

## STUDY ON THE PERCEPTION OF THE PRODUCERS ON ORGANIC PRODUCTS FROM THE TULCEA AND CONSTANTA COUNTIES, ROMANIA, REGARDING THE POSSIBILITIES OF THEIR VALUATION

Indira Deniz RESIT (ALIM), Razvan PANAIT, Rares IAGARU, Cosmina SMEDESCU

University of Agronomic Sciences and Veterinary Medicine Bucharest of Bucharest, 59 Marasti Boulevard, District 1, 011464, Bucharest, Romania, Phone: +40213182564, Fax: +40213182888, E-mails: alimindira@yahoo.com; razvan.panait@managusamv.ro; raresiagaru@gmail.com; smedescu.cosmina@managusamv.ro;

**Corresponding author:** smedescu.cosmina@managusamv.ro

### Abstract

*In front of climate change and the threat of food shortages, organic farming is an answer to both challenges. On the one hand, organic farming protects and improves environmental conditions, and on the other hand, it can provide food for the entire planet. Of course, the organic farming system is difficult to apply, requiring both financial resources and consumer awareness. The current work aims to carry out an analysis of how organic agriculture has evolved in the counties of Constanța and Tulcea, as well as identifying some particularities at the level of the organic farm, from demand to obtaining and delivering production. The study deepened the situation of organic farming using both published data and information collected with the help of a questionnaire. From the study, it emerged that the two studied counties together own 24.1% of the area certified in the ecological agriculture system of our country, respectively Constanța 6.5% (17,651 ha) and Tulcea 17.6% (47,757 ha). The number of operators in the ecological system, in 2020, was 280 in Constanța County and 343 in Tulcea County respectively, holding a share of 2.5% and 3.1% respectively of the total per country. The analysis of ways to capitalize on organic production consisted of the assessment of capitalization, the existence of a capitalization plan and the possession of storage spaces, the commercialization of production in the country or for export. Thus, from the answers of the farmers it emerged that out of the 70 respondents, 18 (25.6 %) consider the exploitation of production to be an easy and medium easy activity, and 28 (40 %) consider it a heavy activity and 24 (34 %) as a very hard activity, of which 85% have higher education; out of the farms analyzed, 35 farms have production storage facilities, of which 32 have higher education; the destination of the production is 41.4% only in the country, 11.4% outside the country and 37.1% capitalize the production both in the country and outside the country.*

**Key words:** ecological agriculture, food security, valorization, sustainability

### INTRODUCTION

Ecological agriculture is a global system of agricultural and food production that combines environmental practices, biodiversity, conservation of natural resources, animal welfare standards, to obtain agricultural products [19]. The objectives of organic agriculture established by European Union Regulations are multiple and aim at the production of food using natural substances and processes. It supports the responsible use of energy and natural resources; preservation of biodiversity; preservation of local ecological systems; increasing soil fertility; and preserving water quality [3]. The role of ecological agriculture is to produce food more

suitable for human metabolism, fresh and authentic, in full harmony with the development and preservation of the environment [10, 12]. It is believed that if current trends in classical production and consumption continue, harm will be done to future generations, regardless of country, through an increase in pollution, climate change, temperatures and extreme weather events, as well as reduces the number of species and water and soil resources [2, 11]. Research plays a special role in the development of ecological agriculture. Thus, by using the results of the ORGAP European Project, financed by the 6th Framework Program for Research of the EU, a manual was edited that includes the methodology for

the development, implementation and evaluation of plans in agriculture in an ecological system [14], which was published by FiBL, Research Institute for Organic Agriculture (Frick, Switzerland) and IFOAM EU (Brussels, Belgium). It is worth noting that the Northwest Regional Development Agency (Romania) also participated in the ORGAP project, along with established research institutes in this field, such as FiBL (Switzerland) and INTIA – Institute of Agricultural Technologies of the Navarre Region (Spain).

A study of 57 developing countries, from 28 projects, covering an area of 37 million hectares, showed that family agroecological farming led to an average increase in yields of up to 79%. It should be noted that all projects used ancestral experience, which provided interesting, optimal indications for an adapted agroecology [18].

