


Article

The Role of Environmental Attitudes and Risk for Adoption with Respect to Farmers' Participation in the Agri-Environmental Practices

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Abstract: This research represents an attempt to systematically introduce the concepts of sustainable agriculture that shall address environmental attitudes and the risks for adoption related to agri-environmental practices. The substantial risks posed by climate change, loss of biodiversity, and other forms of pollution within the 21st century regarding global eco-systems, food production, and human health have emphasized the need to investigate this phenomenon. The agri-environmental practices are aimed at mitigating the environmental impacts of intensive agriculture; however, the adoption of these practices calls for a change in the farmers' behaviors. As farmers are indispensable stakeholders in rural ecological systems, the factors that determine the adoption of agri-environmental practices have been taken into analysis. The research has been carried out on a sample of 246 farmers in the rural areas of the Republic of Serbia. The data has been elaborated on by the SPSS statistical package and PLS SMART software. The findings, in the framework of a farm as a business, point out that the farmers believe that environmental protection is an important segment of production and that good agriculture is a prerequisite for producers' survival, maximum yields, and profits. The farmers, in the framework of stewardship, agree that good agriculture implies responsible management of the farms' agricultural and natural areas, as part of the country's heritage, for the benefit of future generations. The findings also show that the environmental attitudes of farmers in the stewardship frame and factors of risk adoption influence attitudes toward agri-environmental practices. The findings of this paper reveal up-to-date attitudes toward the adoption of further agri-environmental measures, directly contributing to raising awareness of the introduction of new AEM among practitioners in the agricultural sector, decision-makers, and policymakers. The proposed research is significant in the process of transposition of the CAP acquis communautaire in agriculture policy and the implementation of measures under IPARD III.

Keywords: agri-environmental measures; environment awareness; farmers; risks; rural policy



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1. Introduction

The agricultural land occupies about 65% of the total area of Serbia, which represents an area of about 5,700,000 hectares. The agricultural productivity, either in terms of land or labor productivity, is below the European Union (EU) average because of the low level of equipping with machinery, equipment, and supporting infrastructure. The level of mechanization is very low, and the situation is very critical on small farms [1]. Agriculture is significantly represented in the economy, accounting for around 10% of the BDP and 20% of the exports [2]. The EU market is the most important export destination

for Serbian agricultural products, as more than half of Serbian agricultural exports are delivered to the EU. At the same time, Serbian imports of agricultural products from the EU have been steadily increasing, from 440 million euros in 2009 to over 1.6 billion euros in 2021. [3] Modernizing production, increasing efficiency and competitiveness, and accelerating structural changes are the main generators of exports and new jobs [4].

The earlier research that has been conducted in the Republic of Serbia has shown that the ecological culture of farmers is not well developed and that there is not enough information on EU agricultural policy [5]. The research has also shown that there is room for improvement in environmental awareness, which can promote the sustainable development of agriculture [6]. Many producers are not inclined to change from traditional agriculture practices and adopt agri-environmental—climatic—measures because it is usually a complex process, followed by changes in farm operations, farm households, additional costs, long-term contacts, and emotional and social commitments. The farming styles of the farmers in developed countries have revealed different attitudes towards the benefits of using AEM that are reflected in using AEM, together with the subsidies for organic production and profitable implementation of AEM into their businesses [7]. Organic producers can be interested in the adoption of the additional AEM [8,9].

A lot of research has been performed to reveal the farmers' motivation to adopt environmentally friendly farming practices, showing that farmers' attitudes play a significant role in explaining the reasons for the uptake [10]. In Northern and Southern Europe, farmers' attitudes toward adopting AEM reveal a negative effect if the decisions are mainly based on economic motivations [11]. On the other hand, the research shows that farmers' beliefs and values that influence their participation in biodiversity schemes in Europe range from the perspectives of maximizing income and productivity to environmental stewardship, care for future generations, and sustainability [12]. The overall effectiveness of the agri-environment schemes for biodiversity (AES) is important in light of the potential EU accession, and the countries need to learn from the EU experience [13].

The aim of the research is to ascertain the relationships between current attitudes toward environmental awareness, the risk of adoption of AEM, and attitudes towards current agri-environmental measures. This paper will fill the research gap by formulating three hypotheses on the association of agri-environmental measures with environmental awareness and the risk of adopting AEM. These hypotheses have been empirically tested based on survey data that has been elaborated by the SPSS statistical package and using PLS SMART software. As there is a need to support Serbian farmers in planning and implementing an appropriate program of activities to significantly increase the area and the number of farms under organic production, as well as to adopt additional agri-environmental and climatic measures, this research shall present the general public with the current degree of environmental awareness and attitudes towards environmental protection of agricultural producers in Serbia. This research shall reveal new knowledge that can give us an insight into the readiness to implement new agri-environmental-climatic practices.

2. Literature Review

In the Dual Interest Theory approach [14], it has been pointed out that, within the decision-making process to motivate farmers to adopt conservation behaviors, a stewardship view of the environment and a farm as a business view of the environment are identified. The main goal of farmers who view farming as a business is the production of high yields of good quality with profitable income from farm activities [15,16]. On the other hand, stewardship emphasizes sustainable farm management and plays a positive role in the adoption of ecological practices [17].

“In the theory of planned behavior, attitudes, subjective norms, and perceived behavioral control act as filters that determine the intentions for the different perceived behavioral options” [18]. The findings of Dessart et al. [19] show that behavioral factors significantly influence farmers' decisions to adopt specific sustainable practices in specific cultural contexts, as “people's values play a major role in defining the perceived behavioral

options" [18]. The authors Schaub et al. [20] summarize the behavioral factors in three categories: (i) information, peers, networks, and relationships; (ii) attitudes about the environment, business, and AES; and (iii) other dispositional and cognitive factors. Their findings show that neither the more positive environmental nor the business attitudes were significantly related to higher participation in schemes, but a positive attitude towards AESs seemed to be most often positively related to scheme participation. The application of AE practices is also influenced by economic factors and risk [21]. Sattler and Nagel [10] point out that the farmers' choice of conservation measures depends on the characteristics of the conservation measures, the personal attitudes and preferences of the farmer, and the frame conditions (financial situation, climatic and regional site conditions, or policy settings).

