



## OPERATING SUBSIDIES AND THE ECONOMIC SITUATION OF AGRICULTURAL FARMS IN POLAND IN 2014-2019

*Sebastian Janek*

Faculty of Economic Sciences  
University of Warmia and Mazury in Olsztyn  
ORCID: <https://orcid.org/0000-0001-8383-6230>  
e-mail: [sebastian.janek@uwm.edu.pl](mailto:sebastian.janek@uwm.edu.pl)

*Joanna Czyż*

Student of the Faculty of Economic Sciences  
University of Warmia and Mazury in Olsztyn  
e-mail: [joanna.czyz@student.uwm.edu.pl](mailto:joanna.czyz@student.uwm.edu.pl)

*Mirosława Witkowska-Dąbrowska*

Faculty of Economic Sciences  
University of Warmia and Mazury in Olsztyn  
ORCID: <https://orcid.org/0000-0003-1162-7362>  
e-mail: [m.witkowska@uwm.edu.pl](mailto:m.witkowska@uwm.edu.pl)

JEL Classification: Q140, Q180.

Key words: incomes, subsidies, economic size of agricultural farms.

### Abstract

The purpose of this study has been to determine the role of operating subsidies in shaping the economic situation of agricultural farms in the years 2014-2019. Secondary data originating from the database of accounting books of farms aggregated by the Polish FADN were taken for our analysis. The data were processed through an analysis of the dynamics of changes in 2014-2019. The results showed that operating subsidies reached an average of between 41% and 282% of the value of income earned by family-owned farms. It was found that whether or not farms were able to earn a financial surplus without resorting to subsidies depended on the economic size of a farm. The smallest and the largest farms were unable to cover their costs and earn a profit without having access to additional sources of funds.

---

**How to cite:** Janek, S., Czyż, J., & Witkowska-Dąbrowska, M. (2021). Operating Subsidies and the Economic Situation of Agricultural Farms in Poland in 2014-2019. *Olsztyn Economic Journal*, 16(1), 45-55. <https://doi.org/10.31648/oej.7310>.

**DOPLATY DO DZIAŁALNOŚCI OPERACYJNEJ A SYTUACJA EKONOMICZNA  
GOSPODARSTW ROLNYCH W POLSCE W LATACH 2014-2019*****Sebastian Janek***Wydział Nauk Ekonomicznych  
Uniwersytet Warmińsko-Mazurski w Olsztynie***Joanna Czyż***Studentka Wydziału Nauk Ekonomicznych  
Uniwersytet Warmińsko-Mazurski w Olsztynie***Mirosława Witkowska-Dąbrowska***Wydział Nauk Ekonomicznych  
Uniwersytet Warmińsko-Mazurski w Olsztynie

Kody JEL: Q140, Q180.

Słowa kluczowe: dochody, dopłaty, wielkość ekonomiczna gospodarstw rolnych.

**Abstrakt**

Celem badań było określenie znaczenia dopłat do działalności operacyjnej w kształtowaniu się sytuacji ekonomicznej gospodarstw rolnych w latach 2014-2019. Do analizy wykorzystano dane wtórne pochodzące z bazy danych rachunkowych z gospodarstw rolnych polskiego FADN. Zgromadzone dane opracowano z wykorzystaniem analizy wskaźników dynamiki zmian w latach 2014-2019. W wyniku przeprowadzonych badań stwierdzono, że dopłaty do działalności operacyjnej kształtowały się średnio na poziomie od 41% do 282% wartości dochodu z rodzinnego gospodarstwa rolnego. Stwierdzono, że możliwość wypracowania nadwyżki finansowej bez dostępu do dopłat zależy od wielkości ekonomicznej gospodarstwa. Gospodarstwa najmniejsze i największe nie są w stanie bez dodatkowych środków pokryć kosztów i dodatkowo osiągnąć nadwyżki pieniężnej.