From a practical point of view, it is considered that the family holding is the only one capable of adopting agricultural practices to transform conventional agriculture into ecological agriculture, for three reasons [13]. First, farmers are willing to produce without major profitability constraints; secondly, they are more adapted to cultivate poorer quality land, with insufficient labor force, with lower energy consumption (in terms of capital and inputs) and the third reason is family unity (responsibility and control through better production techniques) [4]. In the same direction, policies for the practice of ecological agriculture must also include measures to develop the capacities of farmers regarding education and technical skills [8]. Improving farmers' productivity by increasing the supply of ecosystem services through agriculture [20] has been considered a viable alternative since the 1990s [17]. This form of ecological intensification or double green revolution [6] implies a global and integrated approach that is based on the traditional know-how of family farming communities with agricultural practices inspired by agroecology [5, 7, 9] and agriculture conservation or agroforestry [20].

The paper aims to carry out an analysis of how organic agriculture has evolved in the counties of Constanța and Tulcea, as well as identifying some particularities at the level of the organic farm, from demand to obtaining and delivering production.

## MATERIALS AND METHODS

The present study analyzes the behavior of the producers of ecological agricultural products, with the help of a questionnaire, to which a number of 70 farmers answered, of which 33 from Constanța county and 37 from Tulcea county. The questionnaire had 33 questions, which sought to establish the main characteristics of agricultural holdings, to analyze the technologies practiced in the ecological system and to analyze the ways of capitalizing on ecological production.

The interpretation of the data was done by grouping the answers according to the weight of the different answers and descriptive univariate analysis of the data, absolute frequencies and relative frequencies, using the  $\chi^2$  test (Chi square) [16].

The research methodology assumed the completion of the following stages:

**1. Analysis of the data from the questionnaire according to certain criteria:** age, level of training and by gender of the respondents which allowed us to establish the size and weight of the respondents by origin and level of training.

**2. Data analysis using the  $\chi^2$  test (Chi square)**

The association test,  $\chi^2$ , involves checking the hypothesis of a connection between the answers obtained from the questionnaire and checking a particular set of data that can follow a known statistical distribution. The test is calculated after creating contingency tables, in which the data are grouped according to one, two, or more segmentation variables [15]. The test allows highlighting the existence or non-existence of an association link between subgroups created as variables, based on the questions in the questionnaire. The steps taken in the

calculation of the test, which I exemplify with data from the thesis, are as follows:

a. *The formulation of the hypothesis*, which states that there is no causal link or association between two variables-segmentation questions: X – the desire to change the ecological system (yes, no) and Y – the level of training (high school and higher education).

b. *Evaluation of the significance threshold level  $\alpha$* , depending on the number of degrees of freedom of the table, according to the formula (rows - 1) \* (columns - 1); (e.g.: GL = (2 - 1) \* ((2 - 1) = 1). Based on these data, the value of  $\chi^2$  is taken from the distribution table or calculated directly with Excel functions: theoretical  $\chi^2 = \text{CHIINV}(0,1;GL)$ .

c. *Calculation of expected theoretical frequencies*

d. *Comparison of the obtained results*, for which there are the following situations: if the

null hypothesis is rejected and therefore there is an association or potential relationship between the variables; if the existence of a null hypothesis is admitted and therefore there is no association or potential relationship between the studied variables.

5. *Calculation of the contingency coefficient C*, which has the role of measuring the degree of association between the variables of the contingency table.

## RESULTS AND DISCUSSIONS

The questionnaire was applied to 70 farms, 33 of which are located in Constanța county and 37 in Tulcea county (Table 1). Of the 70 respondents, 16 are under 35 years old, 13 between 36 - 40 years old, 24 respondents are between 41 - 50 years old and 17 are more than 50 years old.

Table 1. Thye distribution of respondents who practice ecological agriculture according to age and residence county

Age	U.M.	County		Total	
		Constanta	Tulcea	N0.	%
≤ 35	no.	3	13	16	22.8
36 - 40	no.	5	8	13	18.5
41 - 50	no.	13	11	24	34.2
≥ 50	no.	12	5	17	24.2
Total	no.	33	37	70	100
	%	47.14	52.86	100	*
Indicator	$\chi^2$	Threshold of significance			
	≤	0.2	0.1	0.05	0.01
CHIINV (Chi teor.); GL = 3	≥	4.64	6.25	7.81	11.3
CHITEST (Sig value)	0.0204	CHIINV (Chi calc.)	9.79	Pearson Coef. The value $\chi^2$ Poisson	0.35

Source: own processing.