The adoption of farm-level conservation practices in developed countries has shown the strong influence of various factors. Wauters and Mathijs [22] have identified, as the first category, the socio-demographic variables of the farmer and farm household and, as the second category, the structure and characteristics of the farm and farm structural factors. A third category of adoption variables are farm biophysical factors, and the fourth series of adoption factors are diffusion factors. The financial, economic, and management factors are outlined as a fifth category, while the following categories of adoption factors are the attributes of soil conservation practice, policy factors, and the socio-psychological characteristics of the farmers. Previous research has also shown that the application of AE practices is influenced by positive attitudes towards the environment or towards the adoption of environmentally friendly farming practices [23–25]. Environmental awareness has been proven to be significant for the adoption of best management practices [26].

That said, concerns about the positive environmental impact of the AEM and the simultaneous adoption of more than one of them positively affect their adoption in Northern and Southern Europe [11]. Farmers' decisions are driven by economic rationality and associated risks, effectiveness, or time and effort necessary to implement a certain measure, as well as compatibility with the local conditions in terms of climate and soil characteristics [10].

The hazards of unexpected weather events linked to anthropogenic climate change could eventually "spur the public discourse into questioning the abilities of policymakers, industries, and sciences to both anticipate and deal with the potential environmental impacts of their practices" [27] (p. 4). In 13 Member States, six or fewer of the 18 possible Ecological Focus Area (EFA) options were made available to farmers; however, the most frequently offered options were those with the least environmental benefits (e.g., nitrogen-fixing crops and short-rotation shoots) [12]. The European Court of Auditors [28] found that the objectives included in rural development programs were not set out in a specific, measurable, and timed manner, as the member states have formulated objectives generally, and when quantification was possible, it was not conducted in many cases. Farmers have doubts regarding the legitimacy of result-based schemes and attribute greater legitimacy to the current action-oriented agri-environmental schemes, while citizens perceive the proposed result-oriented agri-environmental schemes as more legitimate [29]. Sidemo-Holm et al. [30] have pointed out that farmers adopt fewer but more effective pollution abatement measures when payment is based on environmental results.

3. Material and Methods

The Republic of Serbia is facing crucial challenges in developing a competitive economy and reforming national policies to be closer to those in the European Union. As the level of farmers' environmental awareness and the preservation of biological diversity in agricultural areas are not sufficiently developed, the authors have opted to conduct this research. Therefore, the following hypotheses are defined:

H1: *There is a statistically significant relationship between the attitudes toward environmental awareness: farming as a business and the attitudes toward the Incentives for the preservation and improvement of the environment and natural resources (IPIE) among the agricultural producers in the Republic of Serbia.*

H2: *There is a statistically significant relationship between attitudes toward environmental awareness: stewardship frames and the attitudes toward Incentives for the preservation and improvement of the environment and natural resources (IPIE) among the agricultural producers in the Republic of Serbia.*

H3: *There is a statistically significant relationship between the risk of AEM adoption and the attitudes toward Incentives for the preservation and improvement of the environment and natural resources (IPIE) by the agricultural producers in the Republic of Serbia.*

Drawing on previous research from [12,14,31], the research has been carried out on the territory of the Republic of Serbia in rural areas from March 2023 to July 2023. The total number of organic producers in 2022 was 6354 organic producers, group producers, and cooperating producers [32]. We have opted for purposeful sampling, and the anonymous questionnaires have been sent to the organization Serbia Organica members (200 e-mail addresses) and the organic producers that are collaborating with the faculty (100 e-mail addresses). The total number of farmers investigated was 300 (4.72% of the total number of organic producers in 2022). In total, 246 questionnaires were filled out completely (82% response rate).

The research has commenced first by asking the respondents for their socio-demographic characteristics and farm structure (gender, age, household size, professional qualification level, and monthly earnings). The farmers also responded on the type of their agricultural production, on hiring external workers to work on the farm, and on having a business plan for their farm development. The second variable consists of 10 claims, directly related to the farmers' attitudes toward perceiving farms in a business context. The third variable consists of 13 claims, referring to the farmers' attitudes toward perceiving farms in a stewardship frame. The fourth variable is related to the farmers' attitudes toward the risks of AEM adoption (15 claims). This variable denotes attitudes that influence farmers' decisions and represent risks for AEM adoption. The fifth variable refers to the farmers' attitudes toward the incentives for the preservation and improvement of the environment and natural resources (8 claims), which were measured by a 5-point Likert scale. In Appendix A, a list and description of all the variables that have been employed in the research is presented in table form.

Descriptive statistical analysis of the obtained values from the survey process on the sociodemographic characteristics of the respondents was performed in the statistical package SPSS for Windows. In the following, the structural equation model was applied using the PLS method as an acceptable linear regression method for calculating the influence of several groups of data, which make up independent variables, on the dependent variable, which in turn consists of several different indicators [33–36], and so for testing the set hypotheses. The PLS-SEM method is suitable for small samples, accepts all forms of data distribution, all measurement scales (with the exception of some categorical variables), and is robust in cases of missing data. The research first applied descriptive statistics and then examined the normality of the data distribution (Kolmogorov–Smirnov test, Shapiro–Wilk test, and Jarque–Bera test) [33,37,38].

4. Results

4.1. Descriptive Statistic

Firstly, we have performed an analysis of 246 farmers' socioeconomic characteristics (Table 1). The majority of farmers in our sample are male (89%), 51–60 years of age, from a small/medium household (up to 6 members), with a high school/or professional school degree, and a monthly income between 500 and 200 euros.

Table 1. Gender, age, and education of respondents.

