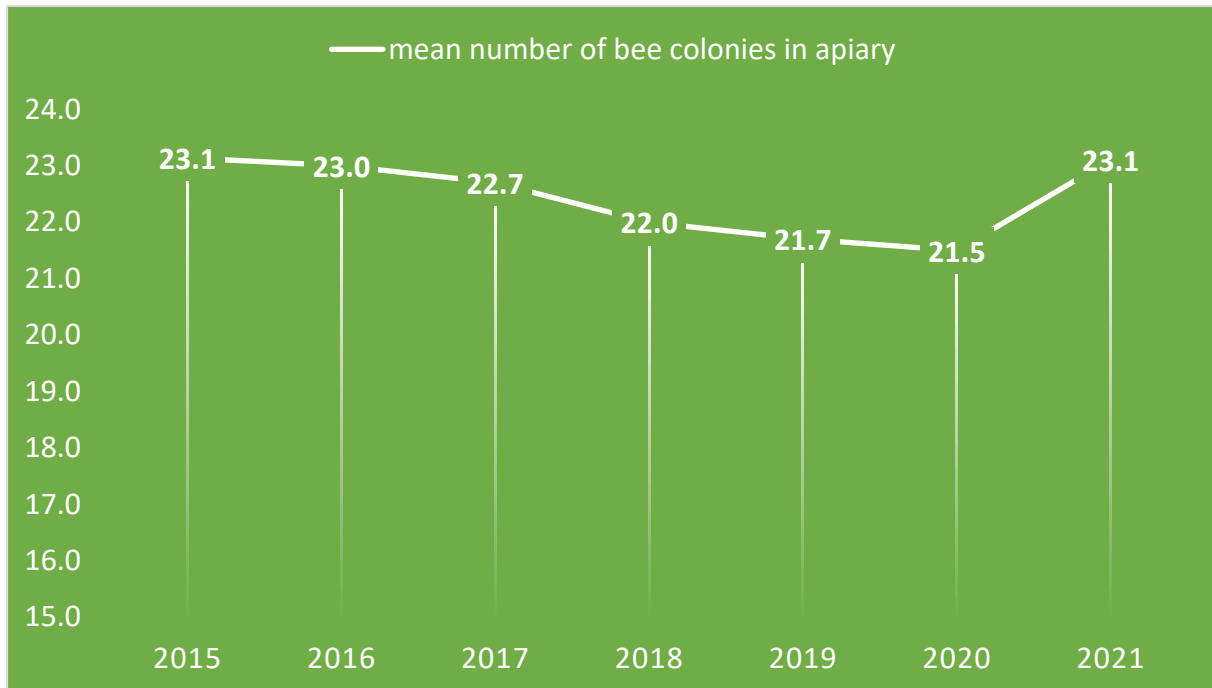


FIGURE 15. MEAN NUMBER OF BEE COLONIES IN APIARY IN POLAND - 2015-2021

Over the last 7 years, there has been a significant variation in the average number of bee colonies in an apiary within individual regions of Poland. In many regions, this number remained at a similar level, and the fluctuations in the average number of hives in an apiary did not exceed 2% (Mazowieckie, Świętokrzyskie, Kujawsko-Pomorskie and Zachodniopomorskie voivodships). In the Lower Silesia Voivodship, a drastic decrease in the average number of bee colonies in the apiary was recorded in this period, amounting to 21.6% (-6.2 hives in the apiary). On the other hand, in the Lubuskie and Opolskie voivodships an increase in the average number of hives in an apiary by 18.8 and 13.7% was recorded, respectively by 4.4 and 2.6 bee colonies in an average apiary (Figure 16.)

