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AN ASSESSMENT OF THE SET-ASIDE AND FALLOW LAND SCALE IN POLAND

Key words: fallow land, area groups of farms, voivodships, Poland

ABSTRACT. Changes in land management methods constantly occur, caused by natural, economic, social and demographic conditions. This paper aims to determine changes in set-asides and fallow land in Poland, in the years 1990-2020, and determine the spatial diversity of this phenomenon. The study was based on available statistical data for the studied period. The study shows that, before 2004, the share of fallow land was much more significant. After Poland acceded to the European Union, land left without cultivation decreased considerably with a simultaneous increase in the area of land used for agriculture. The results show that the share and number of hectares of fallow area decreased. The provinces of Kujawsko-Pomorskie, Opole and Wielkopolskie were characterized by the lowest percentage of fallow land in the agricultural area of the province. In contrast, the provinces of Podkarpackie, Lubuskie, Świętokrzyskie, Małopolskie, Śląskie and Warmińsko-Mazurskie had the highest percentage of fallow land.

INTRODUCTION

Over the centuries, land has been perceived as synonymous with wealth and stability. Land, as a factor of production, has always been treated as a particular good. Land considered infertile was usually abandoned and farmers acquired new land. Over time, available land resources became exhausted and what became important was the amount of land that could guarantee an adequate income from agricultural activity. However, even when every piece of land was valuable, some of the land owned by farmers remained undeveloped as a method of increasing soil fertility [Jaros, Woch 2010]. Fallows and set-asides were an integral part of land use systems from the beginning of agricultural development until the mid-nineteenth century when the fallow system was replaced by crop rotation [Nowicki et al. 2007].

The reasons for land set-asides are diverse. The sources of the decision to exclude certain areas of land from production lie, on the one hand, in the internal conditions of farms, first of all, in limitations resulting from natural conditions (low soil quality, unfavorable topography, or disturbances in water conditions) or available resources of the labor force and capital, and, on the other hand, in factors external to a farm, e.g., the supply of products on the market and the level of prices of production means [Grontkowska 2002, p. 16]. The long-term exclusion of agricultural land from use mainly results from a lack of profitability of its cultivation. Literature usually distinguishes two types of reasons for set-asides. One reason is natural-ecological, which is related to the low production potential of soil (low soil quality), erosion phenomena, or the negative influence of neighboring areas (e.g., forests, set-aside areas). The second reason is socio-economic – resulting from a lack of possibilities to obtain agricultural income. The low profitability of agricultural production may result from a high dispersion of plots (expensive and challenging access) or a lack of a labor force (depopulation an the aging population) [Jaros, Woch 2010].

One of the essential changes in land-use patterns and impacts on the landscape is set-aside areas. Nowadays, land left without any cultivation can be found in rural areas and suburban and urban zones. In agricultural landscapes located outside cities and suburban zones, set-asides are usually determined by habitat aspects. It should be emphasized that, apart from economic effects resulting from the abandonment of plant production, the phenomenon of fallow land has an ecological dimension [Faliński 2001, Kurus, Podstawka-Chmielewska 2006]. The abandonment of land use enables the spontaneous development of many plant populations, often valuable from a natural point of view, but also with adverse effects, e.g., noxious weeds.

This study aims to evaluate changes in the areas of set-asides and fallow land according to two criteria: voivodships and area groups. First, data on the area of set-asides and fallow land for the years 1990-2020 are presented.

MATERIAL AND METHODS

The definition of fallow and set-aside land, used together for a long time in statistics, was modified. According to the definition by agrotechnicians, a fallow is an arable field excluded from utilization for a short period, not longer than two years, on which plants are not sown or planted, but where mechanical soil tending (black fallow), or chemical tending (herbicide fallow) is performed. Another example of a fallow is leaving an untended field that becomes overgrown with weeds (green fallow). The purpose of fallowing is to improve soil fertility [Świętochowski et al. 1996]. Thus, fallow land is not used for agriculture but soil fertilization. On the other hand, fallow land is left for many years without tillage, which causes it to become overgrown.