Socio Characteristics		Frequencies	Percent (%)
Gender	Male	219	89
	Female	27	11
Age	18–30	54	22
	31–40	54	22
	41–50	27	11
	51–60	84	34.1
	Over 60	27	11
Household size	Small/medium household; 1–6 members	219	89
	Larger household; more than 7 members	27	11
Professional qualifications level	High school or professional school	108	43.9
	Higher education/BA	84	34.1
	Master and Ph.D.	54	22
Total monthly income of the household	Up to 200 euros	0	0
	201–500 euros	27	11
	500–1000 euros	81	32.9
	1000–2000 euros	81	32.9
	More than 2000 euros	57	23.2

From the results in Table 2, we can see that the majority of the farmers in our sample are specialized in crop production (89%), the farmers hire external workers (43.9%), and the farmers have no business plan for farm development (67.1%).

Table 2. Farm characteristics.

Characteristics	Frequencies	Percent (%)	
Types of agricultural production	Plant	219	89
	Livestock	27	11
Hire external workers	Yes	108	43.9
	No	81	32.9
	Seasonally	57	23.2
I have a business plan	Yes	81	32.9
	No	165	67.1

In the Figure 1, the farmers have rated the best the claim the “As a farmer, I believe that environmental protection is an important segment of my production” with the grade of 4.61, followed by the grade 4.5. of the claims “Good agriculture is a prerequisite for producers’ survival, maximum yields and profits” and “Soil and water resource protection programs should benefit my agricultural production” followed by the claim “Agricultural practices that degrade the natural landscape harm the profession of agriculture” with the grade of 4.31, and “Environmental protection is related to the primary role of farming (production of food and related agricultural products)” with the grade of 4.11 and “Effective use of all available areas is important in order to maximize yields” with a grade of 4.02.

The lowest-rated claims that express the lowest level of farmers’ agreement are “Natural areas should be maintained only if they benefit agricultural production (irrigation, drainage, etc.)” with a grade of 1.98, and “The risks of industrial agricultural production are offset by the efficient production of food for the growing world population” with a grade of 2.87.

In Figure 2, the farmers have rated the following claims with the same high grade of 4.51: “Good agriculture implies responsible management of the agricultural and natural areas of my farm” and “The natural areas on my farm are part of my country’s heritage and should be maintained for the benefit of future generations”, followed by the claim “I am aware that the way I cultivate my land has a potentially negative impact on the quality of

the rural landscape” with the grade of 4.41, and the following claims with the same grade of 4.31. “Modern agricultural practices require more environmental protection efforts than were necessary in the past”, and “Sustainable agriculture enables solving environmental problems and preserving profitability in an innovative way”.

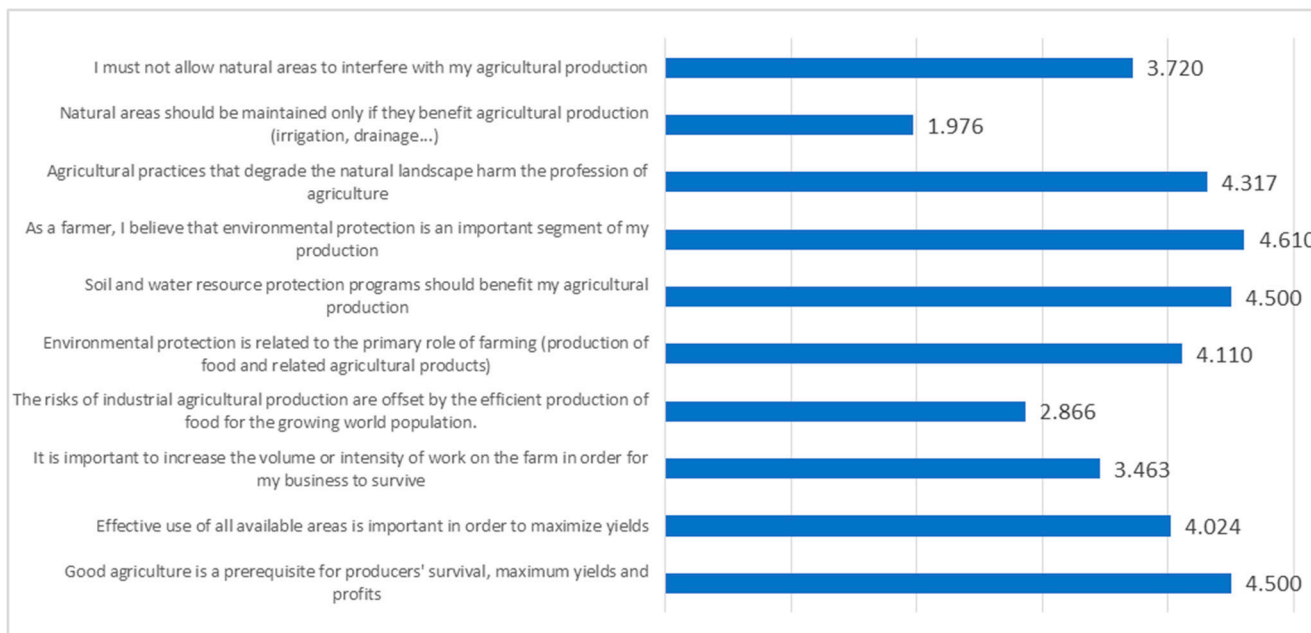


Figure 1. Farmers’ attitudes toward the environment: farm as a business.



Figure 2. Farmers’ attitudes toward the environment: stewardship frame.

The lowest-rated claims are “I am aware that the way I cultivate my land has a potentially negative impact on the quality of the rural landscape”, both 3.03; “Technological progress will ultimately reduce the environmental impact of conventional agricultural

practices”, with a grade of 3.23, and the grade of 3.69 of the claim “The way of performing agricultural activity is connected with the concept of sustainable agriculture”.

