

## Serbian consumers' willingness to buy food products produced without the use of pesticides

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TATJANA PAPIĆ BRANKOV<sup>1\*</sup>, TATJANA ŠIBALIJA<sup>2</sup>, JONEL SUBIĆ<sup>1</sup>

<sup>1</sup>Institute of Agricultural Economics, 11060, Volgina Str. 15, p.o.b. 93, Belgrade, Serbia.

<sup>2</sup>Metropolitan University, Faculty of Information Technology; Faculty of Management, Engineering, Design and Computer Science, Tadeuša Košćuška Str. 63, Belgrade, Serbia.

\*Corresponding author: [brankov.tatjana@gmail.com](mailto:brankov.tatjana@gmail.com) Tel: +381 64 102 16 96

### Abstract

*In order to investigate the motivation and willingness of the citizens of Serbia to buy food not treated with pesticides an anonymous Internet survey on a sample of 420 respondents was conducted. Multivariate linear regression method was used to determine the relation between the input elements (trust, risk perception and the perception of benefits) and output (motivation and willingness to buy food untreated with pesticides). The analysis showed that in Serbia there is great consumer interest in food products produced without the use of pesticides. The analysis also showed that the main motives for the purchase of food not treated with pesticides are the desire to maintain personal health and the environment. The consumers in Serbia react similarly to consumers in other countries in that concern for personal health to a larger extent, this means that egoistic motives are stronger than altruistic motives. It is concluded that the competent authorities and the chemical industry should undertake a series of measures and actions to strengthen the trust of citizens.*

*Key words:* multivariable regression analysis, readiness to purchase food produced without pesticides, perception of risks and benefits associated with pesticides

### 1. Introduction

Pesticides have been used in plant production since ancient times. Intentional pesticide use goes back thousand years when Sumerians, Greeks, and Romans killed pests (animals, insects, fungi, bacteria), with frequently poor results using various compounds such as sulphur, mercury, arsenic, copper or plant extracts. After the World War II introduction of DDT (dichlorodiphenyltrichloroethane), BHC (benzene hexachloride), aldrin, dieldrin, endrin, and 2,4-D (2,4-dichlorophenoxyacetic acid) makes the use of pesticides widespread. According to Dalamas (2009) since 1962, when Carson published the book 'Silent Spring' confidence in the use of pesticides has been shaken. The book describes the harmful effects of pesticides on the environment, particularly on birds.

Public concern has led the industry to create more selective pesticides, and the agricultural sector to the implementation of agricultural practices that reduce dependence on pesticides. It is estimated that on the world market today, there are about 1,500 active substances with pesticide effect TOMLIN [31]. According to a Food and Agriculture Organization (FAO) estimate, over 45 803,000 tons of active substances were spent in 2009, of which over 75% in developed countries (FAOSTAT, URL: <http://faostat.fao.org/site/424/default.aspx#Anchor>).

Organochlorines and organophosphate pesticides are widely used to control various pests because of their high efficiency and low cost. Because of their widespread and often inappropriate use on farms as well as their slow decomposition in the environment the use leads to pollution of water, soil, air, crops and ultimately adverse effects on animals and humans ALEXANDER [1]; BOLANOS [3].; M.E. DELORENZO & al. [10]; S.A. HANNAH & al. [13]. In addition, the increasing cost of developing new products of chemical origin, reduction of the market and straitening registration requirements have contributed to the growing interest in alternative pest control measures. A special place belongs to the biological conservation measures (CARTWRIGHT AND BENSON [5], [6], [7], HOWELL AND STIPANOVIC [16]. It is believed that plant protection products on the basis of living organisms (ecological pesticides) have a good future perspective; these currently only occupy a small part of a very valuable pesticide market ČEKOVIĆ [8]. Using organic pesticides will be helpful (among other things) because it will extend the life of chemical pesticides. This is important because after the development of pest resistance further use of pesticide often comes into question N. FILAJDIĆ & al. [11].