**Introduction and methodology**

The system and economic transformations that occurred in post-communist countries after 1989 and after 2004 had an immense impact on the lives and economic status of rural populations (Toth *et al.*, 2016, p. 2220-2227; Brodziński *et al.*, 2020, p. 103-112). Lizińska (2019, p. 278-287) made an analysis which demonstrated that both agricultural farms and their environment have some capacity for the development of non-farming economic activities that could improve farmers' revenues, but thus far, despite the many years elapsing since the transformation, this potential has been exploited only to a relatively small extent. Thus, the economic situation of farms mainly depends on several factors connected with agriculture. These are the value of sold agricultural products, the costs incurred by farms due to agricultural activity, volumes of imported and exported goods, etc. In Poland, the stability of foreign trade involving agricultural

products and a lesser dependence on Russia than prior to 1989 are ensured by the European Union (Hrybau *et al.*, 2019, p. 397-406). These two factors also affect the incomes earned by Polish farms. Other external conditions including the weather-related risk or farmland use conditions play a role as well. More on this matter can be found in Lososova *et al.* (2017, p. 88-109), who mentions other significant circumstances, e.g. land relief. In her opinion, the dependence on subsidies is more evident in mountainous less favoured areas (LFAs). Furthermore, the impact of other external factors, especially the weather and high volatility of prices, features more distinctly in LFAs situated in mountains. Hence, another factor that significantly affects revenues earned by farms are EU subsidies allocated under the umbrella of the Common Agricultural Policy. The support provided from the CPA, by raising incomes, ensures that farmers can enjoy a certain level of financial security and their farms can generate some economic surplus.

A question arises whether these farms would manage to earn a financial surplus without access to the EU funds. It can be expected that subsidies play an important role in generating farm incomes and without these funds it would be difficult to achieve a financial surplus.

The purpose of this study has been to identify the role of operating subsidies in shaping the economic situation of farms in Poland between 2014 and 2019.

The operating activity of a farm includes transactions which arise from the farm's current economic activities. These are all activities that generate income from plant production, animal production and others, e.g. offering services with the use of the equipment available on a given farm. Operations also entail transactions that generate costs. They are a result of both the farm's existence *per se* and its current activities.

The following hypothesis was set: as the economic size classes increase, the reliance of a farm's ability to earn a financial surplus on operating subsidies diminishes.

Secondary data from the Polish FADN (Farm Accountancy Data Network) database of accounts of farms were analyzed. Farms monitored by the Polish FADN are commodity farms generating at least 90% of Standard Production from all farms in the country. They must have a minimum economic size equal to 4,000 euros. On average for Poland in 2014-2019, there were 730,869 farms which satisfied this criterion, of which a sample of 12,000 was analyzed. The available data are weighted averages of particular variables for the given group of farms and are therefore representative for the Polish FADN observation field. An economic criterion, called Standard Production (SP) has been the basis for classification of farms into economic classes. Standard Production is calculated as an average value of production from five years, excluding subsidies to production and direct costs, expressed in euros. Six economic size classes are distinguished: very small, from 2,000 to 8,000 euros, small, from 8,000 to 25,000 euros, medium small, from 25,000 to 50,000 euros, medium large – from 50,000 to 100,000 euros, large, from 100,000 to 500,000 euros, and very large, 500,000 euros and more.

Although there is a class defined from 2,000 euros of SP, it is worth remembering that the minimum economic size of a farm in Poland included in the Polish FADN observation field is 4,000 euros. Four types of activities are distinguished for the purposes of the Polish FADN statistics, such as operating, investing, financial and private.

The data collected for this study were processed using an analysis of indicators of the dynamics of changes in 2014-2019. The decision to analyze data from 2014-2019 was made as these were the most recent data available in the Polish FADN database. In addition, this was the time period when the previous Financial Perspective, ending in 2020, was implemented.