In Figure 3, the farmers have best rated the claim that “Farmers with a greater sense of the environment or who care about future generations will use agri-environmental measures” with a grade of 4.32, “Farmers choose agri-environmental measures that are easier or cheaper to implement” with a grade of 4.19, and “Older agricultural producers are less likely to use agri-environmental measures” with a grade of 4.12, and “Implementing environmental measures can increase the value of agricultural land” with a grade of 4.01.

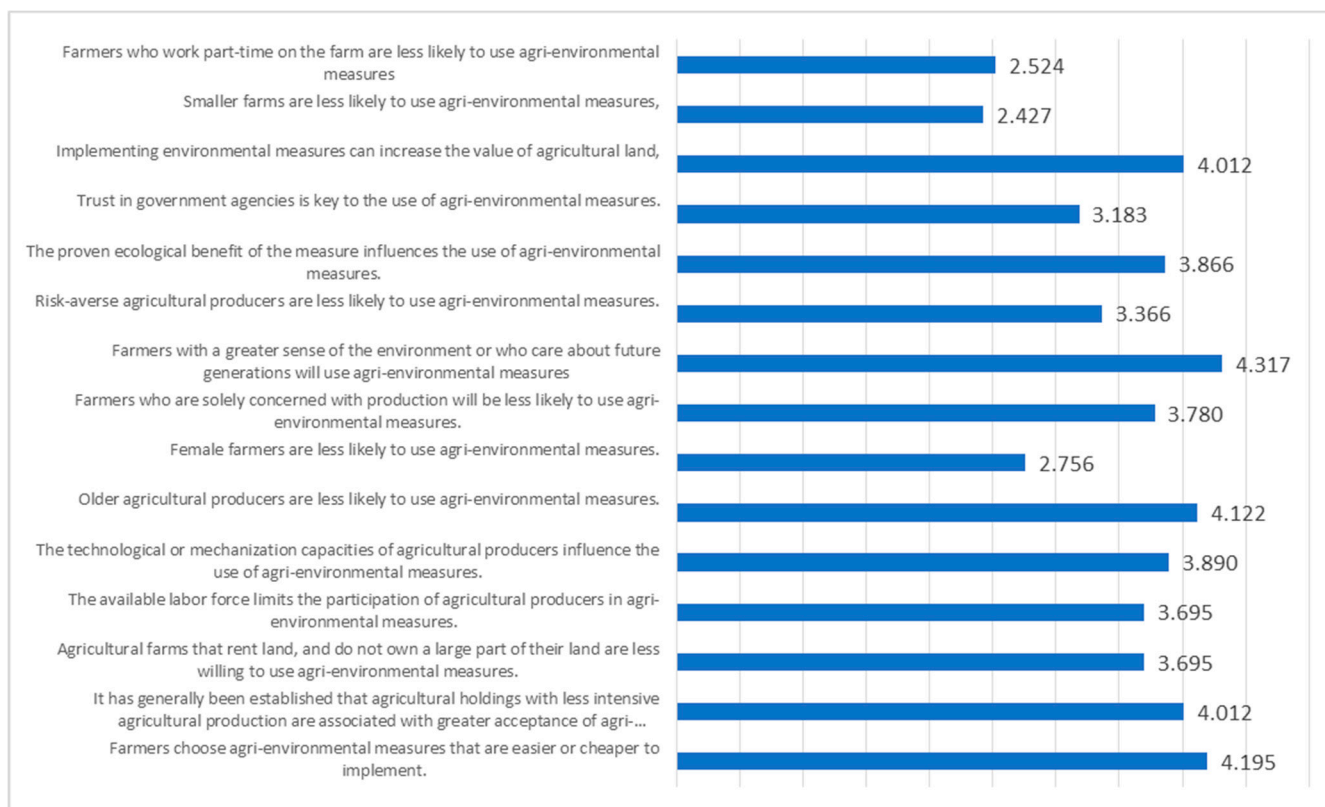


Figure 3. Attitudes regarding the risks of AEM adoption.

The claims that express the lowest level of farmers’ agreement are “Smaller farms are less likely to use agri-environmental measures” with a grade of 2.43, “Farmers who work part-time on the farm are less likely to use agri-environmental measures” with a grade of 2.52, and “Female farmers are less likely to use agri-environmental measures” with a grade of 2.76.

In Figure 4, the claim “Agri-environmental measures are a good way to improve the state of the environment” has the highest grade of 4.36, “Agri-environmental measures are a good way to promote the diversity of nature and organisms” has the highest grade of 4.25, and “Agri-environmental measures are effective in improving the quality of the environment” has the highest grade of 3.37. The claim “Agri-environmental measures are adequately distributed” has been rated as the lowest with a grade of 2.37, followed by the claim “Agri-environmental measures take into account all interested parties equally” with 2.56, and a grade of 2.67 for the claims “Agri-environmental measures treat all farmers equally” and “Agri-environmental measures are easy to apply”.

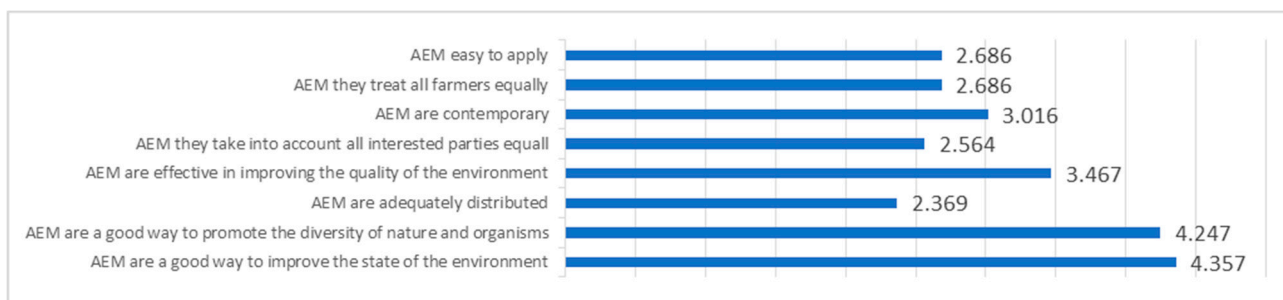


Figure 4. Attitudes regarding existing incentives for the preservation and improvement of the environment and natural resources.

