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ADAPTATION OF ECO-SCHEMES TO POLISH AGRICULTURE IN THE FIRST YEAR OF THE EU CAP 2023-2027

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ABSTRACT: The aim of this study was to assess the ability of Polish farms to absorb practices within eco-schemes in Poland in the first year of operation of the Common Agricultural Policy (CAP) 2023-2027. The type of practices used, their number and the scale of use were determined, taking into account the natural conditions in which the farms implementing them operate. The assessment was made taking into account the division of farms according to the size of utilised agricultural land (UAA) and their location in communes. The analysis concerned thirteen practices within five area eco-schemes that were available to Polish farms in the first year of the Polish Strategic Plan 2023-2027 within EU CAP 2023-2027 implementation. The data used came from the database of the Agency for Restructuring and Modernization of Agriculture. A research method was used that involved analysing the distribution and characteristics of the beneficiary farms of eco-schemes in 2023. It was found that 1/3 of farms benefitted from such support. The size of the farm and the natural management conditions played a role in eco-scheme absorption.

KEYWORDS: eco-schemes, sustainable agriculture, agricultural land, Areas facing Natural or other specific Constraints (ANCs)

Introduction

In the current global, European and Polish economic reality, the occurrence of negative changes in the natural environment, often caused by agriculture, is increasing (EEA, 2019; Pe'er et al., 2020; Żylicz, 2023; World Economic Forum, 2024). In order to effectively remedy this unfavourable situation, agriculture must urgently take into account the need to provide public goods for the environment in a durable, stable, and wide-ranging manner while creating attractive spaces for living, working, and recreation. To achieve this goal, however, it is necessary to have institutional rules of conduct that would be able to regulate and motivate farmers to the expected behaviour. Payments to environmental public goods play an important role in this process (Czyżewski & Smędzik-Ambroży, 2017; Matuszczak 2020). In this context, agriculture in the European Union (EU) is served by the Common Agricultural Policy (CAP), which is revised every few years and is becoming more and more sensitive to social signals regarding its environmental shape (McGurk et al., 2020; Erjavec & Erjavec, 2021). As a result, institutional measures aimed at protecting the natural environment are gaining more and more importance in the EU CAP (Harvey, 2015; Henke et al., 2018). This state of affairs is due to the identified need for protection of the natural environment (Prandecki et al., 2021). On the other hand, the EU agricultural policy is expected to support agriculture in achieving a balance between providing environmental goods and ensuring satisfactory agricultural income (M'barek et al., 2017; Uthes et al., 2020). For farmers themselves, who are the subject of the CAP and agriculture as an economic sector, it is important that the principles of agricultural policy are largely stable and that changes are introduced on the basis of evolution, not sudden changes.

Institutional environmental measures play a fundamental role under the CAP 2023-2027. In the current agricultural policy, at least 25% of the direct payments budget and 35% of the rural development policy budget in the Member States must be allocated to agri-environmental commitments that promote practices that protect the natural environment and climate and concern animal welfare (Cagliero et al., 2023; European Parliament, 2023). In the first case, we are talking about eco-schemes that are part of the first pillar of the CAP; they are mandatory for Member States, but their implementation by farmers is voluntary (Wrzaszcz & Prandecki, 2020; Feindt et al., 2022; Castillo-Diaz et al., 2024). Farmers, in exchange for meeting the minimum requirements for caring for agricultural land, receive compensation in the form of direct payments. However, if they take additional actions to maintain land quality, they will receive further compensation (Czubak et al., 2024). Eco-schemes are fully financed from EU funds and do not require co-financing from national budgets (Lampkin et al., 2020). They constitute a type of additional direct support compensating farmers for additional costs or lost income related to providing society with good conditions of the natural environment and climate (Włodarczyk, 2022; Musiał & Musiał, 2023). Eco-schemes go beyond the basic requirements of conditionality, and their construction is simpler in comparison to the multi-annual environmental activities specified in the second pillar of the CAP (Ziętara & Mirkowska, 2021).

The European Commission states that in the European agricultural policy for 2023-2027, eco-schemes should be treated as a priority in the context of protecting the natural environment and climate, and their shape should respond to the specific needs and priorities of a given Member State or even its regions (European Commission, 2021; Latacz-Lohmann et al., 2022). Natural conditions and priorities for the protection of individual elements of the natural environment differ in individual EU countries (Runge et al., 2022; Alves et al., 2023). In other words, eco-schemes should take into account the specific characteristics of a given country, including its soil and climatic conditions, farm structure and land use. Eco-schemes are, therefore, a new way to initiate a more focused and tailored strategy to address urgent environmental and climate protection challenges, taking into account national or regional priorities. In this context, much currently depends on the willingness, knowledge and capabilities of Member States to implement them properly (Meredith & Hart, 2019).

There is no doubt that under the current EU CAP, policymakers have significantly increased its complexity in this context by adding another instrument in the form of eco-schemes to the set of pre-existing institutional environmental measures. Therefore, a question arises about the type, number and scale of practices implemented within eco-schemes by Polish farms of various sizes and operating in diverse natural management conditions in the first year of the Polish Strategic Plan 2023-2027 implementation within CAP 2023-2027.

The study is intended to fill the research gap regarding determining the ability of Polish agriculture to absorb practices within eco-schemes in the first year of the CAP 2023-2027. An important advantage of the analysis will be determining the type of practices used, their number and scale of use, as well as the natural conditions in which the farms implementing them operate. The assessment was made taking into account the division of farms according to the size of UAA. So far, there is a lack of results of this type in international literature.

Idea of eco-schemes in selected EU countries under the CAP 2023-2027. Theoretical approach

Eco-schemes are annual payments designed to be adapted to national conditions and needs. They are assessed by the European Commission with respect to achieving the environmental and climate goals of the new CAP – protection of soil resources, water, climate, animal welfare and biodiversity in agricultural production (Ministry of Agriculture and Rural Development, 2023). EU Member States have a diverse set of eco-schemes (EU CAP, 2023).

