

THE ENVIRONMENTAL AWARENESS OF AGRICULTURAL PRODUCERS IN SERBIA: ATTITUDES AND PRACTICES

Aleksandra Šarković^{1*}, Slobodan Cvejić², Natalija Bogdanov³

¹Radio Television Serbia, Belgrade, Serbia

²University of Belgrade, Institute for Sociological Research,
Faculty of Philosophy, Belgrade, Serbia

³University of Belgrade, Institute of Agroecology, Faculty of Agriculture,
Belgrade, Serbia

* *aleksandrasarkovic63@yahoo.com*

Abstract

The identification of environmental awareness in this paper was conducted through its basic dimensions: attitudes, behavior and willingness of the respondents to participate in solving environmental problems. The paper focuses on understandings, attitudes and motivations that influence the decision of farmers regarding key issues related to the environment and agricultural production.

In the empirical section, this paper assesses whether and how environmental practices follow environmental attitudes of the respondents. One of the hypothesis is that formal education, as an important determinant, has a significant impact on the attitudes regarding environmental protection and the application of positive environmental practices. What was also examined was the extent of and the manner in which information in the field of agriculture and environmental protection, influences the attitudes, practices and involvement of farmers in preserving the environment.

Key words: environmental awareness, attitudes, practices, agricultural producers education, information.

ЕКОЛОШКА СВЕСТ ПОЉОПРИВРЕДНИХ ПРОИЗВОЂАЧА У СРБИЈИ: СТАВОВИ И ПРАКСЕ

Апстракт

Овај рад се фокусира на схватања, ставове и мотиве који утичу на одлучивање пољопривредних произвођача о кључним питањима која се односе на животну средину и пољопривредну производњу. Идентификација еколошке свести спроведена је преко њених основних димензија: ставова, понашања и спремности испитаника за учешће у решавању еколошких проблема. У емпиријском делу, у раду се процењује да ли и колико еколошке праксе прате еколошке ставове

испитаника. Једна од хипотеза је да формално образовање као важна детерминанта значајно утиче на ставове о заштити животне средине и примену позитивних еколошких пракси. Такође је испитивано у којој мери начин и ниво информисаности у домену пољопривреде и заштите животне средине утичу на ставове, праксе и ангажовање пољопривредних произвођача у очувању животне средине.

Кључне речи: еколошка свест, ставови, праксе, пољопривредни произвођачи, образовање, информисаност.

OPENING CONSIDERATION

Environmental protection is an enormous challenge for each community, whether it is small or big, rural or urban, because its long term consequences have a huge impact on human life (Shultsp & Zelenzy, 1999). Preservation of soil, water and forest resources, as vital for rural population, are one of the most important preconditions for their survival and development. Interaction between agriculture and environment is inevitable and could be positive and negative. Agriculture could improve, but also endanger soil fertility or the habitat of different plant and animal species (OECD, 1992). Application of different agrochemicals in food production process, without prior education of producers, threatens not only health and life quality of a farmer and his family, but also the public health as well (Miltojevic, 2005).

Numerous researches on environmental protection in rural areas deal with technical and economic aspects of that issue, neglecting the aspect of ecological awareness of population in rural areas (Akca, Sayili & Yilmazcoban, 2007). Ecological awareness is a significant factor that influences environment condition. Its three components are ecological knowledge, evaluation ecological situation and behavior (Cifirić, 1989). Among other things, awareness about the necessity of environmental protection itself is insufficiently developed because of the lack of knowledge and habits, when it comes to different attitudes toward nature. Various researches, up to this point, have shown that agricultural producers have ecological ethics because they are in close daily contact with soil on which they and their family's existence depends upon. According to this, we can conclude that agricultural producers see themselves as people who take care of the environment and are responsible for its protection (McCann, 1997). Berenguer's (Berenguer, 2005) research shows that there is a certain difference between the ecological attitudes of the people who live in rural areas in regard to the people who live in cities and that research says that the rural population shows more responsibility toward the environment and more willingness to behave in a way which is coordinated with environmental protection.