4.2. PLS Analysis

In the researched model, four latent variables were introduced, which make up two models: (1) a measurement (external) model in which there is a connection between the manifest and associated latent variables, and (2) a structural (internal) model in which there is a connection between the latent and other latent variables. The independent variables are: Farmers’ attitudes toward the environment: farm as a business (EAB), Farmers’ attitudes toward the environment: stewardship (EAS), and attitudes toward the AEM adoption risks (AR). The dependent variable is the incentive for the preservation and improvement of the environment and natural resources (IPIE).

In our research, all variables are reflective in nature.

- The latent variable—attitudes toward the AEM adoption risks (AR)—is described by six manifest variables: AR1, AR3, AR4, AR5, AR6, AR12.
- The latent variable—Farmers’ attitudes toward the environment: farm as a business (EAB)—is described by 7 manifest variables: EAB1, EAB2, EAB3, EAB5, EAB6, EAB7, and EAB9.
- Farmers’ attitudes toward the environment: stewardship frame (EAS) is described by 8 variables: EAS 1, EAS2, EAS7, EAS8, EAS9, EAS11, EAS12, EAS13.
- The dependent variable (IPIE) is defined by four manifest variables: IPIE1, IPIE2, IPIE4, and IPIE5.

The analysis was carried out on the external measurement model using: Construct reliability and validity: Cronbach’s alpha; Composite reliability (rho_a); Composite reliability (rho_c); Average variance extracted (AVE). Discriminant validity was determined using the heterotrait-monotrait ratio (HTMT), cross-loading, and the Fornell-Larcker criterion [39].

In the model, factor loadings/weights are greater than 0.7, while indicators with lower loadings are excluded. Outer loadings of the variable EAS range from 0.706 to 0.808, of the variable EAB from 0.721 to 0.840, of the variable AR from 0.730 to 0.816, and of the variable IPIE from 0.818 to 0.848 (Table 3).

Table 3. Values of factor loadings of the variables in the measurement model of a reflective character.

Variable	Outer Loadings							
	EAS		EAB		AR		IPIE	
EAS1	0.721	EAB1	0.721	AR1	0.782	IPIE1	0.818	
EAS2	0.797	EAB2	0.840	AR3	0.730	IPIE2	0.831	
EAS7	0.808	EAB3	0.789	AR4	0.735	IPIE4	0.820	
EAS8	0.706	EAB5	0.821	AR5	0.797	IPIE5	0.848	
EAS9	0.755	EAB6	0.771	AR6	0.766			
EAS11	0.804	EAB7	0.837	AR9	0.816			
EAS12	0.754	EAB9	0.836					
EAS13	0.743							

The composite reliability is a measure of internal consistency, and CR values should be ≥ 0.6 , ≥ 0.7 , and ≥ 0.8 acceptable [40]. Composite reliability (CR) is a measure of the internal consistency of scale items [41]. Fornell and Larcker [42] point out that CR is the indicator of common variance among observed variables. The convergent validity was measured using the average variance extracted (AVE) method, which should be above 0.5. Therefore, in the research, AVE is a measure of the amount of variance that the construct includes in relation to the amount of variance, that is, on average, how much variation in the observed items can be explained by the construct or latent variable. The Cronbach’s alpha tests to see if multiple-question Likert scale surveys are reliable. The Cronbach’s alpha values range between 0.849 and 0.908; therefore, reflective variables indicate high internal reliability of latent factors (Table 4).

Table 4. Cronbach’s alpha, CR, and AVE values.

Variable	Cronbach’s Alpha	CR (rho_a)	CR (rho_c)	AVE
EAS	0.908	0.916	0.927	0.645
EAB	0.896	0.899	0.917	0.580
AR	0.864	0.867	0.898	0.595
IPIE	0.849	0.849	0.898	0.688

In the research, various values of composite reliability were achieved, all higher than 0.7, i.e., 0.8. The CR, as an internal consistency assessment (rho_a), is in the range of 0.849–0.916; the CR (rho_c) [43,44], is in the range of 0.898–0.927; and the AVE is 0.580–0.688. The discriminant validity assessment should show that all constructs and variables in the model are mutually different. Although there are several approaches, the assessment of discriminant validity was conducted by applying the Fornell-Larcker criteria and the HTMT criteria. The mentioned approaches can only be applied to reflective constructions. With the Fornell-Larcker criterion, the square root of the AVE of each variable should be greater than the correlation with any other construct in the model. The discriminant validity assessment should show that all constructs and variables in the model are mutually different. Although there are several approaches, the assessment of discriminant validity was carried out using the Fornell-Larcker criteria and the HTMT criteria. The mentioned approaches can only be applied to reflective constructions. The results of the discriminant validity research indicate that the difference between the constructs is obvious [36]. The values of discriminant validity using HTMT are less than 1 and less than 0.9 (Table 5).

Table 5. Values of discriminant validity parameter evaluation—Heterotrait-monotrait ratio (HTMT) and Fornell-Larcker.

Fornell-Larcker					Heterotrait-Monotrait Ratio (HTMT)				
	EAB	EAS	AR	IPIE		EAB	EAS	AR	IPIE
EAB	0.803				EAB				
EAS	0.719	0.762			EAS	0.799			
AR	0.477	0.611	0.772		AR	0.535	0.689		
IPIE	0.443	0.649	0.745	0.829	IPIE	0.497	0.741	0.867	

Source: Author’s calculation.

Evaluation of the Structural Model (Structural Model)

After the reliability of the model was established, the structural model was evaluated using f-square, R-square, cross-validated redundancy (Q2), and the path coefficient. However, before this assessment, multicollinearity testing of the model was conducted. The multicollinearity of the model was checked using the variance inflation factor (VIF) in Table 6.