Implementation of eco-schemes by EU agriculture is intended to provide global environmental public goods (Guyomard et al., 2023). Under the current EU CAP, funds dedicated to agriculture due to participation in eco-schemes are set at EUR 44.7 billion, including EUR 4.4 billion for Poland (European Commission, 2023; Ministry of Agriculture and Rural Development, 2023). Undoubtedly, the funds create a real opportunity to stabilise the economic situation of farms, taking additional actions to protect the natural environment and climate. For society as a purchaser of public goods provided by agriculture, it is important that the financial resources offered in the form of additional payments are used in the most effective way possible, taking into account budget constraints.

In 2023, Poland included five area eco-schemes in its Strategic Plan under the CAP for 2023-2027, including thirteen practices and an additional eco-scheme concerning animal welfare. It is also possible to combine the practices within a farm to ensure their most effective use from the point of view of environmental and climate protection. In the EU, the structure of eco-schemes varies greatly. Three countries (Hungary, Ireland, and the Netherlands) have one collective eco-scheme, while the others contain a larger list. The number of practices within eco-schemes also varies, ranging from 3 (Hungary) to 22 (the Netherlands) (Runge et al., 2022; Jongeneel & Gonzalez-Martinez, 2023; Krishna et al., 2023). For example, Germany has ten practices within seven eco-schemes. Payment rates range from EUR 40 to EUR 1,200 per ha. The practices focus primarily on biodiversity conservation. It includes, among others, the following practices: diversified sowing structure, extensive use of permanent grasslands, agroforestry, biological protection of plants and Natura 2000 areas, as well as maintenance non-productive areas or facilities, and the use of flower strips on arable land (Scheid & Ittner, 2022). In practice, it turned out that the implementation of eco-schemes, with the exception of the variant regarding the diversification of the sowing structure, was smaller than planned. Germany is planning to introduce changes to the eco-scheme system and wants to increase some payment rates. The changes are planned to take place in 2025. Bulgaria, in turn, has prepared eight eco-schemes. They are largely concerned with the maintenance and improvement of biodiversity, including financial rewards for the use of green manure and natural fertilisers, a diversified sowing structure, and limited use of pesticides (Shukadarova, 2023). Denmark prepared a set of six eco-schemes. They included, among others, a diversified sowing structure, extensive use of organic soils, fallowing, and organic farming (Ministry of Food, Agriculture and Fisheries of Denmark, 2021). Only one eco-scheme consisting of eight practices is being implemented in agriculture in Ireland. It includes financing the practice of using precision farming solutions (GPS) to control the spread of fertilisers and plant protection products, subsidies for chemical analyses of soil samples and the proper use of calcium fertilisers tailored to the soil requirements, limiting the use of mineral nitrogen fertilisers, as well as diversifying the structure of sowings and fallowing (Mullally, 2023). A much more extensive set of practices within one eco-scheme has been proposed in the Netherlands. In the Dutch system, each practice is converted into points, which ultimately translates into the payment amount per ha. Their 22 practices include, among others, maintenance non-productive areas, buffer strips with herbal plants next to arable land, green fallow areas, maintenance of extensively used permanent grasslands, cultivation of catch crops, strip sowing, and organic farming (Jongeneel & Gonzalez-Martinez, 2023).

Research methods

The study analysed thirteen practices within five area eco-schemes that were available to Polish farms in the first year of operation of the EU CAP 2023-2027 (Table 1). Data on the number of beneficiaries, as well as the scale and territorial distribution of practices used within eco-schemes, were taken from the database of the Agency for Restructuring and Modernization of Agriculture, which in Poland serves as a public institution implementing direct payments under the current EU CAP.

Table 1. Eco-schemes and their practices implemented in Polish agriculture in the first year of the CAP 2023-2027

Eco-scheme/practice within an eco-scheme	
1. Carbon farming and nutrient management	1.1. Extensive permanent grasslands with livestock 1.2. Winter catch crops/intercrops 1.3. Fertilization plans (basic variant) 1.4. Fertilization plans (liming variant) 1.5. Diversified sowing structure 1.6. Mixing solid manure on arable land within 12 hours of its application 1.7. Using liquid manure with methods other than splashing 1.8. Reduced tillage systems 1.9. Mixing straw with soil
2. Areas with melliferous plants	
3. Water retention on permanent grassland	
4. Integrated plant production	
5. Biological protection of plants	

Source: authors' work based on Ministry of Agriculture and Rural Development (2023).

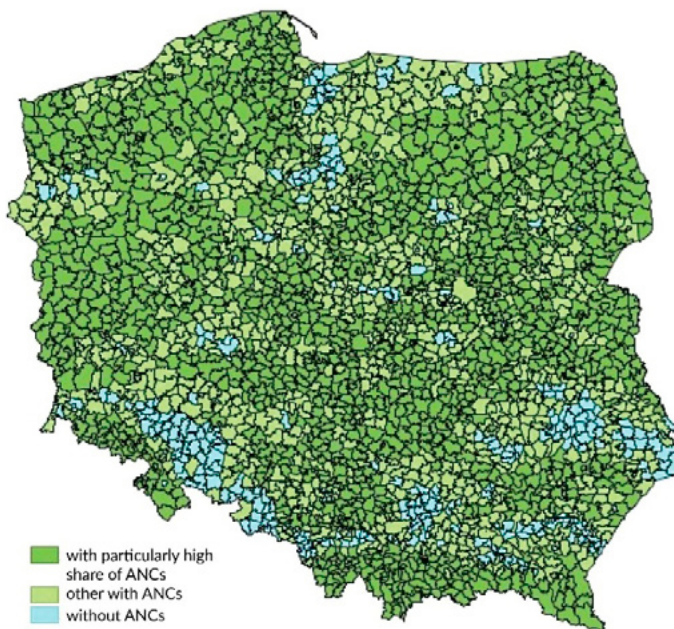


Figure 1. Distribution of communes separated by the degree of ANCs saturation in Poland

Source: authors' work based on Zieliński et al. (2022).

The first objective of the study was to establish the relationship between the number and type of practices analysed within eco-schemes the size of the beneficiary farms, and their spatial distribution within communes.

The second objective of the study, regarding the characteristics of the distribution of the beneficiary farms and the UAA used under individual eco-scheme practices due to their environmental

conditions, was achieved with respect to the different share of Areas facing Natural or other specific Constraints (ANCs) in communes. For this purpose, three groups of communes were determined. The first had an equal or greater than 75% share of ANCs areas in the total area of UAA, hereinafter referred to as communes with a particularly high share (percentage) of ANCs. The second group consisted of communes with a share of ANCs in the total UAA of less than 75%, hereinafter referred to as other communes with ANCs. The third one is from outside ANCs (Figure 1).