### **Role of subsidies in the economic situation of agricultural farms**

Subsidies which serve as additional funds are a significant factor influencing the volume of revenues in agriculture, thereby shaping the economic situation of farms. Having more available cash in hand, farmers now have better opportunities for the development of their farms. On the other hand, since Polish agriculture gained access to CAP instruments, prices of production means, e.g. machines and fertilizers, have begun to rise (Sadowski & Antczak, 2012, p. 348-352). Measures which interfere with the market mechanism, besides causing adverse effects such as growing the prices of production means, generate higher incomes. Thus, the level of incomes earned by farmers does not depend solely on the effects of the work they do. It is also shaped by the volume of cash flows which supply agriculture. Measures implemented under the Common Agricultural Policy improve the situation of farmers. Since Poland's access to the EU in 2014, the incomes have nearly doubled while the actual value of agricultural production has increased by 50% (Kondratowicz-Pozorska, 2017, p. 91-100). The revenues earned from agricultural activity are exposed to certain risks, for example adverse weather conditions, which may even cause complete damage of crops and have an undesired impact on production. Direct payments are a source of constant income, which, regardless of market fluctuations, provides farmers with a certain degree of safety in the face of risks. Owing to direct payments, farmers can improve the long-term profitability of farms. They also have better chances for making investments (*Na czym polega WPR...*, 2018). The level of income in 2004 was 2.4-fold higher than in the previous year and the main reason was an increase in granted subsidies. A considerable rise in the share of subsidies in all revenues from farms was noted. In 2004, subsidies corresponded to around 39% of income, compared to 9% in the year before (Dzun & Józwiak, 2008, p. 24-26).

According to the survey research carried out by Kutkowska *et al.* (2015, p. 243-248), over half of the respondents from the dolnośląskie province noticed

a positive effect of EU funds on the development of farms. One in four reported that the level of their income from the farm increased considerably. Over 10% indicated that the rate at which their farms were declining was halted or slowed down. A similar study was conducted by Marks-Bielska and Babuchowska (2010, p. 89-100) in the warmińsko-mazurskie province, where most farmers (72.6%) agreed that the funds they had been receiving had a positive effect on the financial condition of their farms, with 27% of the respondents stating that this effect was considerable.

The CAP instruments are a key driver for improving the economic standing of agricultural farms (Grzebyk, 2017, p. 146-161), and direct payments are treated as an extra source of funds supplying the household budget. The share of direct payments in the revenue earned from agricultural production in Poland between 2013 and 2017 was 30%, compared to around 26% on average in the entire European Union. In turn, the contribution of all received subsidies in Poland in the same time reached 45% and was about 8% higher than the EU average. The results obtained by Volkov *et al.* (2019, p. 1-17) showed that the system of direct payments had not contributed to any improvement in the socio-economic balance of small farms in Lithuania until the CAP reform in 2013, when its impact became undeniable.

The significance of the financial support received in the form of subsidies depends on the economic size of a farm and the type of agriculture it carries out. Farms at the two extremes, that is the smallest and the largest ones, are unable to operate without any financial aid. Other farms, especially medium-sized and large ones, can earn a financial surplus without being subsidized (*Rolnictwo w 2019 roku*, 2021).

## **Impact of operating subsidies on the economic situation of farms in 2014-2019**

The economic size of farms is an indicator of their production capacity. The worth of production increases in higher economic size classes. This regularity was evident in all years of the analyzed time period. Over the years 2014 to 2019, the average value of total production ranged from 30,414 PLN in the smallest farms to 6,915,374 PLN in the largest ones. The average value of production for all farms included in the study was 127,923 PLN.

Our analysis of the dynamics of changes in the value of production involved increments relative to a fixed base, which was the year 2014. The value of production in 2015 in farms from all economic size classes was decreasing. The highest decrease in that year occurred in medium large farms (down by 10%). In 2016, compared to the base year, this indicator decreased in all farms except the largest ones, where the value of production rose by 5%. In 2017, this indicator declined only with respect to large (-11%) and very large farms (-3%).