Table 6. Internal model VIF values.

Inner Model—VIF							
EAB1	1.833	EAS1	1.796	AR1	1.930	IPIE1	1.813
EAB2	2.613	EAS2	2.396	AR3	1.706	IPIE2	1.901
EAB3	2.067	EAS7	2.367	AR4	1.710	IPIE4	1.906
EAB5	2.258	EAS8	1.659	AR5	1.957	IPIE5	2.046
EAB6	2.005	EAS9	1.960	AR6	1.972		
EAB7	2.573	EAS11	2.185	AR9	2.323		
EAB9	2.393	EAS12	1.994				
		EAS13	1.792				

The internal model VIF values range from 1.659 to 2.613, and as the obtained values are less than 3, collinearity is not present in the model. Model checking was performed using f-square (f^2) [45]. The research established the influence of latent variables on IPIE. The value of the corrected coefficient of determination (R^2 adjusted) is 0.615, which shows that the influence on the dependent variable is strong. The coefficient of determination in the amount of 0.618 indicates that as much as 61.8% of the variable is explained by the action of exogenous latent variables (Table 7).

Table 7. Values of the coefficient of determination and coefficients of the size of influence— f^2 .

f^2		R2 and LV Prediction Q2	MV Prediction Q ²	
	IPIE	R-square = 0.618	IPIE1	0.425
EAS	0.011	R-square adjusted = 0.615	IPIE2	0.421
EAB	0.142	Q2 = 0.607	IPIE3	0.373
AR	0.515		IPIE4	0.444

The f^2 effect size values were used to check the model when the exogenous variables were excluded from it, and this was achieved by demonstrating the effect on the R-square. Simply put, f^2 effect size assesses the size or strength of the relationship between latent variables. Since the value of f^2 is in the range of 0.011–0.515, it indicates a negligible or medium-strong influence. With the AR variable, there is a significant influence (0.515), while with the others, it is weak and negligible.

The cross-validated redundancy values (LV prediction Q2) were obtained using the Run Blindfolding procedure. As the research established a value greater than 0.5, we consider that the accuracy of the model measurement prediction is high [36]. The accuracy of MV prediction Q² has a value of 0.373–0.444, which shows that the accuracy of the model measurement prediction is medium.

The significance of individual effects was calculated using the bootstrapping procedure. The research results indicate the existence of a strong direct effect of the latent construct AR (0.561) and a medium-strong effect of EAB on the dependent variable IPIE. We must also mention the negative effects of EAS-VO and IPIE.

The confidence intervals were analyzed using the Bootstrap-based test. The values shown in Table 8 indicate that the model has a “good fit”. The NFI value of 0.821 ranges between 0 and 1, that is, it is closer to 1, and represents an acceptable fit.

In Table 9, the values of the influence of the latent variable on IPIE show statistical significance at the level of p values < 0.05 and < 0.001 , in two relations: EAS \rightarrow IPIE where ($\beta = 0.372$; $t = 6.210$); AR \rightarrow IPIE where ($\beta = 0.561$; $t = 11.307$); the effect of EAB \rightarrow IPIE is not statistically significant ($\beta = -0.093$; $t = 1.557$ and p values = 0.119).

Table 8. Overall effect and criteria fit summary.

	Total Effects	Fit Summary		
Total effects	IPIE	Criteria	Saturated model	Estimated model
EAS	−0.093	SRMR	0.058	0.058
EAB	0.372	d_ULS	1.099	1.099
AR	0.561	d_G	0.511	0.511
		Chi-square	919.008	919.008
		NFI	0.821	0.821

Table 9. Path coefficients (Mean, STDEV, T values, *p* values).

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	<i>p</i> Values	Confidence Intervals 2.5%	Confidence Intervals 97.5%	X ±
EAB -> IPIE	−0.093	−0.088	0.059	1.557	0.119	−0.207	0.028	−
EAS -> IPIE	0.372	0.370	0.060	6.210	0.000 **	0.249	0.484	+
AR -> IPIE	0.561	0.563	0.050	11.307	0.000 **	0.465	0.659	+

** *p* values < 0.001.

H1 = Statistical significance testing shows that there is no significant positive association between EAB -> IPIE due to the empirical relationship ($\beta = -0.093$; $t = 1.557$) at the significance level of $p < 0.119$, while the population with 95% probability is in the confidence interval of -0.207 to 0.028 . The hypothesis is rejected.

H2 = Statistical significance testing shows that there is a significant positive association between EAS -> IPIE due to the empirical relationship ($\beta = 0.372$; $t = 6.210$) at the significance level $p < 0.000$, while the population with 95% probability is in the confidence interval of 0.249 – 0.484 . The hypothesis is accepted.

H3 = Statistical significance testing shows that there is a significant positive association between AR -> IPIE due to the empirical relationship ($\beta = 0.561$; $t = 11.307$) at the significance level $p < 0.000$, while the population with 95% probability is in the confidence interval of 0.465 – 0.659 . The hypothesis is accepted.

5. Discussion

The new CAP highlights the multi-functionality of agriculture and integrates the ecological dimension, i.e., environmental management that encourages “green” agriculture and promotes AEMs [46], based on the European Green Deal [47] and the Farm to Fork Strategy [48]. The new reform of CAP was implemented on 1 January 2023, for a period up until 2027, and as a result of the reform, the new environmental architecture of CAP replaced the former Cross Compliance Scheme with a new payment approach based on a system of enhanced conditionality requirements that includes the Statutory Management Requirements (SMR) and the Good Agricultural and Environmental Conditions (GAEC) [49]. In the EU Common Agricultural Policy 2023–2027 framework, eco-schemes mobilize 25% of the CAPs Pillar 1 resources to support environmental and climate practices [50].