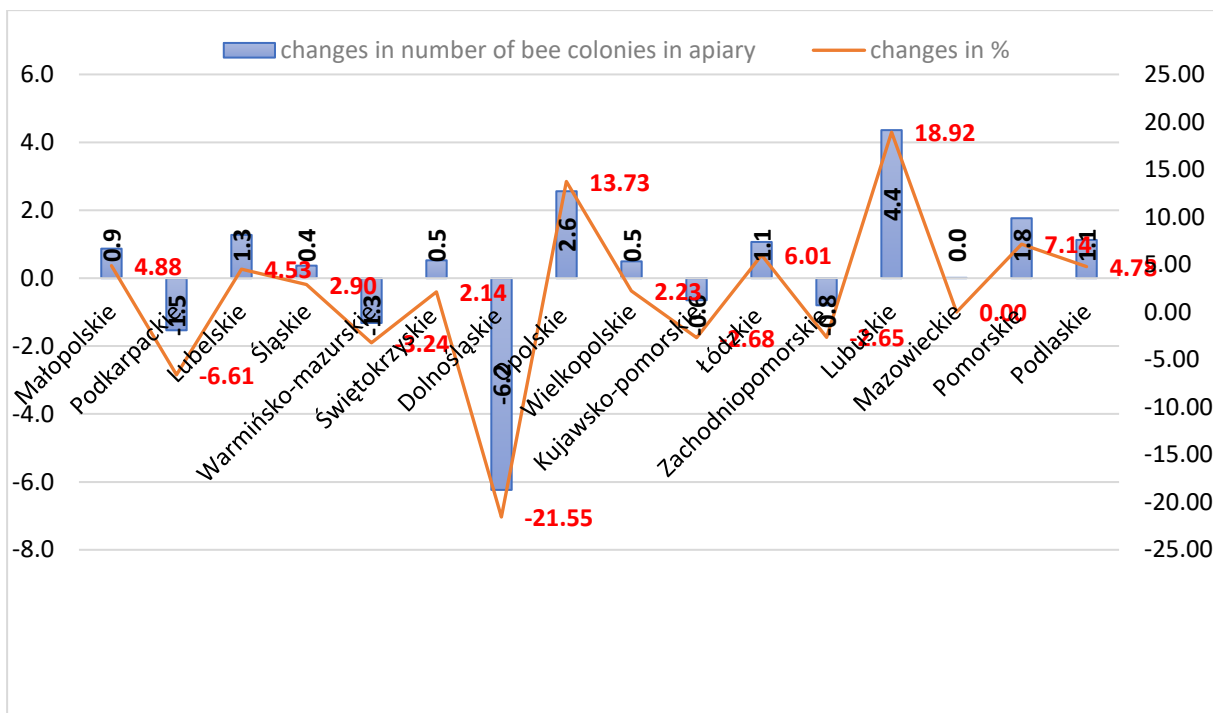


FIGURE 16. CHANGES IN MEAN NUMBER OF BEE COLONIES IN APIARY IN INDIVIDUAL PROVINCES OF POLAND – 2015-2021

In 2021, in individual regions of Poland, the average number of bee colonies varied considerably. Most hives were found in apiaries in the Warmińsko-Mazurskie voivodship (39.4). A high number of hives compared to the rest of the voivodships was also recorded in the Lubuskie and Zachodniopomorskie voivodships - 29.4. On the other hand, the lowest average number of bee colonies in an apiary was recorded in the Śląskie (13.1), Małopolskie and Łódzkie voivodships - approx. 19 (Figure 17.).

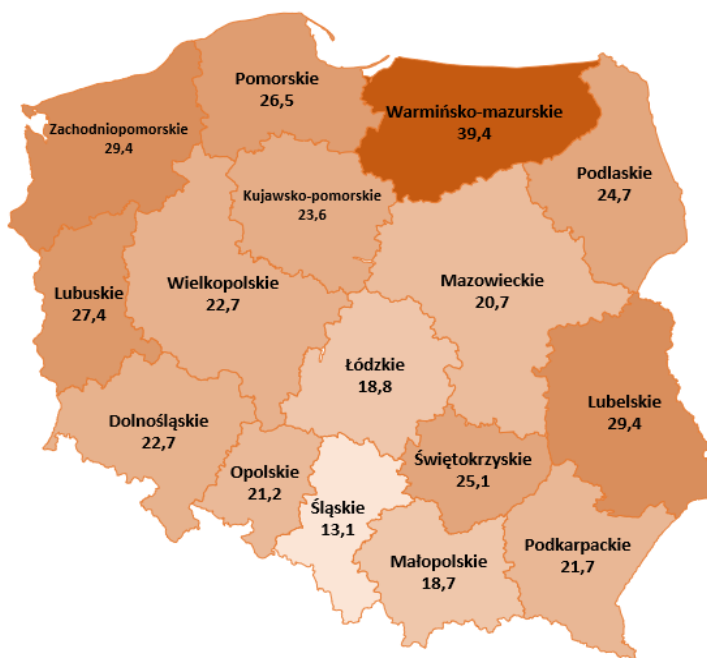


Figure 17. The mean number of bee colonies in apiary in individual provinces in Poland - 2021



In the years 2016-2020, significant fluctuations in the amount of honey produced in both amateur and professional apiaries were observed in Poland. In 2016, the total production of honey was over 24 thousand tonnes, while in 2020, despite the constantly increasing number of bee colonies in the country, this amount decreased by approx. 50% and amounted to approx. 12 thousand tonnes. This was reflected in the drastic decrease in the amount of honey obtained from the bee colony in the amateur apiary (from 16.6 to 8.6 kg) and the professional apiary (from 31.8 to 17.2 kg). The reasons for such a significant reduction in the amount of honey produced include large losses of bees after wintering and unfavorable weather conditions. In 2021, there was an approx. 45% increase (5,748 thousand tonnes) in the amount of honey produced compared to 2020, but the result obtained this year should be considered average. In amateur apiaries this year, beekeepers obtained an average of 12.5 kg of honey from one bee colony, and in professional apiaries - 21.4 kg. Low temperature and significant amounts of rainfall in the spring season and the rainy summer period are unsatisfactory (Figure 18.).