The study uses the currently applicable delimitation of ANCs, which was carried out by the Institute of Soil Science and Plant Cultivation – State Research Institute and the Institute of Agricultural and Food Economics – National Research Institute at the request of the Ministry of Agriculture and Rural Development and the European Commission (Zieliński et al., 2022).

Results

Number of farms and area covered by eco-schemes in Polish agriculture in the first year of the CAP 2023-2027

In 2023, 428.3 thousand farms submitted applications under area eco-schemes; they constituted 34.5% of the total number of farms in Poland (as of 31.01.2024). The most frequently chosen practice was mixing straw with soil while the practice covering the largest area was reduced tillage systems. Based on the data contained in Figures 2 and 3 regarding the share of farms and UAA covered by eco-schemes in particular communes, it should be emphasized that in 2023, farms from regions with a higher agriculture development were more willing to participate in these activities.

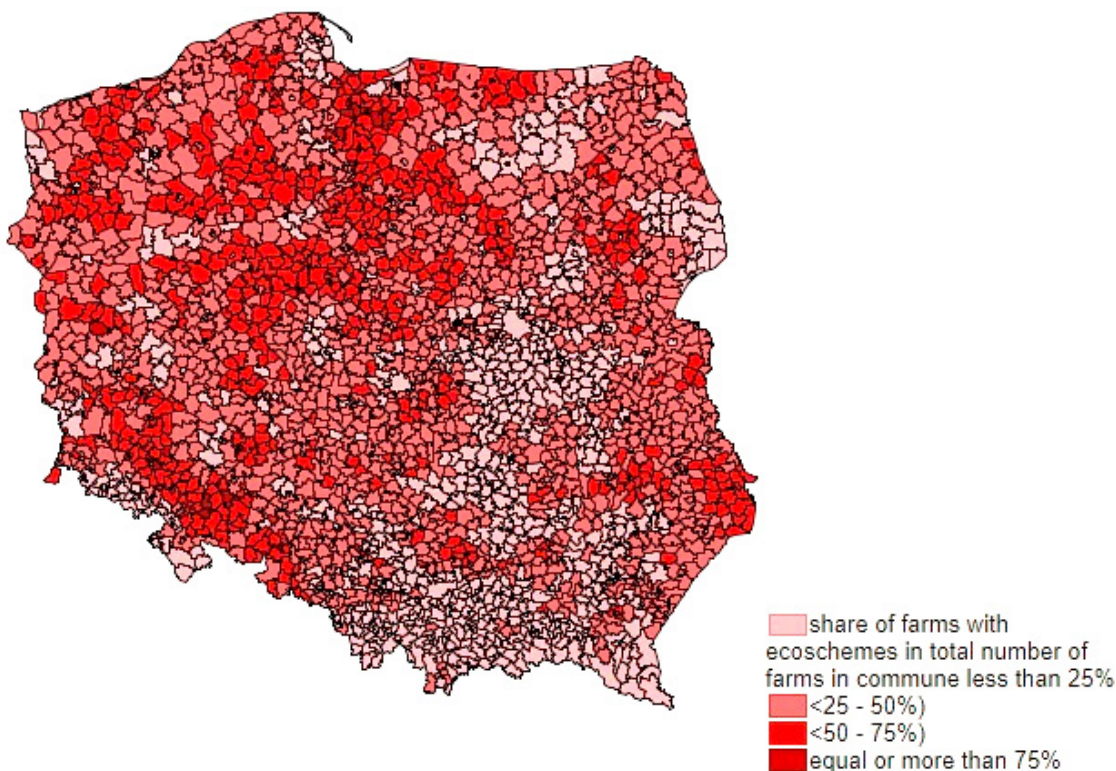


Figure 2. Share of farms which adopted area eco-schemes in the total number of farms by commune in 2023

Source: authors' work based on the Agency for Restructuring and Modernization of Agriculture (data for 2023).

At the moment, however, a large part of farms in Poland remain outside eco-schemes. They are most often small farms in areas with limited possibilities of functioning without additional support from agricultural policy.

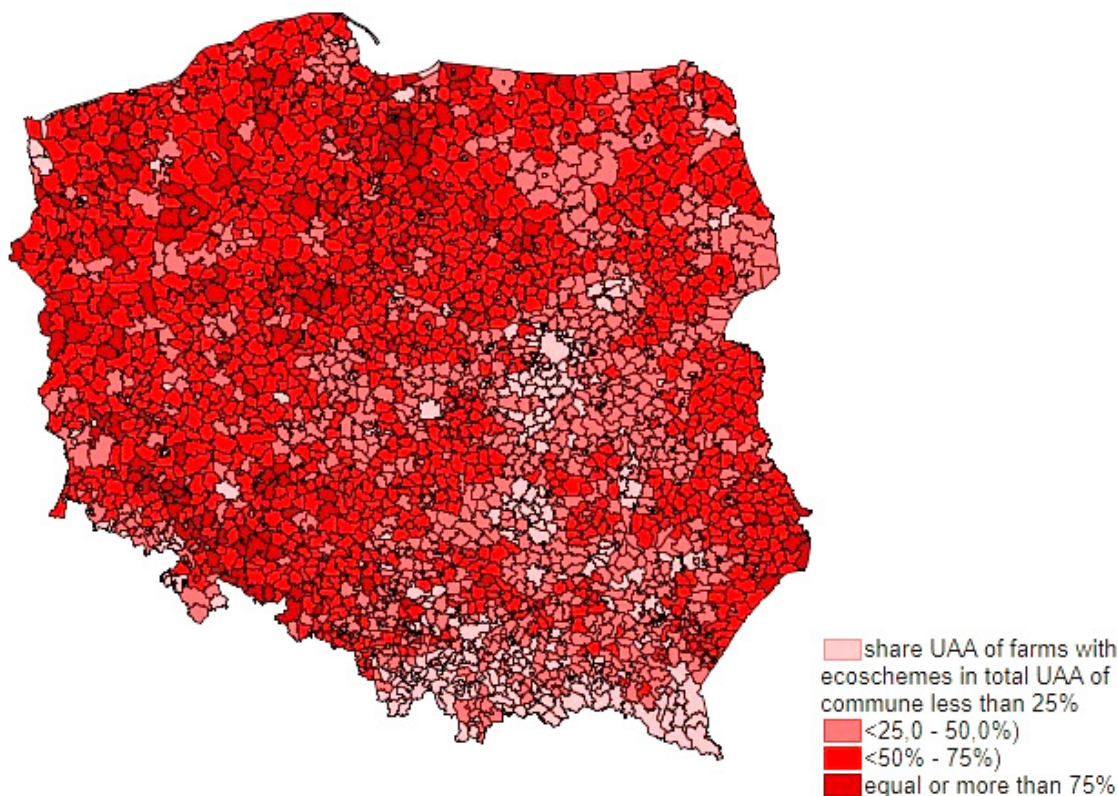


Figure 3. Share of the total area of UAA of farms which adopted area eco-schemes in the total area of UAA by commune in 2023