The Chi square test, indicates a strong correlation between the age and the county of residence of the respondents, the calculated Chi of 9.79 exceeds the theoretical Chi value of 7.81, for a significance threshold of 0.05. It

is observed that among those who are from Constanța county, most of them are over 41 years old and even more than 50 years old, on the other hand, in Tulcea county there are a larger number of those under 40 years old.

Table 2. The distribution of respondents by age and gender categories

Gender	U.M.	Vârsta				Total	
		≤ 35 yers	36 - 40 yers	41 - 50 yers	≥ 50 yers	nr.	%
Female	no.	9	6	5	4	24	34,29
Male	no.	7	7	19	13	46	65,71
Total	no.	16	13	24	17	70	100
	%	22.86	18.57	34.29	24.29	100	*
Indicator	$\chi^2$	Threshold of significance					
	≤	0.2	0.1	0.05	0.01	0.001	
CHIINV (Chi teor.); GL = 3	≥	4.64	6.25	7.81	11.34	16.27	
CHITEST (Sig value)	0.0707	CHIINV (Chi calc.)		7.04	Pearson Coef. The value $\chi^2$ Poisson		0.302

Source: own processing.

Among those who participated in the survey, 46 respondents are male and 24 female (Table 2). Calculation of the Chi-square test indicates a marginally significant association between respondents' gender and their age. Differences

are observed between the ages of male respondents, most of whom are over 41 and a significant number are over 50, while most of the female respondents are under 40.

Table 3. The link between the level of training and the respondents age

Age	U.M.	Level of preparation		Total		
		High school studies	Higher studies	no	%	
≤ 35	no.	2	14	16	22.8	
36 - 40	no.	1	12	13	18.5	
41 - 50	no.	2	22	24	34.2	
≥ 50	no.	5	12	17	24.2	
Total	no.	10	60	70	100	
	%	14.29	85.71	100	*	
Indicator	$\chi^2$	Threshold of significance				
	≤	0.2	0.1	0.05	0.01	
CHIINV (Chi teor.) GL = 3	≥	4.64	6.25	7.81	11.3	
CHITEST (Sig value)	0.2238	CHIINV (Chi calc.)		4.37	Pearson Coef. The value $\chi^2$ Poisson	0.24

Source: own processing.

Most of the respondents have higher education and only 10 have high school education (Table 3). Among those with high school education, half are over 50 years old and only 2 respondents are under 35 years old. Between the age of the respondents and the level of education there is no significant association, as shown by the calculation of the Chi square test, the calculated Chi has a value of 4.37, being lower than that of the

theoretical Chi of 7.81 (GL = 3), for a significance threshold of 0.05.

Also, the calculation of the Chi-square test indicates that there is no significant relationship between the gender of the respondents and the level of education. The calculated Chi has the value of 1.28, which is lower than the theoretical Chi of 3.84 (GL = 1), for the significance threshold of 0.05.

Table 4. The link between the respondents age and specialized studies in agriculture or other fields

Age	U.M.	Specialized studies:			Total	
		Agriculture	Other	Not the case	no	%
≤ 35	no.	4	11	1	16	22.8
36 - 40	no.	7	6	0	13	18.5
41 - 50	no.	14	10	0	24	34.2
≥ 50	no.	10	4	3	17	24.2
Total	no.	35	31	4	70	100
	%	50.00	44.29	5.71	100	*
Indicator	$\chi^2$	Threshold of significance				
	≤	0.2	0.1	0.05	0.01	0.001
CHIINV (Chi teor.) GL = 6	≥	8.56	10.64	12.59	16.81	22.4
CHITEST (Sig value)	0.0966	CHIINV (Chi calc.)		10.74	Pearson Coef. The value $\chi^2$ Poisson	0.36

Source: own processing.