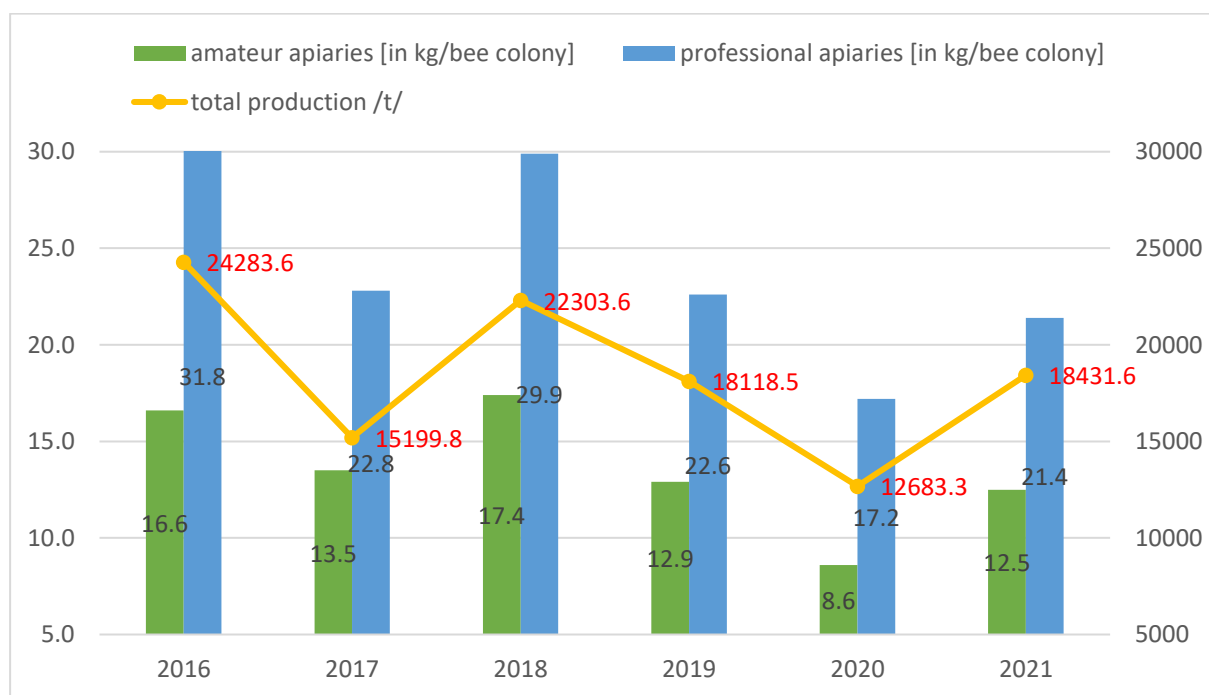


FIGURE 18. HONEY PRODUCTION IN AMATEUR AND PROFESSIONAL APIARIES - 2016-2021

In the case of small apiaries, the best unit production results in 2021 were obtained in the Lubuskie Voivodeship - 19.8 kg. As a result of the worst weather conditions in the Podkarpackie Voivodeship, the obtained unit production results in small apiaries in this voivodeship were the lowest in the country and amounted to 5.8 kg of honey from a bee colony (Figure 19.).



In the case of professional apiaries, the best unit production results in 2021 were obtained in the Lubuskie Voivodeship - 33.6 kg and the Lubuskie Voivodeship - 31.1 kg. The smallest amount of honey from the bee colony in professional apiaries was obtained in the Świętokrzyskie Voivodeship - 17.35.8 kg of honey, which was about half of the production obtained this year in the Lubuskie Voivodeship (Figure 20.).



FIGURE 19. HONEY PRODUCTION (KG/BEE COLONY) IN AMATEUR APIARIES IN INDIVIDUAL PROVINCES OF POLAND - 2021



FIGURE 20. HONEY PRODUCTION (KG/BEE COLONY) IN PROFESSIONAL APIARIES IN INDIVIDUAL PROVINCES OF POLAND - 2021

In 2021, the most honey was obtained in the Lubelskie Voivodeship - 2,100.8 tons, the least in the Opolskie Voivodeship - 325 tons, which was approx. 15 of the production obtained in the Lubelskie Voivodeship. (Figure 21.).



FIGURE 21. TOTAL HONEY PRODUCTION (KG/BEE COLONY) IN INDIVIDUAL PROVINCES OF POLAND - 2021

In the period 2016-2021, in small apiaries in most voivodeships, a unit reduction in the amount of honey produced was recorded. In 2021, the largest reduction in production compared to 2016 was recorded in eastern-central Poland in the Świętokrzyskie (-62.6%), Podkarpackie (-55.4%) and Małopolskie (-46.3%) voivodships. From koela in the Warmian-Masurian Voivodeship, the unit amount of honey produced was by 12.8% (1.9 kg / bee colony)- Figure 22.