Source: authors' work based on the Agency for Restructuring and Modernization of Agriculture (data for 2023).

Choice of eco-schemes depending on farm size

Discussions have been ongoing for several years on the necessary modifications of the EU CAP so that it reflects, as much as possible, the EU's pursuit of effective protection of the natural environment and climate (Lakner et al., 2019; Rydz-Żbikowska, 2022; Sadowski 2022). The proposed changes in the current perspective are largely concerned with maintaining appropriate relationships in agriculture between the need to provide high-quality market goods, environmental protection, and better adaptation to climate change. As a result, the current CAP is intended to support the functioning of sustainable food systems that will integrate the farmers' desire to achieve satisfactory income with the ability to provide public goods to society at the expected level. In this context, eco-schemes are one of its basic institutional tools. Taking into account the area structure of farms in Poland, a question arises about the strength of their tendency to implement practices within eco-schemes.

The size of the UAA on beneficiaries' farms had an impact on the number of practices used within eco-schemes. The small size of the farms significantly limited the possibility of using several practices. According to the data presented in Table 2, in the group of farms up to 5 ha, 81.7% of them used one practice, 15.5% used two practices, and the remaining 2.8% used three to six practices within eco-schemes. As the UAA on farms increased, the number of those with one practice decreased in favour of those with two or three practices. In the case of farms with an area of more than 20 ha, there were those that used eight or even nine practices.

Analysing the results from Table 3 regarding choices of practices, it was found that on farms up to 20 ha, the practice most frequently chosen by farmers was mixing straw with soil (0-5 ha – 67.0%, 5-10 ha – 61.2% and 10-20 ha – 51.0%). On farms ranging from 20 to 50 ha, farmers most often used winter catch crops and intercrops (55.0%). On the largest farms with an area of more than 50 ha of UAA, the most frequently used practice within eco-schemes was reduced tillage systems (50-100 ha – 60.8% and more than 100 ha – 76.6%).

Table 2. Number of farms which adopted practices under eco-schemes depending on the size of UAA on farm and the number of practices used in 2023

Number of practices within eco-schemes	Number of beneficiary farms with agricultural area					
	up to 5 ha	5-10 ha	10-20 ha	20-50 ha	50-100 ha	more than 100 ha
1	84928	61603	39404	17129	4226	2230
2	16146	30036	41709	27970	6092	3003
3	2451	8689	20203	21898	5612	2697
4	372	1843	6145	9992	3260	1573
5	51	331	1413	3254	1246	670
6	5	35	259	779	416	208
7	0	10	40	161	94	58
8	0	5	8	20	23	14
9	0	0	0	2	2	4
10	0	0	0	0	1	0
Total	103953	102552	109181	81205	20972	10457

Source: authors' work based on the Agency for Restructuring and Modernization of Agriculture (data for 2023).

Table 3. Share (%) of farms which adopted practices under eco-schemes depending on the size of UAA on the farm and the type of practices used in 2023

Practices within eco-schemes	Share of beneficiary farms by area					
	up to 5 ha	5-10 ha	10-20 ha	20-50 ha	50-100 ha	more than 100 ha
Biological protection of plants	0.2	0.2	0.2	0.2	0.8	2.3
Areas with melliferous plants	1.5	1.0	0.9	1.2	1.6	2.1
Integrated plant production	0.2	1.0	1.5	1.9	3.7	6.9
Water retention on permanent grasslands	1.4	2.7	3.6	4.8	7.8	8.9
Fertilizer plans (liming variant)	0.2	0.6	1.2	2.0	3.5	5.0
Fertilizer plans (basic variant)	1.1	3.4	7.3	11.7	16.9	26.5
Extensive permanent grasslands with livestock	6.1	7.2	8.1	6.8	4.7	3.1
Using liquid manure with methods other than splashing	2.0	4.1	10.2	18.5	19.8	13.1
Diversified sowing structure	11.4	12.6	16.4	20.7	22.3	21.1
Reduced tillage systems	9.3	12.4	18.2	35.1	60.8	76.6
Mixing solid manure within 12 hours of its application	7.0	18.4	34.6	41.4	29.8	16.5
Winter catch crops or intercrops	14.0	28.1	45.6	55.0	47.4	39.9
Mixing straw with soil	67.0	61.2	51.0	48.0	48.5	43.4
Total number of beneficiary farms	103953	102552	109181	81205	20972	10457

Source: authors' work based on the Agency for Restructuring and Modernization of Agriculture (data for 2023).

To sum up, eco-schemes were met with interest from just over 1/3 of farmers. The average area of farms which adopted eco-schemes was 20.8 ha. Therefore, a further question arises concerning the location of farms combining the practices to varying degrees on a regional basis.

Choice of eco-schemes depending on the number of practices implemented and location of farms

The most frequently used practices in farms, which implement different numbers of them, are presented in Table 4. It distinguishes groups of farms implementing one, two, three or four or more practices, respectively. Based on the share of individual practices in each group, certain preferences can be observed when choosing the practices.

In the group of farms implementing one practice, the most common choice was the mixing of straw with soil, which was chosen by 57.2% of farms. The second choice was reduced tillage systems (11.6%), and the third choice was winter catch crops and intercrops (10.6%). In the group of farms implementing two practices at the same time, the three most frequently implemented practices were mixing straw with soil (27.4%), catching crops and intercrops (24.6%), and mixing solid manure within 12 hours of its application (15.9%). A similar set of practices was undertaken on farms that implemented three practices, but in this group, the practice of catch crops and intercrops was most frequently chosen (22.8%), followed by the practice of quick mixing of solid manure (18.9%) and mixing straw with soil (18.6%).