The data concerning set-asides and fallow areas came from published statistical data. The research was primarily based on information from the Agricultural Censuses for 2010 and 2020 provided by GUS. In addition, for the years 2020 and 2021, the identification of a fallow and fallow land was determined based on data available at a municipal level from the Agency for Restructuring and Modernization of Agriculture's database.

Research was carried out in three systems, i.e., the time frame between 1990 and 2020, including between two general agricultural censuses of 2010 and 2020, spatial (voivodeship) and area groups. The presented data are not fully comparable over time, primarily due to changes in the definition and classification of agricultural land. Until 2006, the division of agricultural land was used separating: arable land, orchards, meadows and pastures, while, since 2007, agricultural land maintained in good agricultural condition was defined following standards meeting the requirements of the Act of February 5, 2015, on direct payments under the income support system consolidated text [Journal of Laws, 2020, item 1341] and other agricultural lands. Thus, the agricultural land area includes agricultural land in good agricultural condition (arable land, orchards, grassland and fallow land) and other agricultural lands, which is agricultural land classified as unused and not maintained in good agricultural condition. The study determined the share of fallow land and fallow land to the agricultural land area.

Since 2007 statistics distinguish the area of fallow land defined as arable land not used for production purposes but maintained in good agricultural and environmental condition. They include land eligible and not eligible (e.g., farms with arable land below 1 ha). Fallow land includes crops to be plowed into the main crop (green manures) [GUS 2019, p. 34]. Until 2007, the national statistics used the concept of a fallow and set-asides without separating their area in detail. According to the GUS definition, set-aside lands are areas of arable land that did not yield any crops and had not been cultivated for at least two years [GUS 2003a, p. XIV]. While the areas which are not cultivated for at least two years were treated as fallow lands, which, in a given year, were temporarily not sown (not used for agricultural purposes). Fallow land, which has been arable land for five years and qualified under the mandatory practice of maintaining ecological areas, is the land the farmer does not use for production. In the case of the fallow land definition presented in § 3 of the Regulation of the Minister of Agriculture and Rural Development of March 11, 2015, (on areas recognized as pro-ecological areas and conditions for the joint implementation of the practice of maintaining these areas [Journal of Laws, item 354]), fallow land is an area suitable for grazing or cultivation if at least one agrotechnical treatment was carried out on it to remove or destroy undesirable vegetation by October 31.

RESULTS

Fallow land is arable land that has not been used for agricultural purposes for many years. The expansion of the fallow land phenomenon on a large scale was influenced, among others, by the political transformation initiated in 1989. In the structure of only farmland use, set-asides and the fallow land area increased from 1.5 million ha in 1996 (according to the National Agricultural Census) to 2.3 million ha in 2002. Such data was confirmed by the National Agricultural Census of that year, which showed that the share of set-asides and fallow land was 17.6% of the arable land area [Krysiak 2011]. In the 1990s, many individual farmers began to exclude part of their arable land from farming. The main reason for this was not excessive production but social and economic changes in the Polish countryside. Also, especially in regions with a high share of state-owned land, bankrupt state farms left large undeveloped fields [Jaros, Woch 2010]. In the period of political transformation, the largest share of uncultivated arable land was in areas of medium and low agricultural usefulness, i.e., land with the lowest soil quality. Table 1 presents data on the total area of set-asides and fallow lands in Poland in the years 1990-2020 and their share in the structure of agricultural land.

The obligation to set-aside agricultural land was introduced by the European Union to control agricultural product supply. This mechanism was one of the instruments used to regulate the situation of the agricultural market and was supposed to ensure the profitability of production and obtaining added value. Set-aside areas were established in 2003, which resulted in direct payments, assuming that the land is not used for production purposes but is maintained in good agricultural and environmental conditions [Mickiewicz et al. 2013]. Nevertheless, the protection of agricultural land using various programs and measures to preserve the existing state or restore the situation from before the agricultural land was used for other purposes is still an essential element of implementing the Common Agricultural Policy.