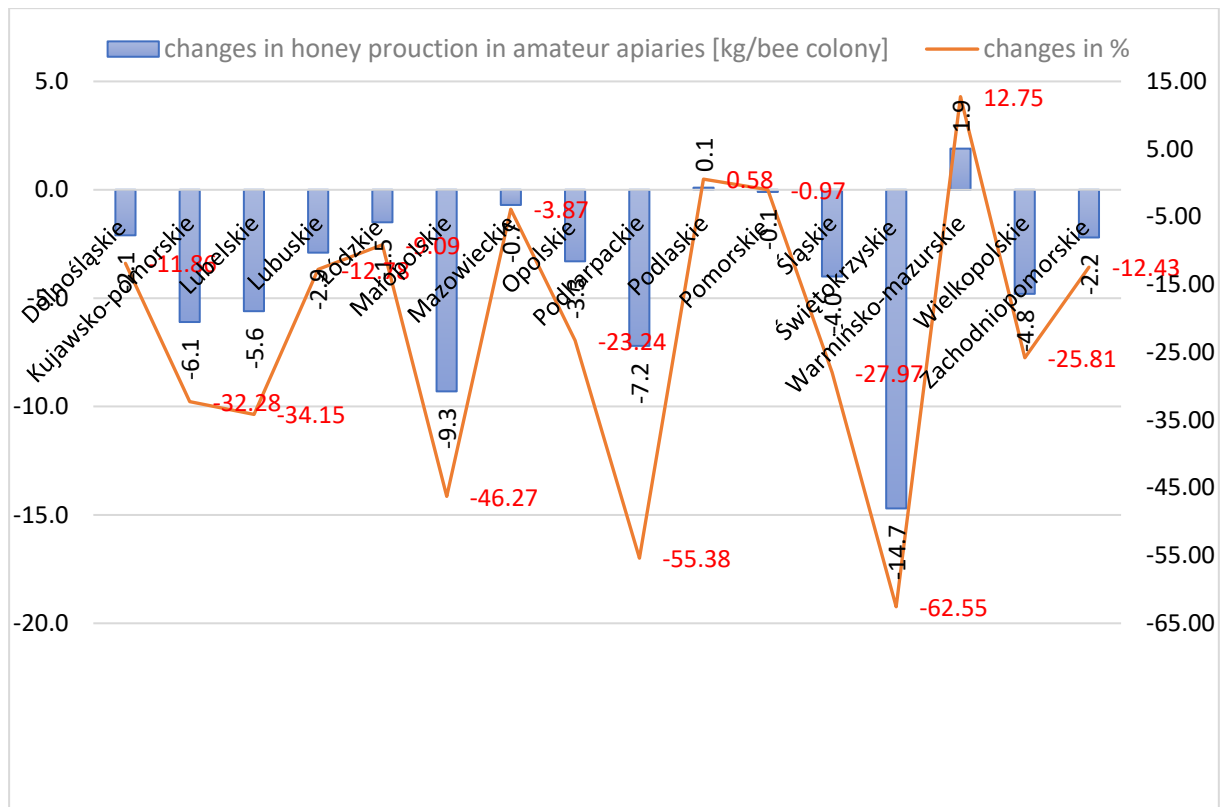


FIGURE 22. CHANGES IN HONEY PRODUCTION [KG/ BEE COLONY] IN SMALL APIARIES IN INDIVIDUAL PROVINCES OF POLAND – 2016-2021

W okresie 2016-2021 zmiany w jednostkowej ilości produkowanego miodu w pasiekach profesjonalnych były bardzo zróżnicowane. Podobnie jak w przypadku małych pasiek największe zmniejszenie ilości miodu produkowanego przez rodzinę pszczelą odnotowano w województwie świętokrzyskim - 61,6% (27,8 kg). Znaczny spadek ilości pozyskiwanego miodu w okresie 2016-2021 zaobserwowano również w województwie lubelskim – 49,0% (22,3kg). Z kolei wzrost jednostkowej ilości produkowanego miodu w pasiekach profesjonalnych odnotowano w województwach lubuskim i pomorskim, odpowiednio: 32,8 and 27,43% (Figure 23.)

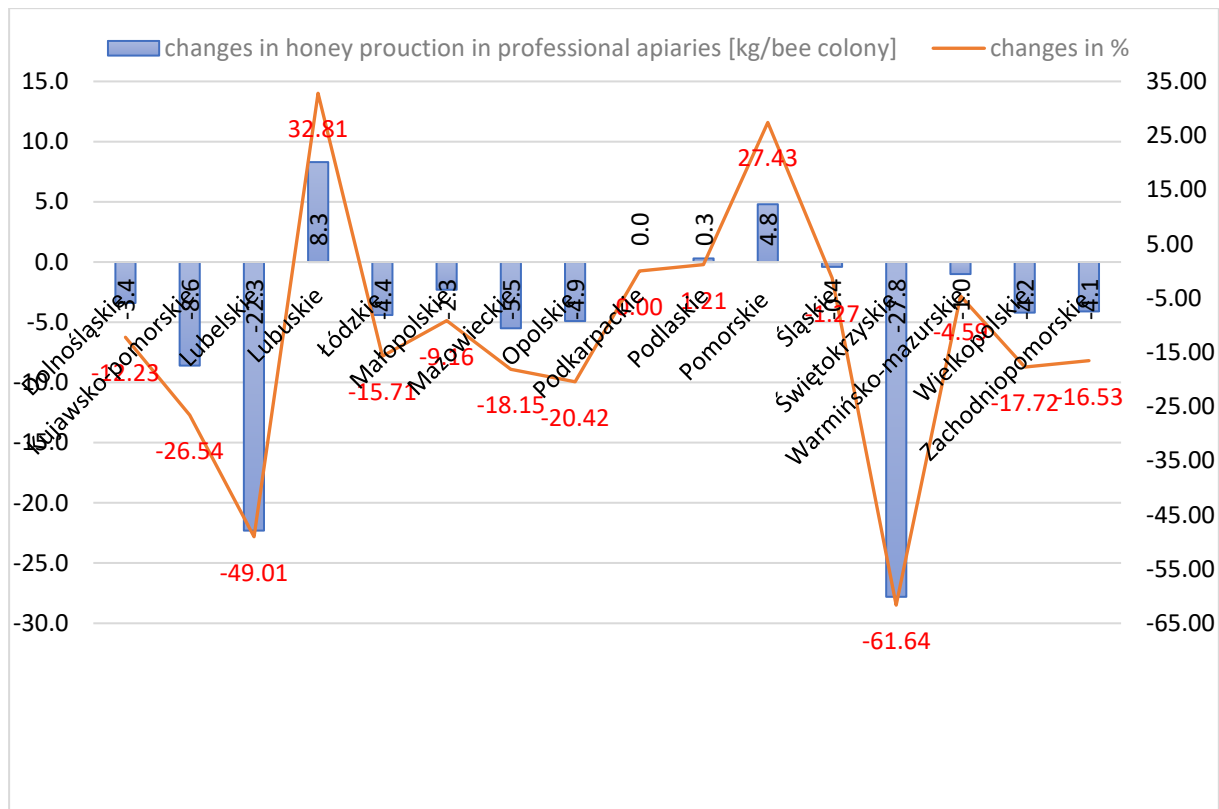


FIGURE 23. CHANGES IN HONEY PRODUCTION [KG/ BEE COLONY] IN PROFESSIONAL APIARIES IN INDIVIDUAL PROVINCES OF POLAND – 2016-2021

The total honey production in 2021 in the vast majority of voivodeships decreased significantly compared to 2016. The most drastic drops were observed in the Świętokrzyskie voivodships - 63.9% (1031.8 tons), Podkarpackie - 55.6% (734.5 tons) and Małopolska - 45.6% (916.8 tons). The largest increase in the amount of honey produced was in Podlaskie Voivodeship - 10.7%, however, due to the small share of this region in the national honey production, the amount of obtained honey in this region increased by only 52.6 tons (Figure 24.).