Ecological pesticides found their application in organic production. Customer requirements related to food safety and quality have increased due to the strengthening of the green movement, developing analytical methods, and the impact of external factors on the environment LAZIĆ AND MALEŠEVIĆ [18]. This has created a market for products derived from organic farming technology. Consumer demands for organic products, which are perceived as healthier and less harmful to the environment is constantly growing SCHIFFERSTEIN AND OUDE OPHUIS [28], WILLIAMS AND HAMMIT [36]. In numerous studies, health concerns are mentioned as the main motive for buying organic food R. CARBONI & al. [4]; SCHIFFERSTEIN AND OUDE OPHUIS, [28]; A. TREGEAR & al. [32]. This concern is part of a widespread anxiety among consumers about the quality of products we eat. The concern was prompted by a number of incidents in the food industry, and the decline of trust in government institutions responsible MILES AND FREWER [22]; WARREN & al. [34]. Investigations of potential food risks have shown that the public is very concerned about the possible effects caused by the presence of pesticide residues in food LECHOWICH [19]; MILES AND FREWER [22]; WILKINS AND HILLERS [35]; WILLIAMS AND HAMMIT [36]. The use of pesticides is linked to the unknown long-term adverse health effects and the benefits, for example cheaper food MILES AND FREWER [22].

Public perception regarding the pesticides, as well as the motivation and willingness to buy food not treated with pesticides are well documented in the developed countries. This study was performed in order to contribute to this research in developing countries and in order to better understand the Serbian public in relation to pesticides. We also wanted to contribute to the recently intensified research on food choice motives in Western Balkans (J. MILOSEVIC & al. [23]; ZEZEJ & [37]; PAPIĆ BRANKOV & al. [24], [25].

## **2. Methodology**

The model that we have defined in order to study the relationship of the public attitude toward pesticides, as well as the motivation and willingness to buy food not treated with pesticides is based on previous research. These studies have shown that: the perception of risks and benefits of a product and/or technology is crucial for the acceptance; there is a causal inverse relationship between perceived risk and perceived benefit; these perceptions affect trust in those responsible for the management of technology (ALHAKAMI AND SLOVIC [2]; L.J. FREWER & al. [12]; T. HOBAN & al. [15]; SIEGRIST [29]; M.

SIEGRIST & al. [30]. The trust positively affects the perceived benefits and the negatively affects perceived risk SIEGRIST [29]. In order to obtain empirical data, an anonymous Internet survey was carried out in January-September 2012 in Serbia on a random sample of 420 Serbian citizens between 18 and 57 years old. The questionnaire used in the research was consisted of 16 questions. It was organised into four groups of questions: trust in the actors relevant to the food production chain and decision-making processes in that chain ('trust in government', 'trust in science',) consumers' perceived benefits (in terms of food quality), consumers' perceived risks and motivations and willingness to buy food not treated with pesticides.

All items were measured on a 5-level Likert scale, where the lowest point (1) means fully disagree or fully negative answer; the point (2) means tend to disagree or negative answer; the midpoint (3) means middle degree or neither positive nor negative answer; the point (4) means tend to agree or positive answer; and the highest point (5) means fully agree or fully positive answer. The contents of each question group in the questionnaire are shown in Table 1.