It is observed from the calculation of the Chi square test that between the gender of the respondents and the specialized studies, there is no significant relationship, the value of the calculated Chi of 1.21 is lower than the theoretical Chi of 5.99 (GL = 2) for the significance threshold of 0.05 (Table 4). Among the 35 respondents with studies in agriculture, 25 are male and 10 are female. Also, the distribution of specialized studies in

other fields is similar to the one in agriculture, in a larger number, respectively 19 male respondents and 12 female respondents, and for those who do not have such studies, the distribution was in equally by 2 respondents per gender. A very important component in managing a farm is the level of education (Table 4). Of those surveyed, 60 respondents have higher education, of which 32 come from the rural area and 28 from the urban

area. There is no association between the level of education and the area of origin of the farmer, the calculated Chi value of 2.49 is

lower than the theoretical Chi value of 3.84 (GL = 1) for the significance threshold of 0.05 (Table 5).

Table 5. The link between the training level and the farmer's origin area

Level of preparation	U.M.	The area of origin		Total		
		Rural	Urban	no	%	
High-school studies	no.	8	2	10	14.2	
Higher education	no.	32	28	60	85.7	
<b>Total</b>	no.	40	30	70	100	
	%	57.14	42.86	100	*	
Indicator	$\chi^2$	Threshold of significance				
	$\leq$	0.2	0.1	0.05	0.01	
CHIINV (Chi teor.); GL = 1	$\geq$	1.64	2.71	3.84	6.63	
CHITEST (Sig value)	0.1147	CHIINV (Chi calculat)		2.49	Pearson Coef. The value $\chi^2$ Poisson	0.185

Source: own processing.

Asked about the period since they have been practicing organic farming, a percentage of 41.43% stated that they have been in this field for 6 - 7 years, 24.29% for 3 - 5 years, and 22.86% for 8 - 9 years (Table 6). A smaller share is held by those who have been

practicing organic farming for over 10 years. Between the level of education and the period since practicing organic farming there is a slightly significant relationship, with a probability of almost 94%.

Table 6. The correlation between the respondents' level of training and the period since they are practicing ecological farming

Level of preparation	U.M.	Age in organic farming				Total		
		3 - 5 years	6 - 7 years	8 - 9 years	> 10 years	no	%	
High-school studies	no.	1	8	1	0	10	14.2	
Higher education	no.	16	21	15	8	60	85.7	
<b>Total</b>	no.	17	29	16	8	70	100	
	%	24.29	41.43	22.86	11.43	100	*	
Indicator	$\chi^2$	Threshold of significance						
	$\leq$	0.2	0.1	0.05	0.01	0.001		
CHIINV (Chi teor.); GL = 3	$\geq$	4.64	6.25	7.81	11.34	16.27		
CHITEST (Sig value)		0.061	CHIINV (Chi calc.)		7.35	Pearson Coef. The value $\chi^2$ Poisson		0.308

Source: own processing.

Most respondents, regardless of the level of education, have been practicing organic farming for 6-7 years. There is a difference between the level of education in the case of those who practice organic farming for 8-9 years and more than 10 years. Thus, among

the respondents with high school education, none has practiced organic farming for more than 10 years and only one for 8 - 9 years, and in the case of those with higher education, 15 respondents have been in this field for 8 - 9 years and another 8 for over 10 years.

Table 7. The correlation between the respondents age and the number of farms visited practicing ecological farming

Age	U.M.	Organic farms visited:					Total		
		0	1 farm	2 - 3 farms	4 - 5 farms	> 7 farms	no	%	
$\leq 35$	no.	1	3	4	3	5	16	22.6	
36 - 40	no.	1	3	5	3	1	13	18.5	
41 - 50	no.	4	2	10	6	2	24	34.2	
$\geq 50$	no.	2	3	3	2	7	17	24.2	
<b>Total</b>	no.	8	11	22	14	15	70	100	
	%	11.43	15.71	31.43	20.00	21.43	100	*	
Indicator	$\chi^2$	Threshold of significance							
	$\leq$	0.2	0.1	0.05	0.01		0.001		
(Chi teor.); GL = 12	$\geq$	15.8	18.55	21.03	26.22		32.91		
(Sig value)		0.398	CHIINV (Chi calculat)			12.6	Pearson Coef. The value $\chi^2$ Poisson		0.39

Source: own processing.