In 1994-1999, the total area of set-asides and fallow land ranged from 1.3 million ha in 1995 to almost 1.8 million ha in 1996, making 9.5% of the total arable land area. Concerning the area of land belonging to farms, the area of fallow and fallow land increased from 1.5 million ha in 1996 (a category shown by 592 thousand farms) to 2.3 million ha in 2002 (1,157 thousand farms) [GUS 2003b]. The highest share of fallow land, which amounted to 14.3% of the agricultural land area, was recorded in 2002. The area of fallow land in 2002 was 1.9 million ha, and the fallow area was 0.4 million ha [GUS 2003a, p. 44]. The area of fallow and fallow land on private sector farms in 2002 amounted to 1.9 million ha (in 909.8 thousand farms), including almost 1.5 million ha (in 1996 – 1.1 million ha), and the fallow land of about 0.4 million ha (in 1996 also 0.4 million ha) and occurred in 294.2 thousand of these farms [GUS 2003b, p. XXXVIII-XXXIX]. In 2002, the fallow and set-aside land area in public sector farms amounted to 0.4 million ha, of

Table 1. Characteristics of set-asides and fallow lands in Poland in the years 1990-2020

Years	Area [thousand ha]	Share in UAA [%]
1990	162.9	0.9
1991	241.0	1.3
1992	810.0	4.3
1993	944.0	5.0
1994	1,536.0	8.2
1995	1,321.0	7.1
1996	1,779.2	9.5
1997	1,594.9	8.6
1998	1,472.5	7.9
1999	1,549.1	8.4
2000	1,668.2	9.1
2002**	2,302.2	14.3
2003	1,761.7	10.9
2004	1,399.2	8.7
2005	1,028.6	6.5
2006	984	5.1
2007*	413	2.2
2008	462	2.4
2009	498	3.1
2010**	449.8	4.3
2011	468.4	4.4
2012	439.9	4.2
2013	446.5	4.3
2014	475.2	4.6
2015	134	0.9
2016	166	1.1
2017	150	1.0
2018	180	1.2
2019	157	1.1
2020**	179	1.1

* By 2007, the area of fallow land and set-aside land in total, since 2007 – the area of fallow land

** Data from the Agricultural Census 2002, 2010, and 2020

Source: own compilation based on [GUS 2003, 2011, 2021]

which 386.4 thousand hectares were taken [GUS 2003b, p. XXXIX]. In the years 2004-2010, the area of fallow land systematically decreased from 1399.2 to 449.8 thousand ha. Thus, after Poland joined the European Union, the interest in land not used for agriculture increased for fear of losing direct payments and because of the profits brought by land used for agricultural production [GUS 2013, p. 176]. Between 2011 and 2014, the share of fallow land remained similar and amounted to about 4.2-4.6% of the agricultural area. In contrast, 2015-2020 was when the share of fallow land averaged 1.1% of the agricultural land area. Data presented in Table 2 show changes in the fallowed area (the only area covered by farms) between the last two agricultural censuses by farm area group.

Table 2. Changes in fallowed area by farm area group between the 2010 and 2020 agricultural censuses

Area group	The volume of the year						Change of share [p.p.]	Surface change 2010 = 100
	2010			2020				
	thousand ha	share in UAA [%]	participation in the structure	thousand ha	share in UAA [%]	participation in the structure		
Total	432	2.9	x	180	1.2	x	-1.7	41.4
Up to 1 ha inclusive	1	5.6	x	1	5.9	x	0.3	100.0
More than 1 ha in total	430	2.9	100.0	179	1.2	100.0	-1.7	41.6
1-2 ha	34	7.7	7.9	13	3.6	7.3	-4.1	38.2
2-3	34	6.5	7.9	14	3.2	7.9	-3.3	41.2
3-5	55	5.1	12.8	26	2.8	14.6	-2.3	47.3
5-7	38	3.7	8.8	17	2.0	9.6	-1.7	44.7
7-10	38	2.7	8.8	17	1.4	9.6	-1.2	44.7
10-15	35	1.9	8.1	14	0.9	7.9	-1.0	40.0
15-20	20	1.6	4.7	8	0.7	4.5	-0.9	40.0
20-30	22	1.5	5.1	9	0.6	5.1	-0.9	40.9
30-50	22	1.6	5.1	10	0.6	5.6	-1.0	45.5
50-100	27	2.3	6.3	12	0.7	6.7	-1.6	44.4
100 ha and more	105	3.2	24.4	38	1.2	21.3	-2.1	36.2