In the studies about social awareness the attitude is defined as an acquired, relatively permanent and stable organization of positive and

negative emotions, valuation and reaction toward some object (Petz, 1992). It is considered that, based on someone's attitude toward a certain object, his future behavior toward that object could be predicted with high level of accuracy (Zvonarević, 1989). Because of this, those attitudes are useful in scientific research as the easiest way for explaining motives which have the central meaning in understanding human behavior. The connection between attitude and behavior depends on the situation, social norms, habits and other personality features and can be stronger or weaker (Gifford & Sussman, 2012). In his research about the differences between organic and conventional agricultural producers, McCann (1997) points out that the connection between the ecological attitudes and ecological behavior is not convincingly confirmed and he even emphasises that the connection is quite uncertain. In his research, Stern points out that the intention might exist, but it does not necessarily lead to influence and positive change in the environment (Stern, 2000). In order to explain these incompatibilities we must take into consideration the socio-structural factors and experience through which people gain ecological values, attitudes and behavior (Berenguer, 2005). Numerous factors that influence the relationship between attitude and behavior have been determined. Extremity, intensity and clarity of attitudes have a paramount role in that relationship (Prislin, 1991). Penington says that habits, rather than attitude, could predict behavior up to larger degree (Pennington, 1997). Ecologically significant behavior is defined, according to Stern (2000), through the influence on the environment, which can be direct and can be manifested as waste selection and recycling, as well as forest cleaning, or indirect, which is noticeable through forming and making decisions which cause changes in the environment.

Another very important factor of ecological awareness is ecological knowledge. Numerous researchers say that ecological knowledge and attitudes are mutually connected, and that attitudes are further linked to behavior (Flamm, 2006). Analyzing how much effect ecological knowledge and attitudes have on the number and type of vehicle households in California own, the author emphasizes that positive ecological attitudes and knowledge about environment are not in a statistically significant relationship with the specific behavior of respondents. Such findings could be interpreted through the *Theory of Planned Behavior* (Ajzen & Fishbein, 1973), according to which attitude is not linked to a certain specific behavior but to the tendency toward certain type of behavior.

From numerous numbers of studies that deal with human concern for environmental protection and their different theoretical approaches (Berenguer, 2000) we can see that testing the socio-demographic characteristics influence is stressed out as important. Based on the demographic variables, such as age and education, Rogers explains the differences between attitudes and farmer practice (Rogers, 1983). Education

did not show the major impact on the decisions about type and amount of mineral fertilizer and plant protection products that they use (Akay, Akca, Sayili & Esengun, 2000). The research conducted in Malaysia among students from families with different financial situations and the level of education, shows that the parents' education has a positive effect on the questioned student's attitude, behavior and opinion about the environment (Aminrad, 2013).

In their work, Pajvancic and Pusic (2010) emphasise informing the citizens as one of the basic conditions for solving ecological problems, and that requires familiarity with the ecologically endangered environment and possible consequences, as well as the discovery of one's own responsibility and ability to protect the environment. Having more knowledge about harmful consequences of human activities for the soil, water, air, plant and animal life and a life quality, the awareness about the importance of preserving these resources is increasing as well. The starting point for many discussions about the media role in increasing public awareness and care about the environment is observation that mass media and television are recognized as a primary source of information in that area. (Murch, 1971).

The aim of this paper is to present ecological attitudes and practices as very important factors for building ecological awareness of the agricultural producers in Serbia, as well as to analyze some structural determinants of these attitudes and behavior. The paper is divided in two parts. The first part presents theoretical term operationalization relevant for perception of ecological awareness of agricultural producers. In the second part, the results of the empirical research conducted in rural settlements in Serbia are interpreted. Through empirical research we followed ecological attitudes, ecological practice and willingness to engage in environmental protection depending on the socio-demographic characteristics such as the level of education and level of informing agricultural producers.

METHODS

Sample

The research is conducted on a random sampling of agricultural households in 157 rural settlements which are located in 110 municipalities on the entire territory of the Republic of Serbia. In the overall number of agricultural households in Serbia, the sector of family agricultural households participates with 99,5%, which influenced the fact that, in our research all, 282 respondents were owners or members of households which participate in making decisions about the expenses and investments in the family household. For the purpose of this research, the official nomenclature was applied and, according to it, Serbia is divided into 4 territorial units and within them the sample was dislocated in the following way:

- Belgrade region: 28 households
- Vojvodina region: 84 households
- Sumadija and West Serbia: 86 households
- South and East Serbia: 84 households

Table 1. The structure of the respondents according to the socio-demographic features¹

Socio-demographic features		Number of respondents	%
Age	From 15 до 34	36	12,7
	From 35 до 54	143	50,7
	55 and more	103	36,6
Total		282	100,0
Education	Without and with Elementary school	93	31,6
	High school	144	51,0
	College or University	45	17,5
Total		282	100,0
Gender	Women	92	32,5
	Men	190	67,5
Total		282	100,0

Methodology

As a means of data collection the questionnaire that included 5 groups of issues was used: the socio-demographic data about the respondent; the respondents' attitudes to the importance of the environment; the readiness for the personal contribution to the protection of the environment; the ways of informing the subjects of environmental problems and the practices of those with environmental consequences. 199 respondents were directly interviewed, while 83 respondents completed the online questionnaire after their preparation and the instruction given by the organizer of the research. The survey was conducted from June to December 2014. The data processing has been done in the statistical program SPSS 19.