Table 4. Share (%) of individual practices within separate groups of farms according to the number of practices implemented within eco-schemes in 2023 (%)

Description	Farms implementing:			
	1 practice	2 practices	3 practices	4 and more practices
Group's % share in the total number of farms implementing eco-schemes	49	29	14	8
Biological protection of crops	0.2	0.1	0.2	0.4
Extensive permanent grasslands with livestock	4.2	3.2	3.7	4.2
Integrated Plant Production	1.4	0.2	0.4	1.3
Areas with melliferous plants	1.0	0.4	0.5	0.8
Winter catch crops/intercrops	10.6	24.6	22.8	18.5
Mixing solid manure with soil on arable land within 12 hours after application	3.7	15.9	18.9	16.4
Fertilization plan (basic variant)	0.0	2.8	5.1	8.6
Fertilization plan (liming variant)	0.0	0.3	0.7	2.2
Using liquid manure with methods other than splashing	1.6	3.8	6.7	9.2
Water retention on permanent grasslands	3.4	0.7	1.3	2.4
Reduced tillage systems	11.6	11.6	11.4	11.7
Mixing straw with soil	57.2	27.4	18.6	13.5
Diversified sowing structure	5.0	9.0	9.7	10.9

Source: authors' work based on the Agency for Restructuring and Modernization of Agriculture (data for 2023).

In the group of farms implementing the largest number of practices (four or more), the most popular practice was winter catch crops and intercrops, chosen by 18.5% of beneficiaries. The practices of mixing solid manure with soil (16.4%) and mixing straw with soil (13.5%) were the next most popular in the group.

Taking the above into account, it could be summarised that the practices most frequently chosen by farmers were: mixing straw with soil, mixing solid manure with soil on arable land within 12 hours after application, winter catch crops and intercrops, and reduced tillage systems. However, it should be emphasised that the indicated practices are among the basic principles of good agricultural practice, and there is a high degree of certainty that at least some of the beneficiary farms had already used them before, and the introduced payment only rewarded them for previous activities in this area.

In addition to the share of individual practices in each of the separated groups, the share of individual groups of farms in each commune is also shown. The data in Figure 4 show that the largest share of farms implementing only one practice occurred in communes located in the south of Poland, excluding the Opole Voivodeship and parts of Silesia (dark red). There is also a large concentration of such communes in the southern part of Masovia. In other words, it mostly concerns the small farms that are common there.

Figure 5 shows the share of farms implementing two practices in the total number of farms with eco-schemes in communes. The largest number of communes with a large share of this group are located in the voivodeships in the centre of the country, i.e. Masovia, Lodz, Wielkopolska, Kuyavian-Pomeranian Voivodeship, the eastern part of the Podlaskie Voivodeship and the northern part of the Lublin Voivodeship.

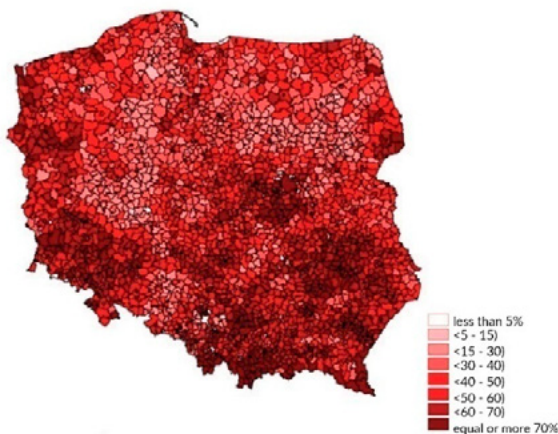


Figure 4. Share of farms with 1 practice in the total number of farms which adopted eco-schemes by communes in 2023

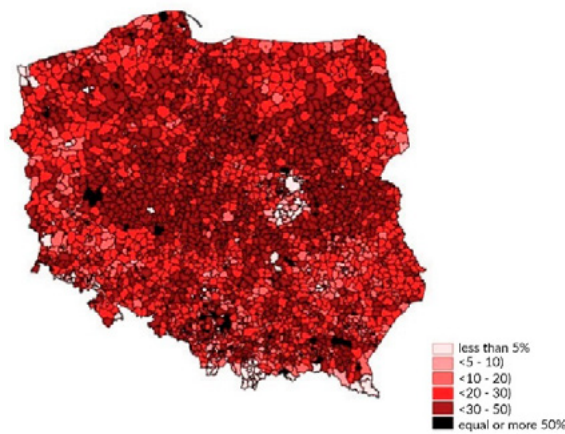


Figure 5. Share of farms with 2 practices in the total number of farms which adopted eco-schemes by communes in 2023

Source: authors' work based on the Agency for Restructuring and Modernization of Agriculture (data for 2023).

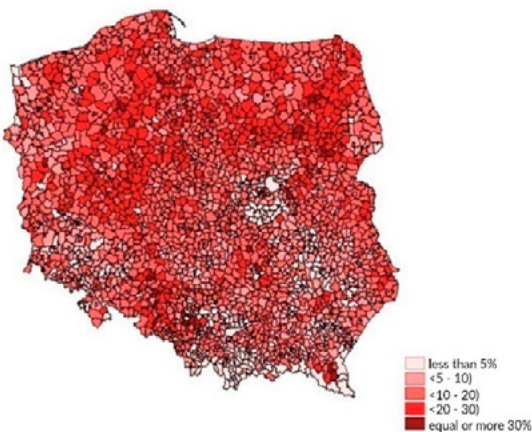


Figure 6. Share of farms with 3 practices in the total number of farms adopted eco-schemes by communes in 2023

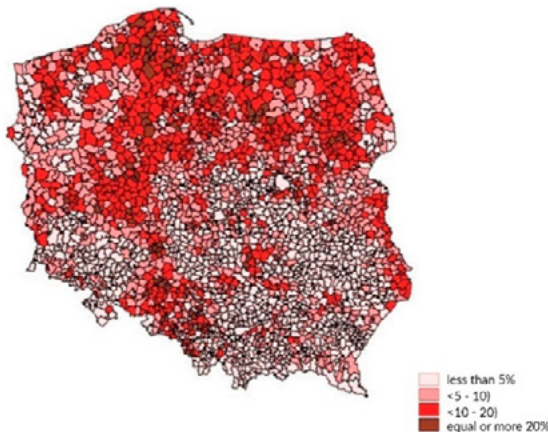


Figure 7. Share of farms with 4 practices in the total number of farms adopted eco-schemes by communes in 2023

Source: authors' work based on the Agency for Restructuring and Modernization of Agriculture (data for 2023).