In 2018, the highest increase in the value of production was noted in very large farms (11%), while in medium large and large farms it was lower by -2% and -10%, respectively. In the last year submitted to the analysis, i.e. in 2019, only large farms recorded a decrease in the value of production (-8%) relative to the base year, while the smallest farms showed the highest rise of this indicator, by as much as 16% (Fig. 1).

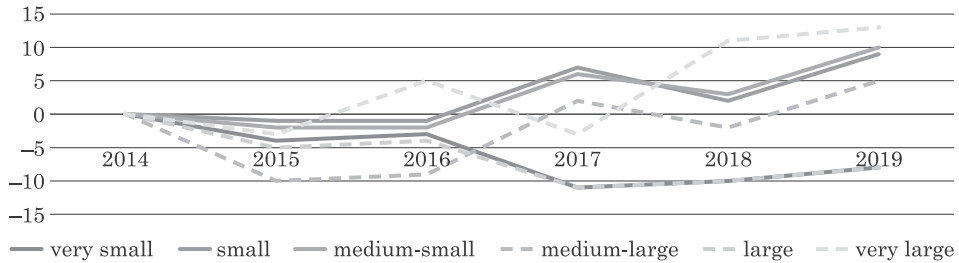


Fig. 1. Dynamics of changes in the production value of farms in Poland, 2014-2019 [%]  
Source: the authors, based on the Polish FADN data.

Operating subsidies and the value of production were the main sources of income for agricultural farms. The worth of subsidies increased with the increasing economic size classes of farms. In 2014-2019, the average value of subsidies ranged from 11,061 PLN in the smallest farms to 809,853 PLN in the largest ones. The average value for farms included in the FADN system in 2014-2019 was 26,996 PLN (Tab. 1).

Table 1  
Value of operating subsidies in farms monitored by the Polish FADN, 2014-2019 (in PLN)

Economic size	2014	2015	2016	2017	2018	2019	Mean
Very small	10,798	10,006	10,446	11,226	12,009	11,882	11,061
Small	20,070	21,782	22,259	23,581	24,554	24,766	22,835
Medium -small	34,250	38,895	39,802	40,473	43,573	44,569	40,260
Large-small	56,691	59,075	60,227	59,662	65,452	64,943	61,008
Large	130,168	106,981	109,411	122,122	129,717	124,556	120,493
Very large	869,389	472,244	731,485	658,022	1,077,117	1,050,860	809,853

Source: the authors, based on the Polish FADN data.

There was an increase in the operating subsidies granted to farms, in nearly all economic size classes, over the analyzed time. The highest rise occurred in medium small farms, where it reached 30%. These farms obtained higher operating subsidies in every year relative to the base year 2014. The same tendency was noted with regards to small and medium large farms. It was only

large farms, which were granted lower operating subsidies in nearly every year, that recorded a decrease by 4% relative to 2014. Very small farms received lower operating subsidies in 2015 and 2016. Moreover, the biggest drop in granted operating subsidies was noted in 2015 and concerned very large farms. It was not until 2018 that these farms recorded a rise in the value of operating subsidies versus their value in the base year 2014 (Fig. 2). The dependence of a farm's economic standing on subsidies is evident when we compare the level of received support and the level of income earned from farming. The said relationship varied depending on the economic size of farms. However, a considerable role of subsidies in creating an economic surplus by farms was evident in every analyzed case. "When comparing the income with subsidies, one needs to remember that we are presenting average results (...) and that some of the farms record losses" (*Wyniki standardowe 2019 uzyskane...*, 2021).