The survey measured the attitudes through the questions that assess the importance of the environment in relation to the agricultural production and readiness for personal contribution to the promotion and protection of the natural environment for farmers. Environmental behavior was investigated through the use of environmentally friendly practices in the everyday life of agricultural producers, which made it possible to assess the level of compliance of the attitudes and behavior of the two most important elements of environmental awareness.

¹ The results in charts and graphs are given in percentage with respect to a total number of 282 agricultural producers who were included in this research.

Informing the farmers is expressed through a unique gamut of information the respondents based on their answers to the following questions:

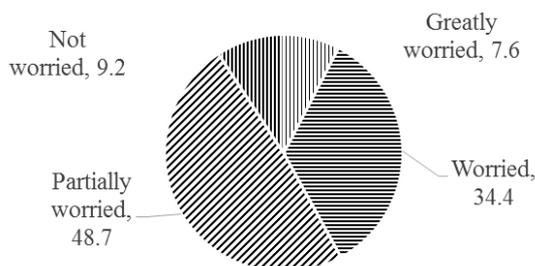
- 1) The criteria in the choice of the chemical substances used in the protection and nutrition of crops;
- 2) The information on environmental pollution originating from agricultural production;
- 3) The frequency of contact with the agricultural extension service (PSSS);
- 4) The frequency of watching a program about agriculture.

For the first two items the respondents were given a maximum of 1 point, and the other two a maximum of 2 points. Based on the total sum of points, the subjects were classified into three categories: well informed, 5-6; medium informed 3-4; poorly informed, 0-2.

RESULTS AND DISCUSSION

Ecological Attitudes

As it has already been emphasised, the attitudes have a significant importance for explaining human behavior. In our research 42 % of the respondents show concern about the environment which confirms the findings of other authors in which it was indicated that the agricultural producers see themselves as very concerned for the environment (McCann,1997).



Graph 1. The level of concern about environment of the agricultural producers in Serbia (%)

In the farmer's attitudes toward the environment we can notice that reducing poverty is a priority compared to environmental protection.

Table 2. Attitudes about environmental protection (% respondents)

Statements	The level of agreement			
	Agrees with	Partially agrees with	Disagrees with	Total
Compared to the fulfillment of requirements, more important is:				
Achieve high yield	23,4	31,9	44,7	100,0
Reduce poverty	40,8	26,6	32,6	100,0

Being that a large number of the respondents (40.8%) considers the reduction of poverty as important in relation to the high yield (23.4%) (Table 2), we can say that the farmers solving their existential problems and poverty are seen as greater and more important problems than environmental protection. The attitudes of the respondents about the willingness to tolerate higher costs in order to protect the environment, show that they are not fully prepared for such a change in practice.

Table 3. Willingness for higher costs in order to protect the environment (% of respondents)

Type of costs	Degree of willingness				Total
	Willing	Partially willing	Unwilling	Cannot decide	
Payment of higher fees and taxes	6,0	59,9	28,4	5,7	100,0
Application of different modes of production, even if it is more expensive and requires more time	6,4	54,3	27,7	11,7	100,0
Investment in primary production that does not provide larger transfers, but provides better products and a higher level of protection	12,1	55,3	21,6	11,0	100,0

A small percentage of the respondents expressed a complete readiness to take on any way of financial involvement in order to protect the environment (Table 3). The respondents showed the greatest willingness for investments in the primary production if it brings a better quality product and higher level of environmental protection. Findings show that 42% of the respondents are concerned with the environment and only 6% are prepared to pay higher taxes and fees in order for its protection, in accordance with the findings of Stern (2000), who states that the economic status is often more important than the positive intentions of ecological behavior. The discrepancy between the high level of concern about the state of the environment and low readiness for financial participation in its improvement can be explained by ignorance and lack of information, but also by economic problems. Within their research, Cvejić et al. Report that the rural population is facing serious problems of poverty and social exclusion in all of its dimensions, especially farmers and old single households. Poverty is twice as high in rural than it is in urban areas (9.8%: 4.3%), which is one of the reasons for the low participation of the population in rural areas in environmental protection when it requires investment funds (Cvejić, Babović, Bogdanov, Petrović and Vuković, 2010). The research shows that the concern for the quality of the environment can be a luxury in which people can engage only after the fulfillment of basic needs (food, housing, economic security) (Sant, 2007).