The share of farms with three eco-scheme practices in individual communes is shown in Figure 6. The distribution of this group of farms was similar and fluctuated between 10 and 30% in most communes. The communes with the smallest share of this group of farms were located in Podkarpacie, Małopolska, the southern part of Masovia and the western part of the Lublin region. The largest

discrepancies in participation were observed in the group of farms implementing four or more practices (Figure 7).

The vast majority of communes with a large share of such farms were located in northern Poland, and a large concentration is also visible around the eastern part of the Lublin region and in the Opole and Silesian voivodeships. In other words, this applies to the larger farms that often occur there.

Distribution of eco-schemes and practices depending on environmental conditions for agricultural production

In Poland, natural conditions for agriculture are characterised by spatial variability and a large share of areas with natural limitations for agricultural production, as evidenced by the nearly 60% (58.7%) share of ANCs in the total UAA (Zieliński, 2023; Zieliński et al., 2023). On the one hand, ANCs naturally significantly limit the possibility of intensive agricultural production, and on the other hand, they require additional remedial actions to protect the soil and take greater care of the condition of used permanent grasslands. Eco-scheme practices, therefore, have a lot to offer in these areas. However, the question arises as to the extent to which the practices were implemented in ANCs in the first year of the CAP 2023-2027.

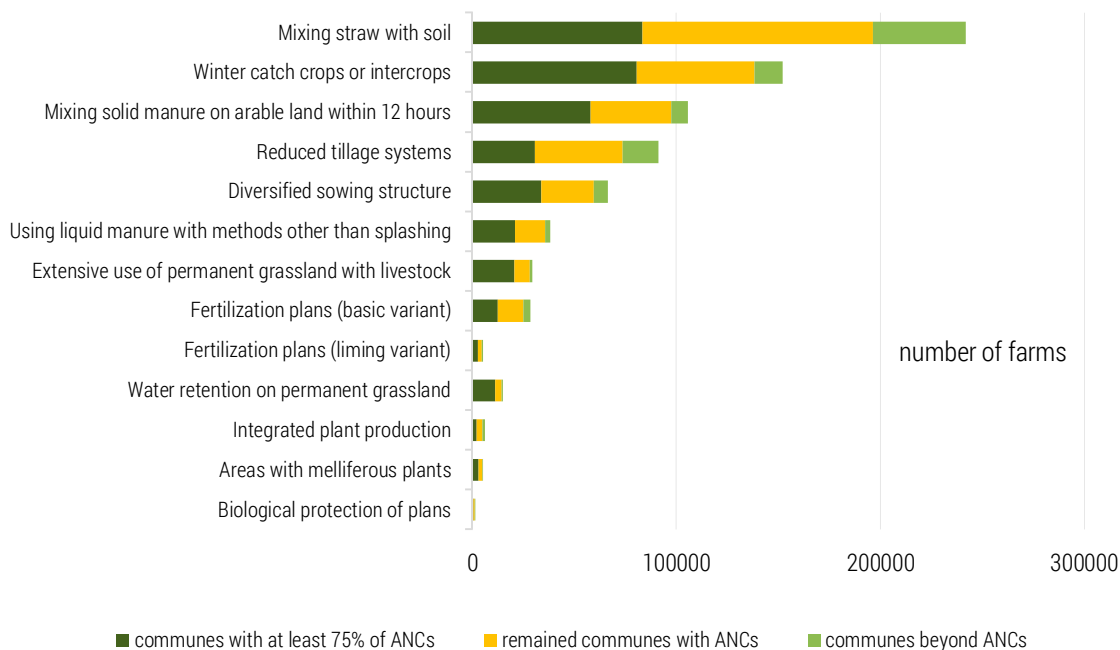


Figure 8. Number of farms which adopted practices under eco-schemes with respect to communes with different share of ANCs in 2023

Source: authors' work based on the Agency for Restructuring and Modernization of Agriculture (data for 2023).

Based on the numbers presented in Figure 8 and Table 5, it should be emphasised that the vast majority of farms implementing practices within eco-schemes conducted agricultural activity in communes with ANCs. There were at least 90% of beneficiaries implementing the practice of water retention on permanent grasslands (97.3%), extensive permanent grasslands with livestock (94.9%), the use of liquid fertilisers using methods other than splashing (93.7%), melliferous plants (92.8%), mixing solid manure within 12 hours of its application (92.9%), and winter catch crops and intercrops (90.9%). It should be added that many of the beneficiaries carried out production in communes with a particularly large share of ANCs (at least 75%). In these difficult conditions, over 2/3 of the total number of beneficiaries implemented the practice of water retention on permanent grasslands (75.4%) and extensive permanent grasslands with livestock (69.9%). In these areas, the beneficiaries

of the package: melliferous plants (57.5%), mixing solid manure on arable land within 12 hours of its application (54.7%), the use of liquid manure excluding the splashing method (54.6%), winter catch crops or intercrops (52.9%), as well as a diversified sowing structure (50.9%) were also of great importance.

Table 5. Share of beneficiary farms in ANCs communes in the total number of farms which adopted practices under eco-schemes in 2023

Practice within eco-schemes	Share in the total number of farms adopted practices under eco-schemes	
	in communes with ANCs (%)	including in communes with at least 75% share of ANCs (%)
Biological protection of plants	80.9	28.9
Areas with melliferous plants	92.8	57.5
Integrated plant production	78.6	29.9
Water retention on permanent grasslands	97.3	75.4
Fertilizer plans (liming variant)	88.6	47.8
Fertilizer plans (basic variant)	87.2	42.9
Extensive permanent grasslands with livestock	94.9	69.9
Using liquid manures using methods other than splashing	93.7	54.6
Diversified sowing structure	89.5	50.9
Reduced tillage systems	80.7	33.3
Mixing solid manure on arable land within 12 hours of its application	92.2	54.7
Winter catch crops or intercrops	90.9	52.9
Mixing straw with soil	81.1	34.4

Source: authors' work based on the Agency for Restructuring and Modernization of Agriculture (data for 2023).