The influence of the age of the respondents on the number of farms visited was also analyzed and it was found by calculating the Chi square test that there is no significant relationship between the two (Table 7). The calculated Chi of 12.6 has a lower value for the 0.05 significance threshold than the theoretical Chi of 21.03 (GL = 12). Among those who have not visited any farm, 2 respondents are under 40 years old, 2 over 50 years old, and 4 are in the 41-50 years old category. Those who

visited 2 - 3 farms have the highest share, almost half of whom are between 41 - 50 years old. In the case of those who visited more than 7 farms, most are over 50 years old, followed by those under 35 years old. Nor does the gender of respondents influence the number of farms visited, the calculated Chi of 5.06 is lower than the theoretical Chi value of 9.49 (GL = 4) for the significance threshold of 0.05. We note that among those who have not visited any farm, 5 are female and 3 are male.

Table 8. The correlation between the age of the respondents and the degree of difficulty for production capitalization

Specification	U.M.	Valorization of production				Total	
		Light	Medium	Difficult	Very difficult	no	%
Age							
≤ 35	no.	1	4	5	6	16	22,86
36 - 40	no.	1		2	10	13	18,57
41 - 50	no.	3	6	10	5	24	34,29
≥ 50	no.	1	2	11	3	17	24,29
Total	no.	6	12	28	24	70	100
	%	8.57	17.14	40.00	34.29	100	*
Indicator	Test $\chi^2$	Threshold of significance					
	≤	0.2	0.1	0.05	0.01	0.001	
CHIINV (Chi theoretic); GL = 9	≥	12.24	14.68	16.92	21.67	27.88	
CHITEST ((Sig value))	0.0506	CHIINV (Chi calculat)		16.88	Pearson Coef. The value $\chi^2$ Poisson		0.441

Source: own processing.

The conducted survey showed that a percentage of 40% of respondents hardly capitalize on the production achieved and another percentage of 34.29% very difficult. Only 6 farmers, representing 8.57% of those interviewed, believe that they have no problems in capitalizing on production, and for 17.14%, this operation assumes an average degree of difficulty. The answers given to this question are influenced by the age of the

respondents as indicated by the calculation of the Chi-square test in Table 4, 5, 6. The calculated Chi of 16.88 has a value close to the theoretical Chi of 16.92 (GL = 9) for the significance threshold of 0.05, which indicates a strong correlation between the age of the respondents and the answers given to assess the degree of difficulty in capitalizing production with a probability of about 95 % (Table 8).

Table 9. The assessment of the degree of difficulty for capitalizing the production according to the level of training and the gender of the respondents

Specification	U.M.	Valorization of production				Total	
		Light	Medium	Difficult	Very difficult	no	%
Level of preparation							
High-school studies	no.	1	2	5	2	10	14.29
Higher education	no.	5	10	23	22	60	85.71
Gender	U.M.	Light	Medium	Difficult	Very difficult	no	%
Female	no.	2	1	9	12	24	34.29
Male	no.	4	11	19	12	46	65.71
Total	no.	6	12	28	24	70	100
	%	8.57	17.14	40.00	34.29	100	*

Source: own processing.

The level of education or the gender of the respondents have no influence on the answers given by the respondents regarding the degree of difficulty in capitalizing on production (Table 9). Following the calculation of the Chi square test, it was found that the

calculated Chi has a lower value compared to the theoretical Chi for a significance threshold of 0.05. Among the 6 respondents who considered that they capitalize their production easily, 5 have higher education, 4

are men, and half of them belong to the age group of 41 - 50 years. In the case of the 24 respondents who rated this operation as very difficult, we note that

most of them belong to the age group between 36 and 40 years old, 22 of them have higher education and 50% are male and the other half are female female.

Table 10. The respondents' structure according to the planning way of the production structure

Specification	U.M.	Are you planning your production structure based on previously concluded capitalization contracts?		Total	
		Yes	No	no	%
<b>Level of preparation</b>					
High-school studies	no.	2	8	10	14.29
Higher education	no.	28	32	60	85.71
<b>Age</b>	<b>U.M.</b>	<b>DA</b>	<b>NU</b>	<b>no</b>	<b>%</b>
≤ 35	no.	8	8	16	22.86
36 - 40	no.	7	6	13	18.57
41 - 50	no.	9	15	24	34.29
≥ 50	no.	6	11	17	24.29
<b>Gender</b>	<b>U.M.</b>	<b>DA</b>	<b>NU</b>	<b>no.</b>	<b>%</b>
Female	no.	8	16	no.	34.29
Male	no.	22	24	no.	65.71
<b>Total</b>	no.	30	40	no.	100
	%	42.86	57.14	no.	*

Source: own processing.