Education as a Factor in the Formation of Attitudes in the Environment

Environmental attitudes vary by age, gender, socio-economic status, ethnicity, degree of urban areas, personality, experience, education and knowledge about the environment (Gifford & Sussman, 2012), and education is one of the most important factors influencing the environmental awareness (Fahliquist, 2008)

Our study shows a high correlation between the educational level of farmers, the size of the estate, which is processed and their concern for the environment. The highest percentage concerned (62.8%) was recorded among the best educated (college or university), among which none of the respondents stated that they are not concerned about the environment. The lowest percentage of the concerned (30.5%) for the environment is in the group with the lowest level of education (Table 4).

Table 4. Concern for the environment by the education level of respondents (%)

Level of education	Degree of concern for the environment			Total
	Worried	Partially worried	Not worried	
Without or with Elementary school	30,5	51,6	17,9	100,0
High school	46,5	47,2	6,3	100,0
College or University	62,8	37,2	0,0	100,0
Total	43,8	48,7	9,2	100,0

$$X^2=22,691; P<0,001; C=0,273$$

When it comes to the claims about the importance of environmental protection, although there are more highly educated respondents than the ones with secondary and elementary school, they find it is more important to achieve high yield or reduce poverty than environmental protection, thus the study did not show a significant association between education and attitudes. The majority of the respondents (45-70%), independently of formal education, present an environmentally positive or neutral attitude which could be interpreted as giving socially desirable answers. When it comes to willingness to engage in environmental protection, research results show that education has a significant impact only on the willingness to pay higher fees and taxes. With the increase in the level of education, the number of those who are somewhat or completely willing to pay the expenses for environmental protection increases as well (Tab.8). Similar results were gained in the research of Fahliquist (2008), stating that those who know more about the environment and related issues, have a higher level of awareness and motivation to solve problems in this area.

Table 5. Willingness for higher expenses for environmental protection based on education (% respondents)

The level of education	Degree of willingness to pay higher fees and taxes				Total
	Willing	Partially willing	Unwilling	Cannot decide	
Without school or only with Elementary school	4,2	51,6	38,9	5,3	100,0
High school	4,2	61,8	26,4	7,6	100,0
College or University	16,3	72,1	11,6	0,0	100,0
Total	6,0	59,9	28,4	5,7	100,0

$$X^2=22,738; p<0,001; C=0,273$$

Education did not have a significant impact on the willingness of the respondents to apply different and more expensive ways of production in order to preserve the environment, nor to bigger investments in primary production which does not provide yield increase, but provides more quality products and a higher level of environmental protection.

Awareness as a Factor in Forming Attitudes about the Environment

The findings about the media's role in increasing the level of awareness of the rural area residents, among whom the highest number are agricultural producers, can be found in Akca's research (2006) who analysed the ecological awareness of the residents in two rural provinces in Turkey and showed that television and press stand out as the major source of informing about the environment. Based on the scale of informing described in the chapter about methodology, the respondents are classified in three categories:

- well informed – 22.7%
- middle informed – 42.9%
- poorly informed – 34.4%

Prus and Sztubas, in their research say that agricultural producers highly evaluate professional services and the role of agricultural advisers in planning agricultural production and conducting ecological action (Prus & Sztubas, 2009). Our results show that there is a small percentage of the respondents (22,7 %) who are evaluated as being well-informed. The rest of the respondents who are evaluated as being middle-informed or poorly informed, apart from temporary contacts with the PSSS about the given questions, used to advise with their colleagues and neighbours or decide based on their own experience. Akay (2006) talks about similar results in the research on the choice of mineral fertilizers and pesticides from agricultural producers and he concludes that they most often decide by themselves and based on their own experience. Prislín (1991) concludes that the attitudes formed based on concrete personal or experience of close

people in comparison to those formed by listening or reading, show better behavior prediction. The next important finding in our research is the existence of a significant connection between the level of informing and the attitude of the respondents toward the concern about the environment (Table 6). The highest percentage of concern was found among the best-informed (64.1%), while the worst one among the least-informed respondents (30.9%)

Table 6. Concern about the environment based on the level of awareness (% respondents)

The level of awareness	Degree of concern			Total
	Very worried	Partially worried	Not worried	
Poor	30,9	52,6	16,5	100,0
Medium	43,0	49,6	7,4	100,0
Good	64,1	34,4	1,6	100,0
Total	43,6	47,2	29,2	100,0

$$X^2=24,435; P<0,000; C=0,282$$

Choosing between the high yield and fulfillment of requirements for environmental protection, the poorly informed respondents choose high yields (25,8%), while the well informed respondents consider environmental protection more important (59,4%) (Table 7).