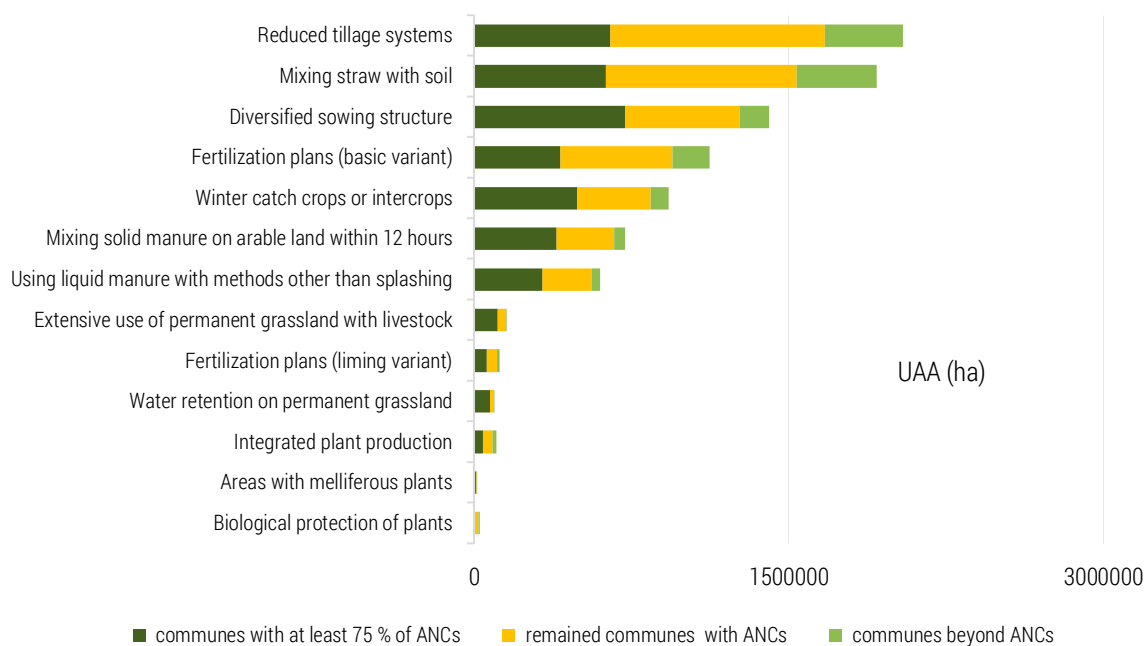


Figure 9. UAA of farms which adopted practices under eco-schemes with respect to communes with different ANCs shares in 2023

Source: authors' work based on the Agency for Restructuring and Modernization of Agriculture (data for 2023).

Figure 9 and Table 6 show the distribution of UAA within individual eco-scheme practices with respect to communes with a different share of ANCs.

Table 6. Share of UAA under eco-scheme practices in ANCs communes in the total UAA under eco-scheme practices in 2023

Practice within eco-schemes	Share in the total number of farms adopted practices under eco-schemes	
	in communes with ANCs (%)	including in communes with at least 75% share of ANCs (%)
Biological protection of plants	76.9	24.5
Areas with melliferous plants	94.5	63.6
Integrated plant production	83.7	37.7
Water retention on permanent grasslands	98.3	79.3
Fertilizer plans (liming variant)	90.2	49.2
Fertilizer plans (basic variant)	84.2	36.6
Extensive permanent grasslands with livestock	97.0	71.8
Using liquid manure using methods other than splashing	93.4	54.4
Diversified sowing structure	89.9	51.1
Reduced tillage systems	81.8	31.7
Mixing solid manure within 12 hours of its application	92.8	54.6
Winter catch crops/intercrops	90.6	52.9
Mixing straw with soil	80.2	32.7

Source: authors' work based on the Agency for Restructuring and Modernization of Agriculture (data for 2023).

Regardless of the practice implemented, the vast majority of agricultural land on which they were used was located in communes with ANCs. In the communes with ANCs, the following practices were implemented: water retention on permanent grasslands (98.3% of total area under practice), extensive permanent grasslands with livestock (97.0%), areas with melliferous plants (94.5%), using liquid manure with methods other than splashing (93.4%), mixing solid manure on arable land within 12 hours of its application (92.8%), winter catch crops or intercrops (90.6%), as well as developing and fertilisation plans (liming variant) (90.2%). In communes with a particularly large share of ANCs (75%), more than 2/3 of the total area of practice was implemented – water retention on permanent grasslands (79.3%) and extensive permanent grasslands with livestock (71.8%).

Discussion/Limitation and Future Research

The analyses carried out showed that there is a great diversity in the existing eco-schemes in EU countries. Their implementation may vary in each EU country. In Poland, after the first year of CAP 2023-2027, 2/3 of farms did not use funds under eco-schemes. The situation was similar in Germany, where the use of funds under eco-schemes in most variants (except for the variant of diversifying the sowing structure) was lower than planned. By contrast, in Spain, the use of eco-scheme payments was high. Absorption covered 87% of the area declared for direct payments and was implemented by 75% of the total number of farmers (EU CAP, 2023). According to Nadeu et al. (2023), however, most of Spain's CAP support continues to be directed towards basic income support payments. In Ireland, the program was also well received by farmers, with approximately 93% of those who benefited from basic support choosing to participate in eco-schemes, and a high percentage of farmers benefited from "space for nature" (Carty, 2024). However, research conducted by Shukadarova (2023) in Bulgaria indicates that some grain producers would refuse to participate in support from European

funds due to increased environmental requirements. In addition, there were farmers who would give up their businesses if environmental requirements were further tightened.

In Poland, the size of agricultural land on farms was of great importance when using eco-schemes. On small farms, the absorption of several practices was limited. As the area of agricultural land on farms increased, the number of practices used also increased. As Donham et al. (2022) pointed out, multi-directional eco-schemes have the greatest chance of success, they can be found first of all in five countries: the Czech Republic, Estonia, Latvia, Slovakia and the Netherlands.