**Table 1.** Questionnaire

Group	Items (Questions)
Trust ( <i>P</i> )	<i>P1</i> . The chemical industry is interested in producing pesticides that are environmentally friendly. <i>P2</i> . Relevant state institutions in Serbia take care of the proper use of pesticides. <i>P3</i> . In general, pesticides are used in a reasonable manner at reasonable rates. <i>P4</i> . I have confidence in scientists and experts working in the chemical industry.
Perceived risks ( <i>R</i> )	<i>R1</i> . Pesticides destroy the environment. <i>R2</i> . Fruit and vegetables produced without pesticides are healthier. <i>R3</i> . Pesticides are a big danger to human beings. <i>R4</i> . Risks associated with pesticide are still underrated.
Perceived benefits ( <i>K</i> )	<i>K1</i> . Without the use of pesticides more human beings would suffer from hunger. <i>K2</i> . Although there are some problems, benefits of pesticides are greater than the risk. <i>K3</i> . A thorough consideration indicated that a general ban on pesticides would be irresponsible. <i>K4</i> . Food would be more expensive without pesticides.
Motivation and willingness to buy ( <i>MS</i> )	<i>MS1</i> . By buying fruits and vegetables produced without pesticides I get personal contribution to reducing chemical pollution. <i>MS2</i> . By eating fruit and vegetables produced without pesticides I get a food that is more nutritious and healthier. <i>MS3</i> . By eating fruits and vegetables produced without pesticides I get a food that has a better taste. <i>MS4</i> . Would you pay more food produced without pesticides? <i>MS5</i> . How much more would you pay for food produced without pesticides? a) up to 15%; b) 15-30%; c) 30-50%; d) 50-70%; e) more than 70%

The primary objective of this study was to determine the influence of the three elements of input modules (*P*, *R*, and *K*) (issues raised in the groups I, II and III) on the elements of the output module that provides a motivation and willingness to buy food not treated with pesticides (*MS*). Elements of *MS* output module are labeled as *MS1* to *MS4* (Table 1). The analysis is performed using multivariate (multiple) linear regression. Key indicators of this study should demonstrate the relationship between the elements of the module I, II and III, and motivation and willingness to buy (*MS* output, Modules IV).

### 3. Results and discussion

As shown in Table 1, the survey was conducted in order to assess the beliefs and fears about pesticides, trust in institutions, and the motivation and willingness to buy food untreated by pesticides. Participation of women and men in the total number of respondents was 51.55% and 48.95% respectively. Table 2 contains the mean (arithmetic mean) and the standard deviation of responses to the questionnaire. According to the responses of women and men, it is evident that there is no significant difference in their responses (Table 2).

**Table 2.** Mean values (MV) and standard deviations (SD) of responses to questionnaires

Questions		<i>P1</i>	<i>P2</i>	<i>P3</i>	<i>P4</i>	<i>R1</i>	<i>R2</i>	<i>R3</i>	<i>R4</i>	<i>K1</i>	<i>K2</i>	<i>K3</i>	<i>K4</i>	<i>MS1</i>	<i>MS2</i>	<i>MS3</i>	<i>MS4</i>
<b>Total</b>	<b>MV</b>	2.87	3.99	3.51	3.42	1.98	1.84	2.15	2.17	3.16	2.88	3.17	2.53	2.15	1.96	2.49	2.45
	<b>SD</b>	1.38	0.90	0.89	1.18	0.79	0.99	1.09	0.71	1.05	0.89	0.92	1.23	0.78	0.92	1.10	0.89
<b>Women</b>	<b>MV</b>	2.90	4.09	3.51	3.40	2.12	1.81	2.39	2.13	3.05	2.87	3.14	2.50	2.19	2.04	2.59	2.47
	<b>SD</b>	1.42	0.81	0.98	1.16	0.71	0.87	1.16	0.73	1.00	0.70	0.87	1.21	0.67	0.96	1.14	0.90
<b>Men</b>	<b>MV</b>	2.84	3.88	3.50	3.44	1.83	1.86	1.90	2.22	3.29	2.89	3.21	2.56	2.12	1.88	2.37	2.43
	<b>SD</b>	1.35	0.98	0.80	1.21	0.84	1.11	0.96	0.69	1.08	1.06	0.97	1.26	0.89	0.87	1.06	0.87

#### 3.1. Trust, perceived risks and perceived benefits

Table 3 presents data about consumers' trust in institutions relevant to the food production chain, and Table 4 and 5 present's consumers' perceived risks and perceived benefits regarding pesticides.