Table 7. Consent with the statement that it is more important to achieve high yields than to meet all the demands for environment protection, based on the level of being informed (% respondents)

The level of awareness	Level of consent			Total
	Agrees	Partially agrees	Disagrees	
Poor	25,8	28,9	45,4	100,0
Medium	25,6	38,0	36,4	100,0
Good	15,6	25,0	59,4	100,0
Total	23,4	31,9	44,7	100,0

$$X^2=9,770; P<0,044; C=0,183$$

Choosing reducing poverty and meeting all the demands for environmental protection, the level of being informed did not have a significant role because approximately the same percent of the respondents declared for or against the given a claim. Furthermore, most respondents do not show willingness to engage financially or to change the way of production in order to protect the environment, regardless of the level of being informed.

Adoption of Environmental Practices

Environmental behavior of the respondents was analyzed through the adoption of environmental and agricultural practices. In this study, as environmental practices, the following were selected:

1. The analysis of the soil was monitored as an agricultural practice, whose ordinary enforcement rationalizes the use of mineral fertilizer, contributes to the increase of yield and its better protection, and increases the level of environmental protection.

2. Treatment of crop residues in the field. Burning the crop residues is viewed as an environmentally harmful practice from the aspect of agricultural production and environmental protection, because in this way it destroys organic matter and beneficial microorganisms in the soil, which leads to soil degradation and pollution of the environment with carbon dioxide emissions. However, plowing is a way of removing crop residues which brings positive effects, such as the input of organic matter to the soil and improving the physical properties (Surekha, Pavan Chandra Reddy, Padma Kumari & Sta Cruz, 2006). Baling and usage of crop residues as an energy material contributes to the rationalization of production and environmental protection.

3. Separation of biological waste in the household. In Serbia, the daily *per capita*, generates about 0.5 kg of municipal solid waste, of which 60-80% is biodegradable. This part ends up in landfills, which significantly affects their life expectancy and is an additional problem for the environment. The rehabilitation of landfills requires a large amount of land that must be made, with significant economic costs as well.

4. Removal of dead animals. Dead animals represent a constant threat as a potential source of infectious material as environmental pollutants. Solving this problem must be organized on scientific principles, specifically based on the possibility of using waste as a resource for conversion to useful products (Jayathilakan, Sultana, Radhakrishna & Bawa, 2012).

5. Disposal of empty pesticide containers. In Serbia, annually, about 5 million pieces of packaging waste from pesticides is improperly destroyed or simply thrown into the closest channel in the place of pesticide application. Serbia, by adopting a set of laws in the field of environmental protection, which are harmonized with the EU directives, created conditions and legislative, legal framework, but still lacks in their practical application.

Our research has shown that farmers largely apply environmentally harmful practices that threaten the environment:

- More than half (58.3%) of the respondents does not separate biological waste within their household;
- More than a third (35.4%) buries dead animals in a place which they determine themselves;

- More than a third of respondents (38.7%) have never done soil analysis;
- One fifth of the respondents (20.9%) burn crop residues directly in the field;
- A fifth (20.2%) burns empty pesticide containers in an unsecured part of the yard.

Positive environmental intentions are just one, but often not the single most important factor influencing behavior. More important within ecological behavior are personal habits or routines in the household as well as the economic status and infrastructure. The lack of infrastructure as an important factor for environmental behavior is stated in the research of Stern (2000). In this study, it was shown that education has an impact on the choice of ecological practices implemented by the farmers². The respondents who have a higher level of education, perform soil analysis to a higher percentage, implement environmentally harmful practice of burning crop residues directly in the field to a much lesser degree (Table 8).