Source: own compilation based on data published by the Agricultural Census 2010 and 2020 [GUS 2011, 2021]

The data summarized in Table 2, showing the area of fallow land by area group, shows that the total fallow area in 2020 was almost 60% less than in 2010. In contrast, the share of the fallow land area in the agricultural area decreased from 2.9% to 1.2% of this land. In 2010 and 2020, the same area groups of farms were characterized by the largest share of fallow land. In big farms, with an area over 100 ha, the share of fallow land decreased from 24.4% to 21.3%. While in small farms, with an area of 3 to 5 ha, its share increased (from 12.8% to 14.6%).

The area group of farms characterized the largest share of fallow land from 1 to 2 ha (Table 2). In 2010, this share accounted for 7.7% of the UAA of this area group, while in 2020, it was 3.6%. Generally, in all farms above 1 ha, a decrease in the area and share of fallow land was observed. In farms, up to 1 ha, the area remained at the same level, and the share increased. The lowest share of fallow land in the structure of agricultural land of a given group was characteristic for area groups of farms from 10 to 50 ha in both studied years. In 2010, the share of fallow lands did not exceed 2%, while in 2020 – 1% of the agricultural land of a given area group. Table 3 presents data on the area of set-asides and fallow land and its share by province in 2002, 2010, 2015 and 2020.

The highest percentage of fallow land in the agricultural area of a given voivodeship in 2010 was characteristic for the Podkarpackie, Lubuskie, Świętokrzyskie and Małopolskie voivodeships, while the lowest for the Kujawsko-Pomorskie, Wielkopolskie and Opolskie voivodships. In 2015, a significantly lower percentage of fallow land was recorded in Poland, which formed at a level of less than 1%. In the provinces of Podkarpackie, Świętokrzyskie and Warmińsko-Mazurskie this percentage was the highest and in the provinces of Wielkopolskie, Opolskie, Kujawsko-Pomorskie and Podlaskie it was the lowest. In 2020 the share of fallow land in Poland increased to 1.2% of agricultural land. The highest percentage of fallow land was recorded in the province of Silesia (3.1%) and Podkarpackie, Świętokrzyskie, and Lubuskie. The lowest percentage is still in the same three provinces (Wielkopolskie, Opolskie, Kujawsko-Pomorskie). To sum up, the lowest percentage of fallow land was recorded in the same provinces, and the province of Silesia joined the provinces with the highest percentage of fallow land. Table 4 presents information about the fallow land area, including the fallow land area with melliferous plants, in 2020 and 2021 based on farmer declarations from the register made available by the Agency for the Restructuring and Modernization of Agriculture.

Data presented in Table 4 and Figure 1 show that the highest percentage of fallow land compared with the area of agricultural land in good agricultural condition in a given province was recorded in the Podkarpackie, Śląskie, Świętokrzyskie, Lubuskie and Zachodniopomorskie provinces, and the lowest in the Kujawsko-Pomorskie, Wielkopolskie, Opolskie and Podlaskie provinces. Therefore, no significant changes were observed over the past years, except for the Śląskie Voivodeship, where the share

Table 3. Characteristics of set-aside land (for 2002) and fallow land on farms by voivodships in 2002, 2010, 2015 and 2020