**Table 3.** Trust in institutions relevant to the food production chain

Percentage of respondents (%)					
	Fully disagree	Tend to disagree	Unsure	Tend to agree	Fully agree
<i>P1</i>	23.59	0.51	33.33	24.62	17.95
<i>P2</i>	29.23	51.28	8.72	10.77	0.00
<i>P3</i>	13.33	37.95	34.87	13.85	0.00
<i>P4</i>	26.67	17.95	26.67	27.69	1.03

**Table 4.** Consumers' perceived risks regarding pesticides

Percentage of respondents (%)					
	Fully disagree	Tend to disagree	Unsure	Tend to agree	Fully agree
<i>R1</i>	0.00	0.51	28.21	40.00	31.28
<i>R2</i>	4.10	4.62	3.59	46.15	41.54
<i>R3</i>	3.59	7.69	23.59	30.77	34.36
<i>R4</i>	0.00	2.05	29.23	52.82	15.90

**Table 5.** Consumers' perceived benefits regarding pesticides

Percentage of respondents (%)					
	Fully disagree	Tend to disagree	Unsure	Tend to agree	Fully agree
<i>K1</i>	14.36	21.03	31.28	33.33	0.00
<i>K2</i>	8.72	6.67	50.26	32.82	1.54
<i>K3</i>	9.23	22.56	46.67	119.49	2.05
<i>K4</i>	5.64	22.56	14.87	33.33	23.59

In order to facilitate the analysis of response data, points 1 (fully disagree) and 2 (tend to disagree) of a 5-level Likert scale were merged to present generally negative answers, and points 4 (tend to agree) and 5 (fully agree) were merged to show generally positive answers.

As it could be seen from Table 3, a large part of respondents (42.41%) believes that the chemical industry is interested in the production of environmentally friendly pesticides (question *P1*), although 25% of the respondents are skeptical. On the other side, a majority of respondents expressed great distrust in the competent state bodies involved in the control of pesticide application (80.51%) and experts and scientists working in the chemical industry (44.62%) (questions *P2*, *P4*, respectively). Respondents predominantly do not believe that pesticides are used in a reasonable manner at reasonable rates (51.28%).

Over two-thirds of respondents (71.28%) thought that pesticides destroy the environment (question *R1*) as well as fruits and vegetables that are produced without pesticides are healthier (87.69%) (question *R2*). More than half (68.18%) of respondents are convinced that risks associated with pesticide use are still underrated (question *R4*). Respondents also expressed concern for humanity, 65.13% believe that pesticides are a big danger to a human being (question *R3*) (Table 4).

Issues related to the usefulness of the application of pesticides (group III) were not well understood by respondents. This group recorded a large percentage of undecided responses. Element (*K2*) "Although there are some problems, benefit from the use of pesticides is greater than the risk" recorded 50.26% undecided responses. Element *K3* "A thorough consideration indicated that a general ban on pesticides would be irresponsible" caused a similar reaction (46.67% undecided). The claim that "Without the use of pesticides more human beings would suffer from hunger" (*K1*) divided respondents into three nearly equal groups, 35.39% disagreed with the statement, 31.28% were undecided, and 33.33% of respondents agreed. The obvious benefit from the application of pesticides for more than half of the respondents (56.92%) is food price reduction, or the belief that the food produced without pesticides would be more expensive (question *K4*) (Table 5).

### 3.2. Motivation and willingness to buy food not treated with pesticides

As can be seen from the Table 6, the majority of respondents are motivated by the possibility of a personal contribution to the reduction of chemical pollution (*MS1*) (73.85%), the ability to preserve health (*MS2*) (70.77%) and eating tastier food (*MS3*) (57.95%). To this end, 68.3% of respondents are willing to pay more for food untreated with pesticides (Table 6). 44.1% of citizens would pay up to 15% more for untreated food than conventionally produced food, 38.46% would pay 15-30% more, 10.77% of respondents 30-50% more, 1.03% 50-70% and 5.64% even and more than 70% .