Table 8. Application of pro-environmental practices depending on the level of the respondents' education (%)

Types of practice		Level of education		
		Without education or only Elementary	High school	College or University
Soil analysis	Perform	47,3	67,8	79,0
	Do not perform	52,7	32,2	21,0
	Total	100,0	100,0	100,0
$X^2=20,757; P<0,008; C=0,271$				
Ways of dealing with crop residues	Burn	33,7	16,0	9,3
	Plow	40,0	46,5	39,5
	Bale and compost	26,3	37,5	51,2
	Total	100,0	100,0	100,0
$X^2=22,409; P<0,033; C=0,262$				

The level of information is highly correlated with the adoption of environmental practices. The results show that among the well informed respondents, the largest percentage performs soil analysis, plows harvest remains and burns the least (Table 9).

² Questions such as "How to deal with dead animals?" and "Where to dispose empty pesticide containers?" could not be parsed by the previously applied methodology. In cases where there is no livestock cemetery in the village and being that there is not an adequately organized collection and professional destruction of pesticide packaging on the territory of Serbia, none of the practices is inappropriate.

Table 9. Application of pro-environmentally responsible practices in relation to the level of awareness (%)

Types of practice		Level of awareness		
		Bad	Medium	Good
Soil analysis	Perform	40,2	56,3	85,9
	Do not perform	59,8	43,7	14,1
Total		100	100	100
X=56,410; P<0,000; C=0,400				
Ways of dealing with crop residues	Burn	37,1	14,8	7,8
	Plow	44,3	34,7	57,8
	Bale and compost	18,6	50,5	34,4
Total		100	100	100
X=55,583; P<0,000; C=0,406				

CONCLUSION

This paper analyzes the environmental awareness of the agricultural producers in Serbia over its basic dimensions: attitudes, behavior and readiness to participate in solving environmental problems.

It was also important to determine whether and how the environmental practices follow the environmental attitudes of the respondents and how the determinants such as formal education, farm size, type and awareness level influence the attitudes and practices of the farmers in preserving the environment in the field of agriculture and environmental protection.

The research results indicate that the manufacturers are aware that agricultural production contributes to environmental pollution and, based on their own testimonies, many of them show concern for the environment.

In their attitudes, a higher number of respondents perceive poverty reduction as more important in relation to the protection of the environment, and that the environment is more important than achieving high yields. From this, we can conclude that agricultural producers in Serbia see solving the existential problems and poverty as greater and more important problems than the environmental protection.

Their views on the readiness to engage in environmental protection, with the inevitable costs, indicate that they are not currently willing to accept the extra costs in order to protect the environment. It is characteristic that the smallest percentage of the respondents expressed complete readiness to get involved, financially or in any other way, in order to protect the environment, which is contrary to their attitudes about environmental concerns. This confirms the findings that the economic status is often more important than the positive intentions of ecological behavior.

Our research has shown that the level of concern for the environment is highly correlated with the level of education. The highest percentage

concerned is registered among the best educated (college or university), while the views of other respondents, which are related to the environment and high yields, reducing poverty, and engaging in financial terms, education did not show significant influence.

During the research, it was concluded that there is a significant relationship between the level of awareness and attitudes of the respondents on environmental concerns. The highest percentage concerned was among the best-informed, and the lowest among the poorly informed.

The results indicate that the manufacturers often use practices that threaten the environment which is not in accordance with the high level of concern about the environment that are recorded.

The investigated determinants of behavior, formal education and information, have shown the impact of the adoption and implementation of environmental practices. The level of formal education has a direct impact on the reduction of harmful environmental practices, provided that any infrastructure allows it. The level of information is highly correlated with the adoption of environmental practices. The results show that among the well-informed respondents, a much larger proportion performs analyzing land, plows and burns harvest remains by the smallest percentage. These findings point out the need for education in order to improve the quality of the environment as an important factor of the socio-economic and cultural life of farmers.

Based on the obtained results that indicate non-compliance of environmental attitudes and behavior, it can be concluded that the environmental awareness of the farmers is not at a level which allows a sustainable development of agriculture, and requires further work on its improvement. The confirmation of the impact of education and awareness as important determinants for the level of environmental awareness indicates that it is necessary to improve and strengthen the system of communication between the PSSS and agricultural producers. As a large percentage of the respondents cited television and radio as the most important source of information regarding environment and agriculture, it is necessary to involve the media system through special programs that are to aim at improving agricultural production while protecting the environment in Serbia.

REFERENCES

- Ajzen, I., Fishbein, M. (1973). Attitudinal and Normative Variables as Predictors of Special Behaviors, *Journal of Personality and Social Psychology*, Vol. 27, No 1, 41–57.
- Akay, M., Akca, H. Sayili, M. Esengun, K. A. (2000). Research on the Sensitivity of Rural People to Environmental Problems (A Case Study of Tokat-Turkey). Proceedings of the 70th, *EAAE Seminar on Problems and Prospects of Balkan Agriculture in a restructuring environment*, June 9–11, Thessaloniki, pp. 180–184.