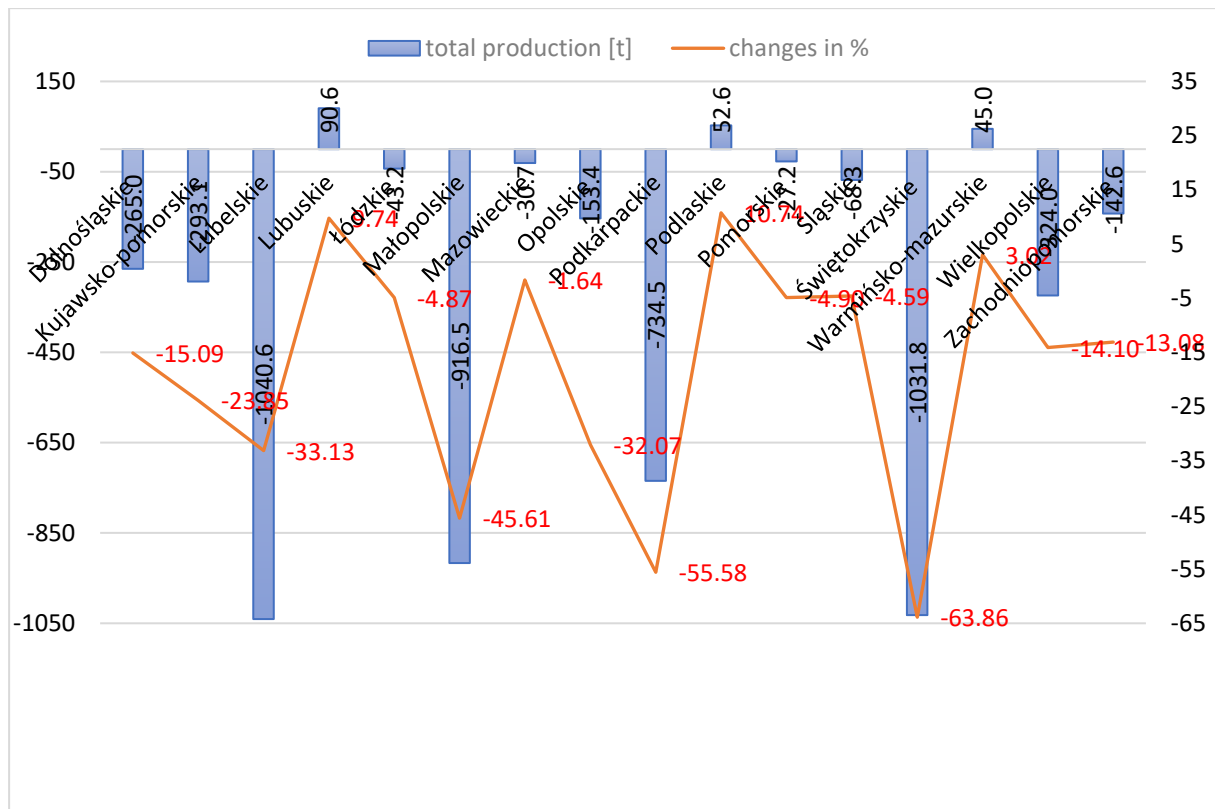


FIGURE 24. CHANGES IN TOTAL HONEY PRODUCTION IN INDIVIDUAL PROVINCES OF POLAND – 2016-2021

In 2021, the prices of honey were very similar to the prices achieved in 2020. Direct sales of honey allowed to obtain significantly higher amounts of income than wholesale. On average, in wholesale, all types of honey only reached 50% of the retail price. The cheapest type of honey was rapeseed honey, and the most expensive was traditionally heather honey, the price of which was as high as EUR 22 per kilogram. (Figure 25.)