**Table 6.** Motivation and willingness to purchase food not treated with pesticides

Percentage of respondents (%)					
	Fully disagree	Tend to disagree	Unsure	Tend to agree	Fully agree
<i>MS1</i>	0.00	6.67	19.49	56.41	17.44
<i>MS2</i>	0.51	4.10	24.62	32.82	37.95
<i>MS3</i>	2.56	21.03	18.46	38.46	19.49
<i>MS4</i>	4.62	8.21	18.97	63.59	4.62

Multivariate regression analysis was performed to determine the effects of the elements of public trust (questions from group I: *P1* to *P4*), elements of perceived risks (questions from group II: *R1* to *R4*), and elements of perceived benefits (questions from group III: *K1* to *K4*) on the output elements of motivation and willingness to purchase food produced without the use of pesticides (questions from group IV: *MS1* to *MS4*). As a prerequisite for performing regression analysis, model validation was performed. Survey data were analyzed using SPSS software, and among them were not detected significant specific aberrations. Then, a test parameter distribution of the results of all elements (questionnaire) were analyzed, and concluded that all elements (answers) subject to the normal (Gaussian) distribution. Given that the questionnaire involves the use of multiplicative scale model reliability was tested using Cronbach's alpha coefficient. Total Cronbach's alpha coefficient for the results of the survey on the basis of presented model is 0.742, which is more than the required value of minimum 0.7. Validation of the model compared to the real data - answers to the survey was estimated using the ratio of the value of chi-square ( $X^2$ ) and the number of degrees of freedom model. This ratio for the proposed model is 2.69, and thus satisfies the necessary condition for the lower value of the ratio of 3. Multivariate analysis was conducted in order to estimate the statistical significance of questionnaire items that refer to the trust, perceived risks and perceived benefits for the consumers' motivation and willingness to buy food not treated with pesticides. The results are presented in Table 7, where the confidence level was 95% ( $\alpha = 0.05$ ).

**Table 7.** Multivariate analysis of the influence of the elements of trust (*P1* to *P4*), risk perception (*R1* to *R4*) and benefit perception (*K1* to *K4*) on the motivation and willingness of consumers to buy food not treated with pesticides (*MS1* to *MS4*)

Items (questions)	<i>MS1</i>	<i>MS2</i>	<i>MS3</i>	<i>MS4</i>
	<i>p</i> -value			
<i>P1</i>	<b>0.005</b>	0.420 (>0.05)*	0.254 (>0.05)*	0.613 (>0.05)*
<i>P2</i>	0.192 (>0.05)*	<b>0.003</b>	0.254 (>0.05)*	0.487 (>0.05)*
<i>P3</i>	0.840 (>0.05)*	0.613 (>0.05)*	0.231 (>0.05)*	0.855 (>0.05)*
<i>P4</i>	0.285 (>0.05)*	0.881 (>0.05)*	0.126 (>0.05)*	<b>0.017</b>
<i>R1</i>	<b>0.000</b>	<b>0.044</b>	<b>0.003</b>	<b>0.013</b>
<i>R2</i>	<b>0.002</b>	<b>0.000</b>	0.738 (>0.05)*	0.834 (>0.05)*
<i>R3</i>	<b>0.044</b>	0.993 (>0.05)*	<b>0.000</b>	0.423 (>0.05)*
<i>R4</i>	0.778 (>0.05)*	0.384 (>0.05)*	0.484 (>0.05)*	<b>0.003</b>
<i>K1</i>	<b>0.049</b>	<b>0.003</b>	0.631 (>0.05)*	<b>0.001</b>
<i>K2</i>	<b>0.013</b>	0.118 (>0.05)*	0.642 (>0.05)*	<b>0.003</b>
<i>K3</i>	<b>0.000</b>	<b>0.001</b>	0.329 (>0.05)*	<b>0.020</b>
<i>K4</i>	0.328 (>0.05)*	0.669 (>0.05)*	0.215 (>0.05)*	0.199 (>0.05)*

\* not significant

As it could be seen from *p*-values presented in Table 7, the issues of the most importance for the motivation and readiness to buy food not treated with pesticides are:

- *R1* („Pesticides destroy the environment“);
- *K3* (“A thorough consideration indicated that a general ban on pesticides would be irresponsible”);
- *K1* (“Without the use of pesticides more human beings would suffer from hunger”).