On the other hand, the Serbian agriculture sector is small in the European framework, and at the same time, the agriculture sector productivity “lags” behind in almost all aspects of the productivity of EU member states. In light of the transposition of the acquis of the EU into national agricultural policy, the EU rules on direct payment schemes and rural development measures will be applied in Serbia [51]. Increasing the competitiveness of Serbian agriculture imposes the need for changes and innovations [52].

Therefore, this research represents an attempt to systematically analyze the concepts of sustainable agriculture that will address the preparedness of the farmers to adopt the AEMs. Farmers, in the framework of farming as a business, believe that environmental protection is an important segment of production and that good agriculture is a prerequisite for producers’ survival, maximum yields, and profits, while soil and water resource protec-

tion programs should benefit their agricultural production. The farmers, in the framework of stewardship, agree that good agriculture implies responsible management of the agricultural and natural areas that are part of their country's heritage for the benefit of future generations. They all agree that agri-environmental measures are a good way to improve the state of the environment and promote the diversity of nature and organisms, but are of the opinion that they do not take into account all interested parties, do not treat all farmers equally, and are not easy to apply. The farmers have agreed that farmers with a greater sense of the environment or who care about future generations will use agri-environmental measures and that they shall choose agri-environmental measures that are easier or cheaper to implement, which is in line with [12]. Older agricultural producers are less likely to use agri-environmental measures, which is contrary to [53]. They believe that implementing environmental measures can increase the value of agricultural land, which is in line with the findings of [54] that it is important to analyze the economic parameters together with the benefits of AEMs for future generations. The farmers are of the opinion that the small households are more prepared to adopt the AEMs, which is in line with [55,56].

Following the first hypothesis, the findings have shown that there is no statistically significant relationship between attitudes toward environmental awareness (farm as business) and attitudes toward AEM (H1). This is in line with the findings that the acceptance of nature conservation policies may be constituted by economic criteria, but economic incentives seem to generate only superficial acceptance and do not seem to be as significant as is usually assumed [57]. Some findings, on the other hand, show that profit-oriented farmers are willing to lose some income in order to implement AEMs, but with a strong disutility for long contracts [58]. The findings show that Yield Optimizers believe that nature conservation is only practicable with appropriate compensation payments [7].

The findings have shown that there is a statistically significant relationship between attitudes toward environmental awareness (stewardship frame) and attitudes toward agri-environmental measures (H2). This is in line with the findings identifying that environmental knowledge is the most important factor in environmental awareness [59]. The ecologically based acceptance of nature conservation policies seems the most promising [57], as it is in line with the findings of [10] that the farmers felt that a measure is important if it can help to protect resources for future generations. On the other hand, Ref. [60] argue that environmental awareness positively influences farmers' decisions, although the willingness to adopt an AES is not a sign of altruistic behavior since utility is also present.

The findings have shown that there is a statistically significant relationship between the risk of adoption of AEM and attitudes toward incentives for the preservation and improvement of the environment and natural resources (IPIE) (H3). A clear demonstration of environmental benefits could minimize the potential risks of adoption with appropriate opportunities for training and education on AEM. This is in line with the findings from [21] that connected to participation are both the behavioral factors and the opportunity costs. Lastra et al. [25] argue that previous experiences with AESs positively affect farmers' willingness to adopt an AES, as it may be reflected in their greater trust in a policy instrument. In order for the nature conservation measures to be successfully accepted, farmers must be informed in advance, as it is shown that perception, communication, and possibilities to participate are the most decisive driving factors [57]. Sattler and Nagel [10] point out that risks and the visibility of the intended results, followed by the costs, are the main drivers when decisions are made to adopt new conservation measures, and that smaller farms and older farmers are concerned about the risks. On the other hand, [61] points out that the type of measures and legal protection are significant. The adoption of AEM depends on the schemes' perceived legitimacy [10,13]. Therefore, the coordinated joint action of local structures, local communities, and the creators of rural policies is needed to encourage further rural development and enhance environmental awareness [62]. The agricultural practices of the students are performed on conventional farms [63]. On the other hand, the protests in the Netherlands have brought to the fore the seeming contradiction between policy that seeks to realize environmental gains and the needs of agriculture as a business

sector. Van der Ploeg [64] (p. 603) has shown that family farmers will have to pay the highest toll for the ecological transition risk in Europe that will be imposed in the transition to fight climate change, and therefore it is crucial “to develop an agroecological proposal that builds on and unites the many ‘pockets’ of peasant agriculture and that, at the same time, deals in an integrated way with the socio-economic and environmental problems of an industrial agricultural model that is no longer fit for purpose” [64]. Vermunt et al. [63] point out that in sustainable agriculture, the farmers may not be sufficiently compensated for the benefits.

6. Conclusions

Although the development of various mechanisms for environmental protection in Serbia has started in the eighties of the last century, the fact is that more progress in the field of environmental policy has been noticed only in the last decade, with not enough funds for rural policies [65]. The findings of this paper shall reveal up-to-date attitudes toward the adoption of AEM and shall contribute to raising awareness of AEM among practitioners in the agricultural sector, decision-makers, and policymakers. We can conclude the following:

- Farmers, in the framework of farming as a business, believe that environmental protection is an important segment of production and that good agriculture is a prerequisite for producers’ survival, maximum yields, and profits.
- The farmers, in the framework of stewardship, believe that good agriculture implies responsible management of the agricultural and natural areas of their farm as part of their country’s heritage for the benefit of future generations.
- They all agree that agri-environmental measures are a good way to improve the state of the environment and promote the diversity of nature and organisms, but are of the opinion that they do not take into account all interested parties or treat all farmers equally and are not easy to apply.
- The farmers have agreed that those with a greater sense of the environment or who care about future generations will use agri-environmental measures, and the farmers will choose agri-environmental measures that are easier or cheaper to implement.
- The farmers believe that implementing environmental measures can add to the value of the agricultural land.
- The farmers are of the opinion that small households and younger farmers are more ready to take up AEM measures.
- The proposed research is significant in light of the future AEM funded by IPARD III for rural development.
- In order for the agri-environmental measures to be successfully adopted, Serbian farmers must be additionally educated, and the information must be widely disseminated.