- Akca, H., Sayili, M., Yilmazcoban, M. (2007). Rural Awareness of Environmental Issues: the Case of Turkey Polish *J. of Environ. Stud.* Vol. 16, No 2, 177–182
- Aminrad, Z. (2013). Relationship Between Awareness, Knowledge and Attitudes Towards Environmental Education Among Secondary School Students in Malaysia, *World Applied Sciences Journal* 22 (9): 1326–1333.
- Berenguer, J. (2000). Actitudes y creencias ambientales. Una explicación psicosocial del comportamiento ecológico. [Environmental Attitudes and Beliefs: A Psychological Account of Ecological Behavior]. Colección Tesis Doctorales. *Servicio de Publicaciones de la UCLM:Cuenca*.
- Berenguer, J. (2005). Rural-urban Differences in Environmental Concern, Attitudes, and Actions."[?] *European Journal of Psychological Assessment* 21.2[?]: 128–138.
- Cvejić, S., Babović, M., Bogdanov, N., Petrović, M., Vuković, O. (2010). *Socijalna isključenost na selu u Srbiji*, [Social Exclusion in Rural Serbia] Beograd: UNDP
- Cifrić, I. (1989). *Socijalna ekologija* [Social Ecology]. Globus, Zagreb
- Fahlquist, J. N. (2008). Moral Responsibility for Environmental Problems-Individual or Institutional? *J. Agric. Environ.Ethics*, DOI 10.1007/s 10806-008-9134-5.
- Flamm, B.J. (2006). *Environmental Knowledge, Environmental Attitudes and Vehicle Ownership and Conservation*, University of California, Berkeley.
- Gifford, R., & Sussman, R. (2012). Environmental Attitudes. In S. Clayton (Ed.). *Handbook of environmental and conservation psychology*. Oxford, UK: Oxford University Press.
- Jayathilakan, K., Sultana, K., Radhakrishna, A., Bawa, S. (2012). Utilization of Byproducts and Waste Materials from Meat, Poultry and Fish Processing Industries: A Review, *J Food Sci Technol.* 49(3): 278–293.
- Maširević, S., Vojinović-Miloradov, M. (2013). Rešenje nekih ekoloških problema na selu [The Solution of Some Environmental Problems in the Country]. *Zbornik radova: Perspektive razvoja sela*, Odbor za selo SANU. [155-162]
- Milotojević, V. (2006). Ekološka kultura i razvoj sela [Ecological Culture and Rural Development]. U: *Ruralni razvoj i zaštita životne sredine – Zbornik radova 2* (286–293). Beograd: Jugoslovensko udruženje za sociologiju sela I poljoprivrede, Zavod za sociologiju sela i poljoprivrede; Zavod za sociologiju razvoja sela; Zemun: Institut za agroekonomiju Poljoprivredni fakultet.
- Murch, A. W. (1971). Public concern for environmental pollution, *Public opinion Quarterly* 35: 102–9. OECD,(1992). *Environmental Policy: How to Apply Economic Instruments*, OECD, Paris.
- Pajvančić-Cizelj, A., Pušić, L.J. (2012). Kako građanstvo Vojvodine sagledava ekološke probleme [The Way of Perceiving Ecological Problems by Citizens of Vojvodina]: Prikaz empirijskih istraživanja, *Sociologija* Vol LIV, 1:153–168.
- Pajvančić, A., Ristić, D. (2010). Ekološka svest stanovnika vojvodanskih gradova na Dunavu [Environmental Attitude of Urban Dwellers on the Danube in Vojvodina]. *Teme*, XXXV (2), 549–568.
- Pennington, D. C. (1997). *Osnove socijalne psihologije* [Introduction to Social Psychology]. Slap, Jastrebarsko.
- Petz, B. (Ur.) (1992). *Psihološki rječnik* [Psychological Dictionary] Prosvjeta, Zagreb.
- Prišlin, R. (1991). Kada se i kako naše ponašanje slaže sa našim stavovima? [When and How Does Our Behavior Agree With our Views?] U Kolesarić,V. (Ur): *Uvod u psihologiju – suvremena, znanstvena i primijenjena psihologija*. Grafički zavod Hrvatske, Zagreb, str. 175–213.
- Prus, P., Sztubas, R. (2009). The Role of Agricultural Counselling Centres in Implementation of Sustainable Development of Rural Areas in Poland. 203.pp.7th