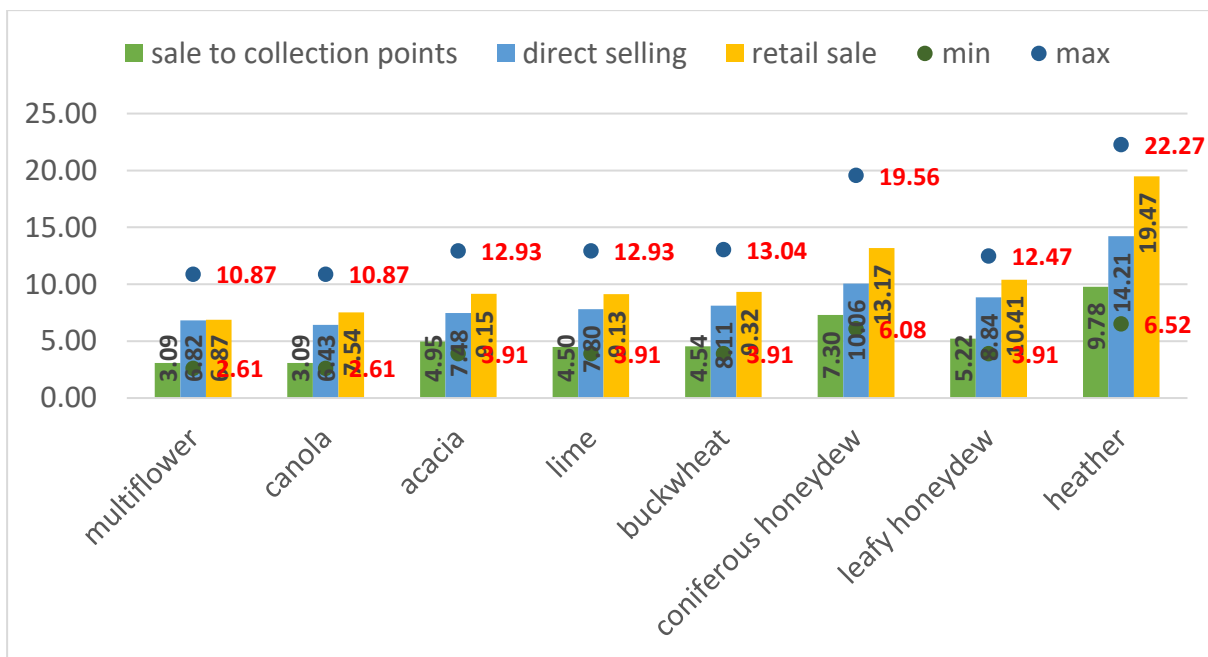


FIGURE 25. THE AVERAGE, MINIMUM AND MAXIMUM PRICES OF VARIOUS TYPES OF HONEY IN POLAND IN 2021*

The greatest extent to production costs is variable costs, especially labor. In the case of small apiaries, it accounts for almost half of all production costs, and thus has the greatest impact on economic effects. In addition to work, the costs of depreciation (13%) and food for bees (10.8%) are of significant importance for the profitability of production.– Figure 26.

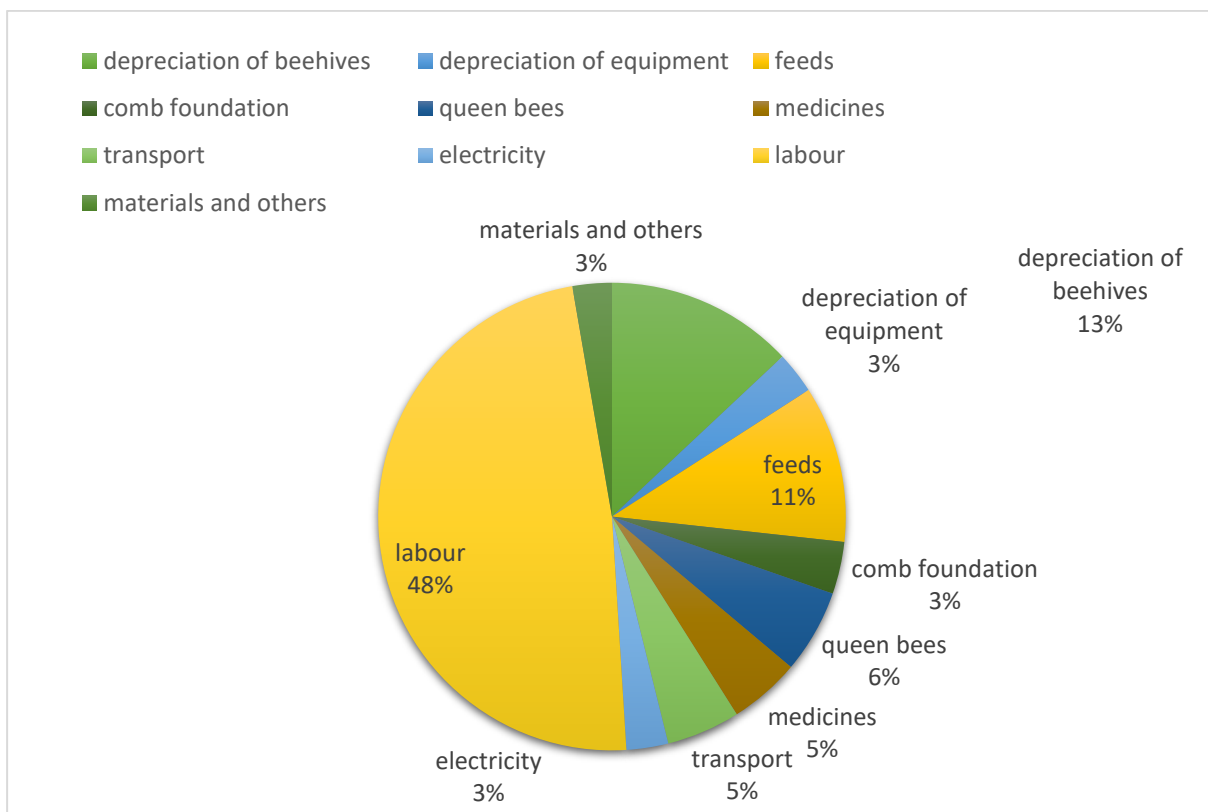


FIGURE 26. PRODUCTION COSTS IN SMALL APIARIES IN POLAND IN 2021*



Also in professional apiaries, the costs of honey production are most affected by variable costs, including labor. In the case of professional apiaries, they account for one third of all production costs. Apart from work, the costs of transport (14%), depreciation of hives (11%) and food for bees (9%) are significant for the profitability of production.– Figure 27.