Question *R1* is statistically significant for all four outputs (*MS1*, *MS2*, *MS3* and *MS4*), while *K1* and *K3* issues are significant for the three outputs (*MS1*, *MS2* and *MS4*).

The following issues are significant for two outputs:

- *R2* („Fruit and vegetables produced without pesticides are healthier“);
- *R3* („Pesticides are a big danger to human beings“)
- *K2* („Although there are some problems, benefits of pesticides is greater than the risk,“), *MS1* and *MS2*; *MS1* and *MS3*; *MS1* and *MS4*, respectively.

Issue *P1* („The chemical industry is interested in producing pesticides that are environmentally friendly“), *P2* („Relevant state institutions in Serbia take care of the proper use of pesticides“), *P4* („I have confidence in scientists and experts working in the chemical industry“) and *R4* („Risks associated with pesticide are still underrated“) are statistically significant for the following outputs, *P1* for *MS1*, *P2* for *MS2*, *P4* for *MS4*, and *R4* for *MS4*. Issues that are not significant for the motivation and willingness to buy are: *P3* ("In general, pesticides are used in a reasonable manner at reasonable rates") and *K4* ("Food would be more expensive without pesticides"). Rejection of *P3* issues can be understood because the respondents were of different professional orientation, and the judgment of the *P3* is more relevant for professional agronomists. It can be assumed that the issue *K4* is not statistically significant because the price of food (despite the economic crisis in Serbia) is not critical in the choice of food.

Multiple (multivariate) linear regressions were done after conducting the analysis of basic statistical parameters. It is necessary that the value of the correlation coefficient multivariate regression (*R*) is at least 0.95 to the regression equation to be accepted. The coefficient *R* is a linear correlation between observed actual values and predicted values of the model dependent variables. The high value of the coefficient *R* showed the expressive and good relationship. After checking the *R* value for multivariate linear regression, the regression equation are included those elements (the dependent variable) that are significant with 95% confidence ( $\alpha = 0.05$ ). Practically, the regression equation included only those elements whose *p*-value is less than 0.05. Given that the coefficient of this equation is greater than 0.95 we will present the results of multivariate linear regression for the output size *MS1*, *MS2* and *MS4*. Regression coefficient for the regression equation which observes all inputs to the output *MS3* (question: „By eating fruits and vegetables produced without pesticides I get a food that has a better taste") is 0.86, and since the value is less than 0.95 this equation is not acceptable and will not be considered further.

1) Regression equations for output *MS1* (question: "By buying fruits and vegetables produced without pesticides I get personal contribution to reducing chemical pollution") (Eq. 1):

$$MS1 = 2.66 + 0.0984 P1 + 0.473 R1 + 0.151 R2 - 0.115 R3 - 0.137 K1 - 0.183 K2 - 0.250 K3 \quad (1)$$

From the above equation it is obvious that the greatest impact on the *MS1* has *R1* element (positive impact), followed by *K2* and *K3* (both with a negative impact), *R2* (positive impact), *K1* and *R3* (negative impacts) and *P1* (positive impact). Strong motive to purchase food produced without pesticides is giving a personal contribution to the preservation of the

environment. It is based on the belief that the pesticide has a devastating effect on the environment, and that fruits and vegetables produced without pesticides are healthier. In that sense, respondents support chemical companies interested in producing environmentally friendly pesticides. On the other hand, the respondents desire to preserve the environment discourage certain claims, especially the claim *K3* ("A thorough consideration indicated that a general ban on pesticides would be irresponsible"). Probable cause of this is a feeling of helplessness, because if pesticides are really needed, then why fight for the environment?