Voivodeship	The volume of the year														
	2002*						2010*			2015			2020*		
	set-asides [ha]	fallow [ha]	share set-asides in UAA [%]	participation in the structure	share fallow in UAA [%]	participation in the structure	fallow [ha]	share in UAA [%]	participation in the structure	fallow [ha]	share in UAA [%]	participation in the structure	fallow [thous. ha]	share in UAA [%]	participation in the structure
Poland	1,882,773	419,442	9.7	100.0	2.2	100.0	449,849	2.9	100	134,068	0.9	100.0	180	1.22	100.0
Dolnośląskie	126,034	25,168	11.2	6.7	2.2	6.0	30,370	3.1	6.8	6,541	0.7	4.9	8	0.9	4.4
Kujawsko-pomorskie	40,694	20,694	3.3	2.2	1.7	4.9	14,129	1.3	3.1	4,579	0.4	3.4	5	0.5	2.8
Lubelskie	114,051	37,794	6.3	6.1	2.1	9.0	33,680	2.4	7.5	9,732	0.7	7.3	14	1.0	7.8
Lubuskie	101,686	19,579	19.1	5.4	3.7	4.7	21,496	4.8	4.8	6,374	1.6	4.8	9	2.1	5
Łódzkie	97,536	26,351	7.5	5.2	2	6.3	21,593	2.1	4.8	11,262	1.2	8.4	13	1.3	7.2
Małopolskie	121,635	16,125	12.5	6.5	1.7	3.8	28,912	4.4	6.4	6,111	1.1	4.6	7	1.3	3.9
Mazowieckie	242,709	63,934	9.4	12.9	2.5	15.2	59,951	3	13.3	19,362	1.0	14.4	28	1.4	15.6
Opolskie	33,025	8,592	5.6	1.8	1.4	2.0	8,049	1.6	1.8	1,294	0.3	1.0	2	0.4	1.1
Podkarpackie	164,720	40,223	17.0	8.7	4.2	9.6	52,889	7.6	11.8	11,266	2.0	8.4	16	2.8	8.9
Podlaskie	81,839	17,414	6.0	4.3	1.3	4.2	18,222	1.7	4.1	3,924	0.4	2.9	6	0.6	3.3
Pomorskie	129,129	249,10	12.5	6.9	2.4	5.9	21,420	2.7	4.8	4,857	0.6	3.6	8	1.0	4.4
Śląskie	120,314	23,210	18.9	6.4	3.7	5.5	17,279	3.8	3.8	3,095	0.9	2.3	12	3.1	6.7
Świętokrzyskie	78,767	19,345	11.0	4.2	2.7	4.6	25,283	4.6	5.6	8,770	1.8	6.5	11	2.2	6.1
Warmińsko-mazurskie	161,903	28,809	12.2	8.6	2.2	6.9	39,297	3.7	8.7	17,965	1.8	13.4	15	1.5	8.3
Wielkopolskie	70,017	21,028	3.5	3.7	1.1	5	25,513	1.4	5.7	5,876	0.3	4.4	11	0.6	6.1
Zachodnio-pomorskie	198,714	26,267	17.4	10.6	2.3	6.3	31,768	3.3	7.1	13,060	1.6	9.7	15	1.7	8.3

* Data from the 2002, 2010 and 2020 Agricultural Censuses
Source: own calculations based on [GUS 2003, 2011, 2021]

Table 4. Characteristics of fallow land by voivodeship in 2020-2021 based on farmer declarations