From the conducted survey, it emerged that 42.86% of the farms make their production plan based on the contracts already concluded, and the remaining 57.14% plan their structure according to other criteria (Table 10). From the analysis of the influence of the level of education, the age or the gender of the respondents on the planning of the crop structure based on the capitalization contracts, with the help of the Chi square test, it emerged that there is no statistically

significant connection between them. The calculated Chi had lower values than the theoretical Chi for a significance threshold of 0.05. Among the 30 farmers who plan their production based on previously concluded contracts, 28 farmers have higher education, 8 are female and 22 male, 8 farmers are under 35 years old, 7 between 36 - 40 years old, 9 farmers belong to the age category of 46-50 years and 6 have exceeded 50 years.

Table 11. The respondents' structure according to the possession of storage spaces, annexes or constructions

Level of preparation	U.M.	You own storage spaces and other annexes and construction?		Total	
		Yes	No	no	%
High-school studies	no.	3	7	10	14.29
Higher education	no.	32	28	60	85.71
<b>Age</b>	<b>U.M.</b>	<b>DA</b>	<b>NU</b>	<b>no</b>	<b>%</b>
≤ 35	no.	7	9	16	22.86
36 - 40	no.	5	8	13	18.57
41 - 50	no.	12	12	24	34.29
≥ 50	no.	11	6	17	24.29
<b>Gender</b>	<b>U.M.</b>	<b>DA</b>	<b>NU</b>	<b>no</b>	<b>%</b>
Female	no.	9	15	24	34.29
Male	no.	26	20	46	65.71
<b>Total</b>	no.	35	35	70	100
	%	50.00	50.00	100	*

Source: own processing.

Of the studied farms, only half also have storage spaces, annexes or other constructions (Table 11), from which it can be deduced that the other half utilizes their production immediately after harvesting. Among the 35 farmers who own such premises, 32 have higher education, and most

are over 40 years old, and most of them are male and only 9 are female. Calculating the Chi-square test, it was found that there is no statistically significant correlation between the level of education, age or gender of the respondents and the possession of storage spaces.

Table 12. The correlation between the respondents' level of training and the destination of ecological products

Level of preparation	U.M.	Commercialization of ecological products is done in:				Total	
		In the country	Out of the country	Both	No	no	%
High-school studies	no.	3	1	1	5	10	14.29
Higher education	no.	26	7	25	2	60	85.71
<b>Total</b>	no.	29	8	26	7	70	100
	%	41,43	11,43	37,14	10,00	100	*
Indicator	Test $\chi^2$	Threshold of significance					
	$\leq$	0,2	0,1	0,05	0,01	0.001	
CHIINV (Chi theoretic); GL = 3	$\geq$	4.64	6.25	7.81	11.34	16.27***	
CHITEST ((Sig value)	0.0001	CHIINV (Chi calculat)		21.37	Pearson Coef. The value $\chi^2$ Poisson		0.484

Source: own processing.

The structure of the respondents, according to age and gender, according to the destination of organic agricultural production, is presented as follows: among those who sell production outside the country, 17 are men and 12 are women, 8 are under 35 years old and 15 are over 40 years old; those who trade

in the country 6 are men and 2 women, of which 3 are under 35 years old, 2 are between 36 - 40 years old and 3 are between 41 - 50; among the farmers who sell their production both in the country and outside it, 20 are men and 6 are women, and most are over 41 years old (Table 12).

Table 13. The respondents' structure according to the destination of ecological products from the farm

Age	U.M.	Commercialization of ecological products				Total	
		In the country	Out of the country	Both	No	no	%
$\leq 35$	no.	8	3	4	1	16	22.86
36 - 40	no.	6	2	3	2	13	18.57
41 - 50	no.	10	3	10	1	24	34.29
$\geq 50$	no.	5		9	3	17	24.29
Gender	U.M.	In the country	Out of the country	Both	No	no	%
Female	no.	12	2	6	4	24	34.29
Male	no.	17	6	20	3	46	65.71
Total	no.	29	8	26	7	70	100
	%	41.43	11.43	37.14	10.00	100	*

Source: own processing.