In EU countries, the most popular eco-schemes in strategic plans are those related to extensive grassland management, the use of cover crops/catch crops and organic farming (Donham et al., 2022). In Poland, farmers most often chose practices such as: mixing straw with soil, mixing solid manure with soil on arable land within 12 hours of its application, winter catch crops and intercrops, and reduced tillage systems.

In Poland, a lot of farms implementing practices within eco-schemes conducted agricultural activity in areas with unfavourable natural conditions. Many beneficiaries carried out production in communes with a particularly large share of ANCs. This is understandable because, as Guyomard et al. (2023) point out, farmers' incomes in disadvantaged areas are generally lower than those of their non-ANC counterparts. This is confirmed by Kumbhakar et al. (2023), claiming that income stabilisation thanks to subsidies is particularly pronounced among farmers in less-favoured areas. However, as Guyomard et al. (2023) also point out, eco-schemes should cover the entire agricultural area.

To ensure the implementation of environmental protection activities, the focus should be on an approach based on long-term results beyond annual operations. Therefore, the results we presented should be treated as preliminary when implementing and using eco-schemes. Previous research shows that it is important to construct and use simple eco-schemes and ensure their availability to farmers in all farming conditions and for all farm sizes while ensuring the attractiveness of payments, which will contribute to increased environmental protection. Additionally, according to Czubak et al. (2024), they should be adjusted to social expectations and the microeconomic interests of farmers.

The experiences gathered in Poland in the first year of operation of eco-schemes can be used as a source of reflection on their future shape. For example, the validity of the eco-scheme "areas with melliferous plants", a similar package which is included in the agri-environment-climate program, raises doubts. In practice, it basically means following, with a rather one-sided impact on maintaining/increasing the biological diversity of agricultural ecosystems isolated from other agricultural areas. Instead, it is worth considering introducing another eco-scheme, with the working name "protection of field margins with melliferous plants". In response to the more and more frequent practice of eliminating margins, it is worth pointing out the functions that the margins perform. The margins, are a habitat for perennial plants, including melliferous herbs, and a wintering place for beneficial insects, spiders, and birds, including predatory ones. Such margins should remain a permanent element of the agricultural landscape in Poland. In addition to increasing biological diversity, they also reduce the drift of the spray liquid during spraying into neighbouring fields, i.e. where the plant protection products used should not be used. Moreover, "protection of field margins with melliferous plants" as a new eco-scheme may be widely accepted by owners of smaller farms, increasing their participation in eco-schemes.

Good information flow is considered to be crucial to ensuring the use of a range of practices and the use of payments. As Kelemen et al. (2023) point out, the use and implementation of innovations are relatively slow and geographically dispersed. This also applies to the implementation of eco-schemes. Therefore, it becomes mandatory to create a broader information campaign and support for advisory institutions.

It should be emphasised that in 2023, the extended time needed to approve many national plans for 2023-2027 was a significant problem in the implementation of eco-schemes. This was the first year of implementation of the eco-schemes, and information was available to farmers with a delay, often only after they had made decisions about the structure of field production. A further and wider information campaign is needed from the institutional side of the Ministry of Agriculture and Rural Development and agricultural advisory services. In addition, it is necessary to consider the possibility of updating the payment rates under eco-schemes during the implementation of the current EU CAP and to start working on a better regional adjustment of them, including in the context of the presence of ANC areas in Poland.

Conclusions

To sum up, it should be stated that in the first year of CAP 2023-2027, a significant number of Polish farms did not benefit from subsidies under eco-schemes. Only 1/3 of total farms submitted applications under eco-schemes. Analysing the phenomenon from a geographical perspective, it should be emphasised that, in 2023, farms from regions of Poland with a higher agriculture development were more likely to participate in these practices.

The most frequently chosen practice among Polish farmers was mixing straw with soil, while the practice covering the largest area was reduced tillage systems. The size of UAA on farms was of great importance when choosing practices used within eco-schemes. Small farms, up to 5 ha, did not implement many practices, and more than 80% of them used only one practice. The larger the farm, the greater the number of practices used.

Taking into account the current experience resulting from the implementation of eco-schemes in Poland, it is worth considering their further evaluation in the coming years.

The contribution of the authors

Concept of research, M.Z.; methodology, M.Z., M.A. and J.S.; literature review, M.Z., B.G. and J.T.; data collection and analysis, M.Z., M.A. and J.S.; data analysis, M.Z., B.G. and J.T.; formal analysis, M.Z., B.G., M.A. and J.T.; work administration, M.Z.; writing, M.Z., B.G., M.A., J.S. and J.T.; visualization, M.Z., M.A. and J.S.

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WDRAŻANIE EKOSCHEMATÓW W POLSKIM ROLNICTWIE W PIERWSZYM ROKU FUNKCJONOWANIA WPR UE 2023-2027

STRESZCZENIE: Celem badań była ocena zdolności polskich gospodarstw rolnych do absorpcji praktyk w ramach ekoschematów w Polsce w pierwszym roku funkcjonowania Planu Strategicznego na lata 2023-2027 w ramach Wspólnej Polityki Rolnej (WPR) 2023-2027. Ustalono rodzaj stosowanych praktyk, ich liczbę oraz skalę wykorzystania, przy uwzględnieniu warunków naturalnych, w których funkcjonują realizujące je gospodarstwa. Oceny dokonano uwzględniając podział gospodarstw ze względu na wielkość powierzchni użytków rolnych oraz ich lokalizację w ujęciu gmin. Analiza dotyczyła trzynastu praktyk w ramach pięciu ekoschematów obszarowych, które były do dyspozycji polskich gospodarstw rolnych w pierwszym roku funkcjonowania WPR UE 2023-2027. Wykorzystane dane liczbowe pochodziły z bazy danych Agencji Restrukturyzacji i Modernizacji Rolnictwa (ARiMR). Stwierdzono, iż 1/3 gospodarstw skorzystała ze wsparcia związanego z wprowadzeniem ekoschematów. Znaczenie miała przy tym wielkość powierzchni gospodarstw oraz przyrodnicze warunki gospodarowania.

SŁOWA KLUCZOWE: ekoschematy, zrównoważone rolnictwo, użytki rolne, obszary z ograniczeniami naturalnymi lub innymi szczególnymi ograniczeniami (ONW)