Voivodeship	Area in ha in 2020			Area in ha in 2021		
	fallow	fallow with honey plants	share in UAA [%]	fallow	fallow with honey plants	share in UAA [%]
Dolnośląskie	8,226.63	95.13	0.90	10,021.55	194.41	1.10
Kujawsko-pomorskie	3,111.32	59.83	0.31	3,725.16	72.51	0.37
Lubelskie	9,684.27	106.27	0.70	16,977.80	158.32	1.24
Lubuskie	9,552.08	150.23	2.13	9,588.91	220.78	2.15
Łódzkie	9,297.58	47.04	0.98	15,507.05	115.32	1.64
Małopolskie	3,897.49	37.27	0.81	6,490.60	72.38	1.36
Mazowieckie	19,479.72	95.57	1.11	29,547.63	239.51	1.69
Opolskie	1,898.27	32.04	0.37	2,491.12	52.18	0.48
Podkarpackie	9,649.09	79.99	1.74	18,507.21	93.96	3.36
Podlaskie	3,903.81	52.51	0.38	5,614.88	70.71	0.55
Pomorskie	7,819.34	210.33	1.06	8,430.01	194.94	1.15
Śląskie	8,200.47	44.9	2.39	10,771.37	64.74	3.13
Świętokrzyskie	7,570.65	22.5	1.51	13,415.59	100.77	2.68
Warmińsko-Mazurskie	8,668.18	136.06	0.79	10,433.43	140.56	0.96
Wielkopolskie	6,233.08	115.02	0.38	7,076.96	136.26	0.43
Zachodniopomorskie	19,361.64	208.56	2.10	18,486.26	330.7	2.00
Poland	136,553.62	1,493.25	0.96	187,085.53	2,258.05	1.32

Source: own elaboration based on [ARiMR 2021]

of fallow land systematically increased. Between 2020 and 2021, there was an increase in the area managed as fallow with melliferous plants by 51%; however, the scale is still tiny (ca. 2.2 thousand ha in Poland).

The data presented in Figure 1 shows that the area of land set-asides in 2000 was the highest. Therefore, it can be concluded that there was a decrease in the share of land set-asides in provinces, characterized by a significant share of State Treasury Land before the ownership transformation process (Warmińsko-Mazurskie, Pomorskie and Zachodniopomorskie provinces).

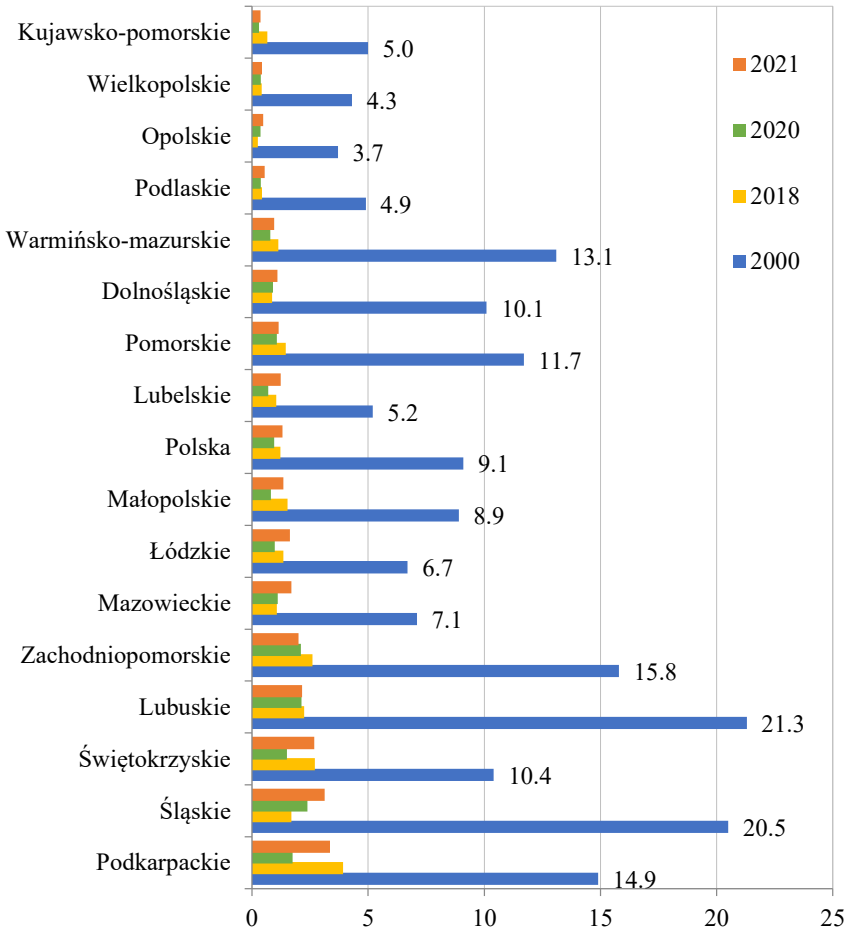

Figure 1. Comparison of the share of set-asides and fallow land by province in 2000, 2018, 2020 and 2021 (sorted in descending order with data for 2021)