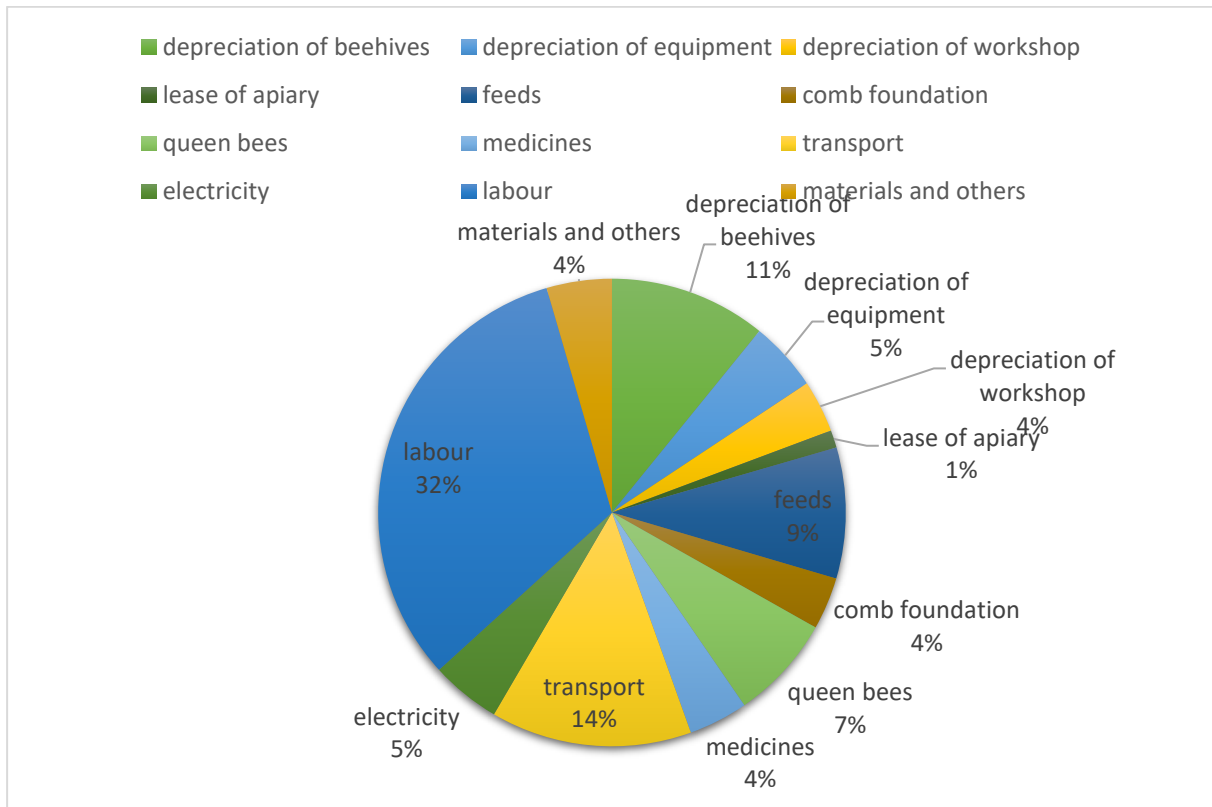


FIGURE 27. PRODUCTION COSTS IN PROFESSIONAL APIARIES IN POLAND IN 2021*

Since 2015, a systematic increase in the scale of foreign trade in honey has been observed in Poland. During the period, the amount of honey imported always exceeded the amount of honey exported. In 2020, the level of foreign trade reached the highest scale in many years. This year, almost 25 thousand tons of honey worth EUR 54 873.8 thousand were exported from Poland, and almost 37.5 thousand tons worth EUR 69 271.1 thousand were imported. Compared to 2015, the amount of honey exported increased by 23%, and its value by 073%, while the amount of imported honey increased by 79%, and its value by 57%. Since 2015, the balance of foreign trade in honey has been negative (Figure 28.)

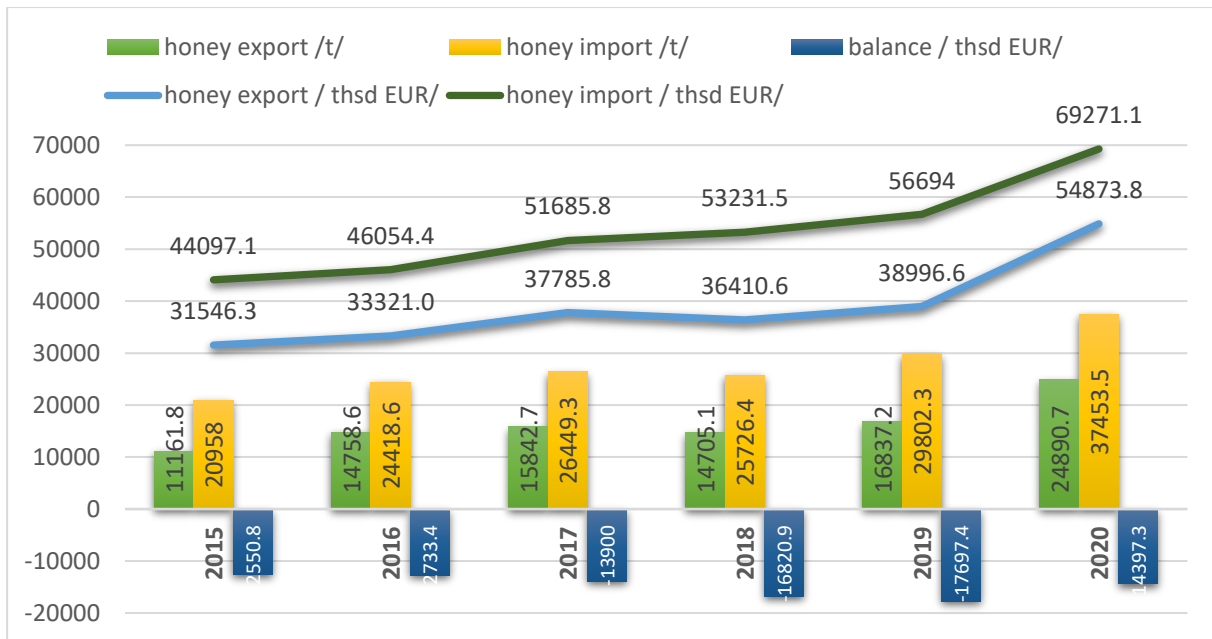


FIGURE 28. FOREIGN TRADE OF HONEY IN POLAND - 2015-2020

In 2021, honey from Poland was sold mainly from European Union countries. The largest amounts of honey were exported to France - 244 tons, however, due to the high price of honey exported to Germany, the greatest value was achieved from the export of honey to this country (EUR 6,876,000) – Figure 29.