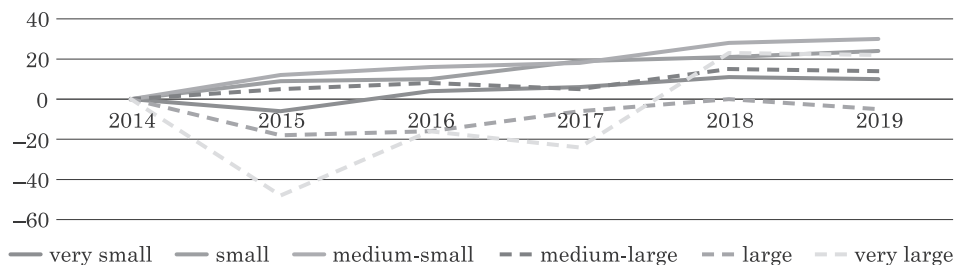


Fig. 2. Dynamics of changes in values of operating subsidies in Poland, 2014-2019 [%]  
Source: the authors, based on the Polish FADN data.

The smallest farms of the economic size up to 8,000 euros of SP generated an income lower than the subsidies they received in 2014-2019. The value of subsidies surpassing the income implicates that these farms "(...) report a positive income mainly owing to subsidies" (*Wyniki standardowe 2019 uzyskane...*, 2021). Over the analyzed time period, subsidies reached on average 126% of the income. The biggest difference was noted in 2018, when the earned income was lower than the subsidies by over 3,735 PLN. In 2019, as a result of an increase in the value of the incomes generated by the smallest farms, the average income and the level of subsidies were the most approximate as the difference was just 175 PLN (Fig. 3). The relationship between operating subsidies and incomes in small farms, of the economic size between 8,000 and 25,000 euros of Standard Production, was shaped slightly differently than for very small farms. The income they generated in every year over the analyzed time period was higher than the subsidies they received. The subsidies corresponded to 83% of the income on average. In 2019, the difference between the subsidies and the income was the greatest, reaching 7,602 PLN. The smallest difference appeared in 2018, when the value of the earned income was higher than the granted subsidies by just 2,048 PLN.



Fig. 3. Subsidies and income in farms from different economic size classes in Poland, 2014-2019: *a* – very small, *b* – small, *c* – medium-small, *d* – medium-large, *e* – large, *f* – very large  
Source: the authors, based on the Polish FADN data.

When reviewing the ratio of operating subsidies to incomes in medium small farms, that is the ones generating between 25,000 and 50,000 euros of Standard Production in the FADN classification, it emerged that there was a slightly larger discrepancy between the subsidies received and the value of income. In the time period submitted to our analysis, the income exceeded the subsidies



more than in small farms. The latter averaged 57% of the income. The smallest difference appeared in 2015, when the income was higher by 23,642 PLN than the value of granted subsidies. The largest gap between the two values, reaching 39,597 PLN, was noted in 2017, when the income was twice as high as the subsidies. The dependence of the total income from a family farm on operating subsidies was decreasing as the economic size grew larger.

In medium large farms, i.e. generating between 50,000 and 100,000 euros of Standard Production, the income exceeded the subsidies more than it did in small and medium small farms. In 2014-2019, the subsidies on average corresponded to 47% of the income. The biggest difference between the two values was noted in 2017, when the income was higher than the subsidies by 91,332 PLN.

In contrast, the strongest dependence on subsidies was seen in 2015, when the value of the generated income was higher than the obtained financial support by 51,279 PLN. The weakest dependence on operating subsidies appeared in large farms, generating between 50,000 and 100,000 euros of SP. These farms achieved such a level of income that it exceeded the subsidies of most. Over the analyzed time period, the subsidies approximated 31% of the income. The biggest divergence appeared in 2019, when the income was greater than the subsidies by 213,310 PLN. In turn, the subsidies were relatively most important in 2014, that is in the first year of the analyzed time period, when the difference between the two values was the smallest, at 152,273 PLN. The situation was reversed in the case of very large farms, generating at least 500,000 euros of Standard Production.

This type of a situation, namely subsidies exceeding income, also appeared in the group of very small farms. As for the largest farms "(...) it is due to the losses which some of the farms owned by legal persons showed in the accounting year" (*Wyniki standardowe 2019 uzyskane...*, 2021). In each year throughout the analyzed time interval, subsidies considerably exceeded the earned revenues. The biggest difference between the two was seen in 2018, when the value of subsidies was higher than revenues by 699,733 PLN. On average, subsidies corresponded to 282% of revenues.