2) Regression equations for output *MS2* (element: "By eating fruit and vegetables produced without pesticides I get a food that is more nutritious and healthier") (Eq. 2):

$$MS2 = 1.79 - 0.238 P2 + 0.218 R1 + 0.237 R2 - 0.202 K1 + 0.282 K3 \quad (2)$$

From these relations, it is evident that the greatest impact on the *MS2* has *K3* (positive impact), then *P2* (negative effect) and *R1* and *R2* (positive impact). The smallest is the impact of *K1* (negative impact) on the *MS2*. As previously described motif (personal contribution to the preservation of the environment), the motive- personal health and possibility of increasing the intake of nutrients in the body, is based on the belief that pesticides has devastating effect on the environment and that fruits and vegetables produced without pesticides are healthier. Contrary to the previous case, the motive of preserving personal health strengthens with the claim that the scientific research indicated that a total ban of the use of pesticides would be an irresponsible act (element *K3*). This can be explained by the desire of the respondents to do anything to protect personal health if they are faced with danger. Although the respondents expressed great distrust in the relevant state institutions dealing with control of pesticide use (80.2% of responders), if state institutions do their work conscientiously concern for personal health would be reduced (negative effect on the *P2* element *MS2*).

3) Regression equations for output *MS4* (question: "Would you pay more food produced without pesticides?") (Eq. 3):

$$MS4 = 2.46 - 0.109 P4 + 0.212 R1 + 0.251 R4 + 0.189 K1 - 0.213 K2 - 0.185 K3 \quad (3)$$

The biggest influence on the output *MS4* has element *R4* (positive impact), then *K2* (negative impact), *R1* and *K1* (positive impacts), and finally *K3* and *K4* (negative impacts).

Willingness to buy food produced without pesticides is generally generated by belief that the risks associated with pesticides are still underrated. Strengthening trust in scientists and professionals working in the chemical industry leads to reduced willingness to buy food produced without pesticides. A similar effect is manifested in the case of the inevitability of pesticides. Positive impact of *K1* element in this regression equation is interesting.

Both motives for buying food produced without pesticides: a personal contribution to preserving the environment and protecting the health are reduced if pesticides contribute to reducing the number of hungry people in the world (the regression equations *MS1* and *MS2*). However, willingness to buy food not treated with pesticides is positively associated with the *K1*. The above contradiction points to the awareness of the respondents about the cost of food production without pesticides or point to the fact that food produced without pesticides is more expensive than conventional one, and thus represents a niche market for wealthier residents.



## 4. Conclusions

The model we defined showed that the main motives for the purchase of food untreated with pesticides are desire to preserve the environment and personal health. Regression equations for output *MS3* "By eating fruits and vegetables produced without pesticides I get a food that has a better taste" in our questionnaire was irrelevant. It has shown that the ability to eat tastier food does not sufficiently motivate respondents to purchase food not treated with pesticides. This finding is contrary with previous studies which indicated that the "taste" is one of the most important criteria for buying organic food M.K. MAGNUSSON & al. [20]; G. RODDY & al. [27]; SCHIFFERSTEIN AND OUDE OPHUIS [28]. It is believed that due to the high cost of organic food consumers perceive this to have higher quality than conventional food, which explains their perception of better taste HILL AND LINCHEHAUN [14].

Regression equations for *MS1* and *MS2* outputs showed that if pesticides are really a necessity (element *K3*) the desires to preserve own health is becoming stronger, while the desire to preserve the environment deteriorates. Based on this, we can conclude that the consumers in Serbia react similarly to consumers in other countries in that concern for personal health to a larger extent. This means that egoistic motives are stronger than altruistic motives M.K. MAGNUSSON & al. [21]. The results of this study clearly indicate that in Serbia there is a strong consumer interest in food products produced without pesticides. The Republic of Serbia has very good conditions for the establishment of this production: favorable agro ecological conditions, uncontaminated arable land and water B. KATIĆ & al. [17]; V. PARAUŠIĆ & al. [26]; VLAHOVIĆ AND ŠTRBAC [33].

The results also suggest that the relevant state bodies/authorities involved in the implementation and control of pesticides and chemical industries need to take a series of actions and measures to strengthen the trust of citizens. However, this study should be understood as a pilot study of the first of its kind in Serbia, and further studies are needed to verify the usefulness and the generality of these findings.

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