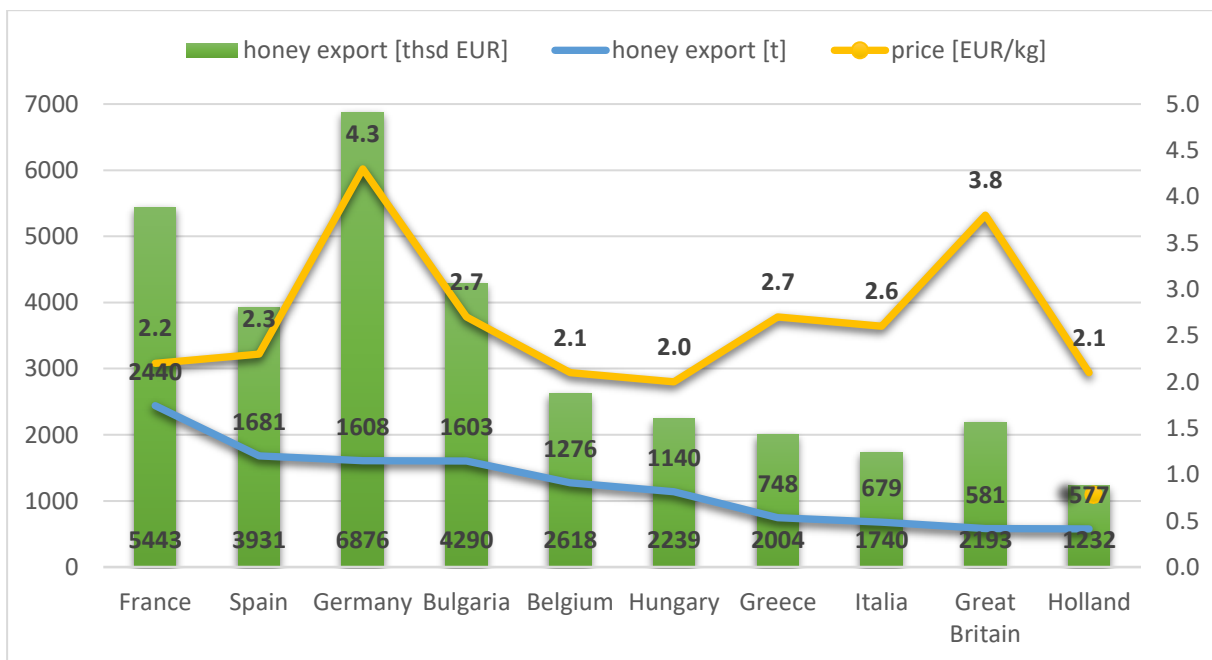


FIGURE 29. FOREIGN TRADE OF HONEY IN POLAND - EXPORT- 2021



In 2021, about 85% of all honeys imported to Poland were products from Ukraine and China. Honey imported from China was the cheapest (EUR 1.3), and the highest price was paid for honey purchased in Germany (EUR 11.9). The average purchase price this year was around EUR 2 / kg (Figure 30.).

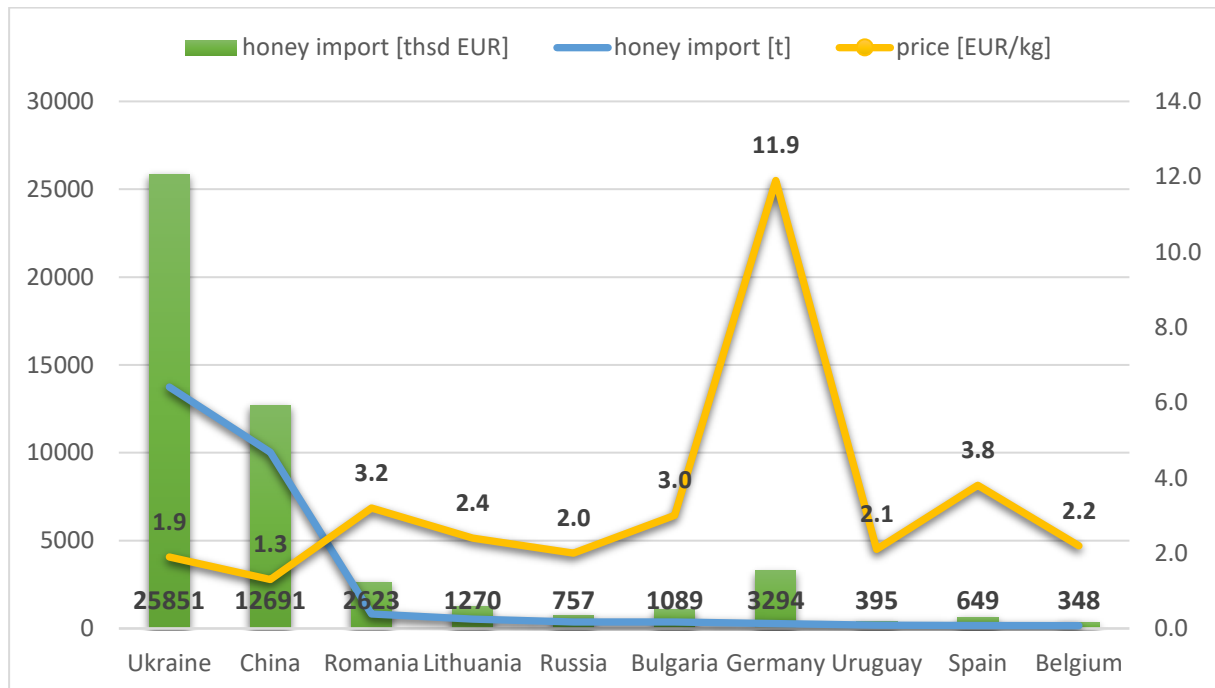


FIGURE 30. FOREIGN TRADE OF HONEY IN POLAND - IMPORT- 2021