The above analysis concerning relationships between operating subsidies and revenues from family-owned farms implicates the reliance of the financial standing of agricultural farms on operating subsidies throughout the entire analyzed time period. However, the degree of this dependence varied depending on the economic size of farms. Operating subsidies in 2014-2019 on average corresponded to 41% up to 282% of the value of income earned from family-owned farms. A study reported by Lososova *et al.* (2020, p. 236-251) showed that operating subsidies, for example, had a stronger impact on investment activities than an opportunity to acquire capital support.

Farms with 8,000 to 500,000 euros of Standard Production are able to earn a positive income from farming without additional financial support. On the

other hand, the smallest farms, with 2,000 to 8,000 euros SP, as well as the largest ones, with over 500,000 euros SP, are unable to cover costs and generate a financial surplus without being subsidized. The operation of the largest farms is more strongly dependent on subsidies although they were able to generate a financial surplus. Similar studies using FADN data have demonstrated that subsidies play a key role in shaping the economic position of agricultural farms in the EU, especially in the new member states (Średzińska, 2017, p. 814-820).

## Conclusion

The operating subsidies granted between 2014 and 2019 corresponded on average to 41% up to 282% of the value of incomes earned by family-owned farms. Over the analyzed time period, it was possible to observe a decreasing tendency in the importance of subsidies for the total income of farms, except the largest ones, where the dependence of their economic situation on subsidies was clearly increasing. The dependence on subsidies was varied depending on the economic size of farms. It was found that the ability to generate a financial surplus without having access to subsidies depended on the economic size of the farm. The smallest farms, that is the ones which according to the FADN classification generated from 4,000 to 8,000 euros of Standard production, as well as the largest ones, generating above 500,000 euros of SP, were unable to cover the costs and additionally earn a financial surplus without subsidies. The reason is that the costs incurred surpass the value of their production. In the largest farms, these are very high costs of external means, mostly the necessity to hire labour and therefore pay remunerations. On the other hand, farms generating between 8,000 and 500,000 euros of Standard Production are able to earn a financial surplus from farming without additional funding. The farms with 100,000 to 500,000 euros SP manage the best. The hypothesis that as the economic size classes increase, the dependence of farms on subsidies in terms of their ability to earn a financial surplus decreases was not confirmed. This regularity has been distorted by the largest farms, where the dependence of their ability to generate a surplus on being granted subsidies is the strongest among all economic size classes. The largest farms are able to function only with the help of operating subsidies.