Practical suggestions for the development of similar economies can be reflected in the fact that local farmers need adequate and sufficient information and support from policymakers in order to be prepared to implement planned AEM and thus contribute to long-term environmental sustainability. The interested farmers need to be meaningfully included in the AE policy development, as it is crucial to building trust and sharing recommendations in the early stages of potential AEM adoption. The shared environmental and other farm values “should be incorporated into the AE policy in order to increase the implementability and voluntary adoption of this new policy tool” [29]. Cooperation with the national advisory services is crucial for the easier adoption of agri-environmental management practices.

The multifaceted issue of the adoption of AEM should be further analyzed. However, many relationships in AEM adoption require context-specific interpretation. The economic factors are definitely not the only ones to be analyzed, and they should be compared with other factors. As the adoption of AEM in the Republic of Serbia gradually develops, it is necessary to analyze the level of adoption of these measures. This research study is based only on a sample of farmers in the Republic of Serbia; therefore, one of its limitations is that its findings cannot be applied to developed, environmentally sustainable economies.

Another limitation that should be borne in mind is that the survey respondents may be tempted to rate their environmental values with a higher mark as a sign of socially acceptable values. These limitations of the study can point to the need to conduct further studies in similar economies.

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Appendix A. The List and Description of Variables

Gender	Male
	Female
Age	18–30
	31–40
	41–50
	51–60
	Over 60
Household size	Small/medium household; 1–6 members
	Larger household; more than 7 members
Professional qualification level	High school or professional school
	Higher education/BA
	Master and Ph.D.
Total monthly income of the household	Up to 200 euros
	201–500 euros
	500–1000 euros
	1000–2000 euros
	More than 2000 euros
Types of agricultural production	Plant
	Livestock
Hire external workers	Yes
	No
	Seasonally
I have a business plan	Yes
	No

Attitudes of farmers perceiving farms as a business frame (10 claims)	EAB1	Good agriculture is a prerequisite for producers' survival, maximum yields, and profits
	EAB2	Effective use of all available areas is important in order to maximize yields
	EAB3	It is important to increase the volume or intensity of work on the farm in order for my business to survive
	EAB4	The risks of industrial agricultural production are offset by the efficient production of food for the growing world population
	EAB5	Environmental protection is related to the primary role of farming (the production of food and related agricultural products)
	EAB6	Soil and water resource protection programs should benefit my agricultural production
	EAB7	As a farmer, I believe that environmental protection is an important segment of my production
	EAB8	Agricultural practices that degrade the natural landscape harm the profession of agriculture
	EAB9	Natural areas should be maintained only if they benefit agricultural production (irrigation, drainage, etc.)
	EAB10	I must not allow natural areas to interfere with my agricultural production
Attitudes of farmers perceiving farm as a stewardship frame (13 claims)	EAS1	Removal of forest plots, fences, small ponds, and other activities on the farm affect the environment
	EAS2	Technological progress will ultimately reduce the environmental impact of conventional agricultural practices
	EAS3	Industrial agricultural activity is associated with environmental risks
	EAS4	The way agricultural activity is performed is connected with the concept of sustainable agriculture
	EAS5	Sustainable agriculture enables solving environmental problems and preserving profitability in an innovative way
	EAS6	A successful farmer must continuously evaluate the impact of his farm on the environment and adopt new approaches to protect the environment
	EAS7	Modern agricultural practices require more environmental protection efforts than were necessary in the past
	EAS8	I am aware that the way I cultivate my land has a potentially negative impact on the quality of the rural landscape
	EAS9	In order to protect the rural landscape, farmers must adopt ecological principles instead of conventional agricultural practices
	EAS10	The most important thing for me is the existence of natural areas on my farm
	EAS11	The natural areas on my farm are part of my country's heritage and should be maintained for the benefit of future generations
	EAS12	I am aware that the protection of natural areas on my farm improves the quality of life of other members of my community
	EAS13	Good agriculture implies responsible management of the agricultural and natural areas of my farm

Farmers' attitudes towards the risks of AEM adoption (15 claims)	AR1	Farmers choose agri-environmental measures that are easier or cheaper to implement
	AR2	It has generally been established that agricultural holdings with less intensive agricultural production are associated with greater acceptance of agri-environmental measures
	AR3	Agricultural farms that rent land and do not own a large part of it are less willing to use agri-environmental measures
	AR4	The available labor force limits the participation of agricultural producers in agri-environmental measures
	AR5	The technological or mechanization capacities of agricultural producers influence the use of agri-environmental measures
	AR6	Older agricultural producers are less likely to use agri-environmental measures
	AR7	Female farmers are less likely to use agri-environmental measures
	AR8	Farmers who are solely concerned with production will be less likely to use agri-environmental measure
	AR9	Farmers with a greater sense of the environment or who care about future generations will use agri-environmental measures
	AR10	Risk-averse agricultural producers are less likely to use agri-environmental measures
	AR11	The proven ecological benefit of the measure influences the use of agri-environmental measures
	AR12	Trust in government agencies is key to the use of agri-environmental measures
	AR13	Implementing environmental measures can increase the value of agricultural land
	AR14	Smaller farms are less likely to use agri-environmental measures
	AR15	Farmers who work part-time on the farm are less likely to use agri-environmental measures
Farmers' attitudes towards AEM incentives for the preservation and improvement of the environment and natural resources (8 claims)	IPIE1	AEM is a good way to improve the state of the environment
	IPIE2	AEM is a good way to promote the diversity of nature and organisms
	IPIE3	AEM are adequately distributed
	IPIE4	AEM is effective in improving the quality of the environment
	IPIE5	AEM takes into account all interested parties equally
	IPIE6	AEM are contemporary
	IPIE7	AEM treats all farmers equally
	IPIE8	AEM is easy to apply

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