- International JTEFS/BBCC Conference, Sustainable development, culture, education.* Conference 5th to 8th May 2009. Daugavpils, Latvia
- Rogers, E. M. (1983). Difusion of Innovatons. *The Free Press of Glencoe*, New York.
- Stern, P. (2000). Toward a Coherent Theory of Environmentally Significant Behavior. *Journal of Social Issue*, Vol. 56, No. 3, pp. 407–424.
- Surekha, K., Pavan Chandra Reddy, K., Padma Kumari, A. P. and Sta Cruz, P. C. (2006), Effect of Straw on Yield Components of Rice (*Oryza sativa* L.) Under Rice-Rice Cropping System. *Journal of Agronomy and Crop Science*, 192: 92–101. doi: 10.1111/j.1439-037X.2006.00192.x
- Shultsp, W., Zelenzy, L. (1999). Values as Predictors of Environmental Attitudes Evidence for Consistency Across 14 Countries. *J Environ.Psychol.*, 19, 225.
- Znaor, D. (1996). *Ekološka poljoprivreda* [Ecological Agriculture]. Nakladni zavod Globus, Zagreb, 469 pp.
- Zvonarević, M. (1989). *Socijalna psihologija* [Social Psychology], Školska knjiga, Zagreb.

ЕКОЛОШКА СВЕСТ ПОЉОПРИВРЕДНИХ ПРОИЗВОЂАЧА У СРБИЈИ: СТАВОВИ И ПРАКСЕ

Александра Шарковић¹, Слободан Цвејић², Наталија Богданов³

¹Радио Телевизија Србије, Београд, Србија

²Универзитет у Београду, Институт за социолошка истраживања,
Филозофски факултет, Београд, Србија

³Универзитет у Београду, Институт за агроэкономију,
Пољопривредни факултет, Београд, Србија

Резиме

За рурално становништво очување природних ресурса представља један од најважнији предуслова за њихов опстанак и развој. Интеракција између пољопривреде и околине је неизбежна, а пољопривреда може побољшати, али и угрозити, квалитет и изглед окружења. Еколошка свест је значајан фактор који утиче на стање животне средине у руралним подручјима, а ставови и праксе су важни чиниоци за изградњу еколошке свести пољопривредних произвођача. Еколошки ставови и праксе, између осталог, зависе и од карактеристика као што су ниво образовања и ниво информисаности пољопривредних произвођача.

Истраживање је реализовано на случајном узорку од 282 испитаника која су била власници или чланови пољопривредних газдинстава смештених у 110 општина на целокупној територији Републике Србије. Анкетним упитником мерени су ставови и еколошко понашање у свакодневном животу пољопривредних произвођача и ниво њихове међусобне усклађености као два најважнија елемента еколошке свести.

Резултати истраживања указују на то да су произвођачи свесни тога да пољопривредна производња доприноси загађењу животне средине и велики број њих показује забринутост за животну средину. Смањење сиромаштва схвата се као важније у односу на заштиту животне средине, а пољопривредни произвођачи у Србији решавање егзистенцијалних проблема и сиромаштво виде као већи и важнији проблем него заштиту животне средине. Ставови испитаника показу-

ју да они у овом тренутку нису спремни да прихвате додатне трошкове у циљу заштите животне средине, што такође потврђује налаз да је економски статус често значајнији од позитивне намере еколошког понашања.

Наше истраживање показује да је ниво забринутости за животну средину и усвајање позитивних еколошких пракси у високој корелацији са нивоом образовања и информисања. Такви налази упућују на неопходност даљег обучавања у циљу унапређења квалитета животне средине као значајног фактора социо-економског и културног живота пољопривредних произвођача. Међутим, неусаглашеност еколошких ставова и понашања указује на то да еколошка свест пољопривредних произвођача није на нивоу који омогућава одрживи развој пољопривреде, што захтева даљи рад на њеном унапређењу.

Потврда утицаја образовања и информисаности као детерминанти од значаја за ниво еколошке свести указују да је неопходно унапредити и ојачати систем комуникације између ПССС и пољопривредних произвођача. Како је велики проценат испитаника навео телевизију и радио као најважнији извор информисања о животној средини и пољопривреди, потребно је и медије системски укључити кроз специјализоване емисије које би имале за циљ унапређење пољопривредне производње и истовремену заштиту животне средине у Србији.