## References

- Brodziński, Z., Bojkowska, E., & Janek, S. (2020). Development of Micro-Enterprises in Rural Areas in the Warmińsko-Mazurskie Voivodship. *Olsztyn Economic Journal*, 15(2), 103-112. <https://doi.org/10.31648/oiej.5834>.
- Dzun, J., & Józwiak, W. (2008). *Polskie gospodarstwa przed i po wejściu do Unii Europejskiej*. *Rolniczy Magazyn Elektroniczny*, 27, 24-26. Retrieved from [https://cbr.gov.pl/rme-archiwum/2008/rme27/dane/4\\_6.html](https://cbr.gov.pl/rme-archiwum/2008/rme27/dane/4_6.html) (22.03.2021).
- Grzebyk, B. (2017). Rola instrumentów Wspólnej Polityki Rolnej Unii Europejskiej w podnoszeniu jakości życia mieszkańców obszarów wiejskich. *Nierówności Społeczne a Wzrost Gospodarczy*, 52, 146-161. Retrieved from <http://repozytorium.ur.edu.pl/handle/item/3328>.
- Hrybau, A., Hryshanava, V., Witkowska-Dąbrowska, M., & Świdwińska, N. (2019). Agricultural Production Volume in Poland and in Belarus and its Prospects. *Olsztyn Economic Journal*, 14(4), 397-406. <https://doi.org/10.31648/oiej.4934>.
- Kutkowska, B., Berbeka, T., & Pilawka, T. (2015). Wpływ instrumentów wspólnej polityki rolnej na sytuację ekonomiczną gospodarstw indywidualnych w opinii rolników. *Roczniki Naukowe Stowarzyszenia Ekonomistów Rolnictwa i Agrobiznesu*, 17(3), 243-248. Retrieved from <https://ageconsearch.umn.edu/17-3-Kutkowska.pdf>.
- Lizińska, W. (2019). Conditions motivating a decision to start and develop a non-agricultural business on a farm in the province of Warmia and Mazury. *Annals of the Polish Association of Agricultural and Agribusiness Economists*, 21(4), 278-287. <https://doi.org/10.22004/ag.econ.302839>.
- Lososova, J., Zdenek, R., & Kopta, D. (2017). Development of the main production and economic indicators of Czech farms. *Custos e Agronegocio*, 13(2), 88-109. Retrieved from <http://www.custoseagronegocioonline.com.br/numero2v13/OK%206%20production.pdf>.
- Lososova, J., Zdenek, R., & Svoboda, J. (2020). Tangible fixed assets in Czech small and middle-sized farms. *Eastern Journal of European Studies*, 11(1), 236-251. Retrieved from <https://www.ceeol.com/search/article-detail?id=888156>.
- Marks-Bielska, R., & Babuchowska, K. (2010). Functioning of the Direct Subsidies System in Poland and Other European Union Countries. *Journal of Agribusiness and Rural Development*, 17(3): 89-100. Retrieved from [http://www.jard.edu.pl/tom17/zeszyt3/art\\_9.pdf](http://www.jard.edu.pl/tom17/zeszyt3/art_9.pdf) at [http://www.jard.edu.pl/tom17/zeszyt3/art\\_9\\_pl.pdf](http://www.jard.edu.pl/tom17/zeszyt3/art_9_pl.pdf).
- Na czym polega WPR. Płatności bezpośrednie dla rolników w latach 2015–2020*. (2018). Urząd Publikacji Unii Europejskiej. Retrieved from <https://op.europa.eu/pl/publication-detail/-/publication/541f0184-759e-11e7-b2f2-01aa75ed71a1> (22.03.2021).
- Rolnictwo w 2019 roku*. (2021). Warszawa: Główny Urząd Statystyczny. Retrieved from <https://stat.gov.pl/obszary-tematyczne/rolnictwo-lesnictwo/rolnictwo/rolnictwo-w-2019roku,3,16.html> (22.03.2021).
- Sadowski, A., & Antczak, W. (2012). Wpływ dopłat bezpośrednich na sytuację ekonomiczną gospodarstw w ocenie ich kierowników. *Roczniki Naukowe Stowarzyszenia Ekonomistów Rolnictwa i Agrobiznesu*, 14(3): 348-352. Retrieved from <https://bazekon.uek.krakow.pl/rekord/171369621>.
- Średzińska, J. (2017). *The income situation of farms in the European Union countries*. In P. Marešová, & I. Soukal (Eds.), *Hradec Economic Days: Double-blind peer reviewed proceedings of the International Scientific Conference*. Hradec Králové: University of Hradec Králové.
- Toth, M., Lancaric, D., & Savov, R. (2016). *Globalization and its socio-economic consequences, 16<sup>th</sup> international scientific conference proceedings*. Zilina: University of Zilina.
- Volkov, A., Balezentis, T., Morkunas, M., & Streimikiene, D. (2019). Who Benefits from CAP? The Way the Direct Payments System Impacts Socioeconomic Sustainability of Small Farms. *Sustainability*, 11(7), 2112, 1-17. <https://doi.org/10.3390/su11072112>.
- Wyniki standardowe 2019 uzyskane przez gospodarstwa rolne uczestniczące w Polskim FADN. Część II. Analiza wyników standardowych*. (2021). Warszawa: Polski FADN.