Source: own elaboration based on [ARiMR 2021]

SUMMARY

In Polish agriculture, there are constant changes regarding land management. One of the forms, implemented with different intensities, is the temporary exclusion of land from agricultural use in the form of fallow land. Fallowing relates to the introduction of different technologies to keep land in good agricultural condition. Such action contributes to limiting unfavorable changes in land fertility and maintaining production potential, preventing environmental degradation.

In the pre-accession period, and especially after Poland acceded to European Union structures and the introduction of area payments, a rapid decrease in fallow land in the agricultural landscape was observed. Earlier, the scale of fallow land, especially in the 90s, was significant, especially in areas with a significant share of land owned by the State Treasury. The area of fallow land between PSR 2010 and 2020 decreased by 60%. There were no significant changes in the share of fallow land by area group, except for farms below 1 ha, where there was an increase in the share of fallow land. No significant changes were noted concerning provinces, either. In the following years, the same provinces (Kujawsko-Pomorskie, Opolskie and Wielkopolskie) were characterized by the lowest percentage of fallow land in agricultural land in good agricultural condition in a given province. Provinces with the highest percentage of fallow land formed a similar composition, namely the Podkarpackie, Lubuskie, Świętokrzyskie, Małopolskie, Śląskie and Warmińsko-Mazurskie provinces.

Following the changes in agricultural policy, including the implementation of the Common Agricultural Policy, the solutions to the issue of temporary exclusion of land from agricultural production have changed (i.e., the transition from set-asides to fallow). Fallow land becomes an integral part of modern crop rotation as a traditional link in crop rotation, especially important in transforming intensive agriculture into sustainable or partly organic farming. Properly implemented fallowing contributes to maintaining soil value and even improves their biophysical and chemical conditions, i.e., increases the soil production potential. Fallow land, thus, becomes an integral part of the contemporary agricultural landscape.

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OCENA SKALI ODŁOGOWANIA I UGOROWANIA ZIEMI W POLSCE

Słowa kluczowe: odłogi, ugory, grupy obszarowe, województwa, Polska

ABSTRAKT

Celem opracowania jest określenie zmian w powierzchni gruntów odłogowanych i ugorowanych w Polsce w latach 1990-2020, a także określenie zróżnicowania przestrzennego tego zjawiska. Zmiany sposobów zagospodarowania gruntów dokonują się nieustannie, a ich przyczyny to uwarunkowania przyrodnicze, ekonomiczne, społeczne i demograficzne. W opracowaniu bazowano na dostępnych danych statystycznych za badany okres. Z przeprowadzonych badań wynika, że przed 2004 rokiem skala odłogowania gruntów była znacznie większa. Po przystąpieniu Polski do Unii Europejskiej skala pozostawiania ziemi bez uprawy znacznie się zmniejszyła, przy jednoczesnym zwiększeniu powierzchni gruntów użytkowanych rolniczo. W ujęciu przestrzennym nie odnotowano wyraźnych zmian, w zasadzie powierzchnia ugorowana zmniejszyła się proporcjonalnie. Najniższym odsetkiem gruntów ugorowanych w powierzchni użytków rolnych danego województwa charakteryzowały się województwa, takie jak kujawsko-pomorskie, opolskie i wielkopolskie, natomiast najwyższy taki odsetek miały województwa: podkarpackie, lubuskie, świętokrzyskie, małopolskie, śląskie i warmińsko-mazurskie.

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