As specified, 7 respondents do not market the production obtained, of which 3 are men and 4 women, 1 is under 35 years old, 2 between 36 - 40 years old, 1 between 41 - 50 years old and 3 over 50 years old. No significant

correlation was observed between the gender or age of the respondents and the destination of the production, after calculating the Chi-square test (Table 13).

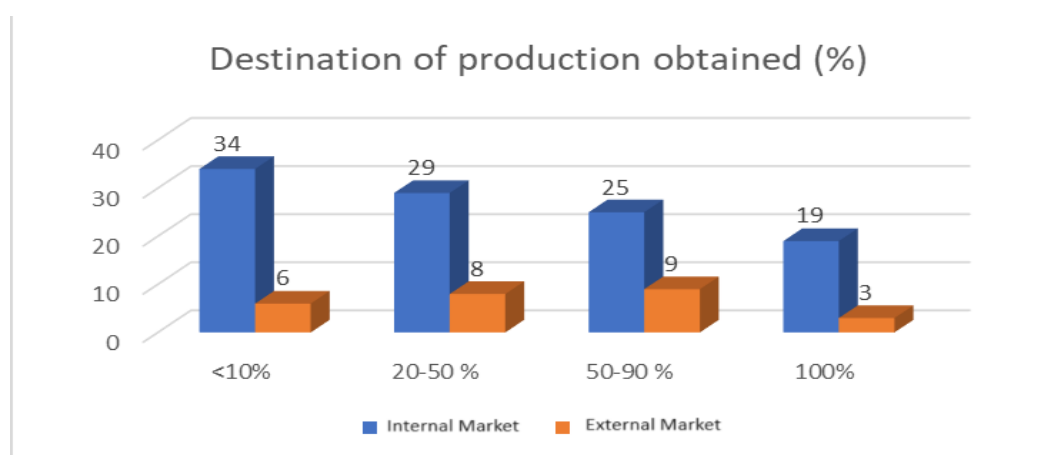


Fig. 1. The ecological agricultural production percentage sold on the domestic or foreign market

Source: own processing.



Regarding what % of the organic agricultural production obtained is sold on the domestic or foreign market, it was found that: among those who sell production on the domestic market, 34 farmers sell below 10%, 29 between 20 - 50%, 25 between 50 - 90 % and only 19 respondents sell all production in the country; among those who export the production obtained, the percentage that goes outside the country is below 10% for 6 farms, between 20 - 50% in the case of 8 farms, 50 - 90% for 9 farms and only 3 farms sell their entire production on the foreign market (Figure 1).

## CONCLUSIONS

The principles of ecological agriculture refer to: the principle of human, soil, plant and animal health; the ecological principle based on living ecological systems; the principle of the correctness of relations between man and the environment, of respect for the chances of life, of equity, respect, justice and solidarity among people, as well as in their relations with other living beings and the principle of precaution in the sense that ecological agriculture must be practiced prudently and responsibly in order to protect the soil and the health and well-being of current and future generations.

Organic farming could feed Europe until 2050 and still export grain to countries that need it for human food. The research team that issued such a thesis is based on three levers [1]. The first would involve a change in the diet with 30% protein intake of animal origin and 70% protein intake of vegetable origin; the second lever refers to bringing cereal crops and livestock closer to each other, returning to mixed farming to enable closed cycles of organic and nutrient import and export from the soil, and establishing crop rotations and legumes, which have the advantage of fixing nitrogen in the soil.

In Romania, ecological agriculture represents a dynamic sector, which has seen an upward evolution, the cultivated areas represented about 2.18% in 2010, and in 2020 it will reach a share of 3.15%.

The conducted study highlighted the fact that the motivation for practicing ecological agriculture in order of importance were: subsidies, winning a project, the high price of ecological products and the production of healthy food; according to the degree of satisfaction: a percentage exceeding 68% have a high or very high degree of satisfaction; 28.57% have an average degree and only 2.8% (2 respondents) are a little satisfied with their work; regarding the descendants, it is found that out of the 70 respondents, 32 are certain that they will have someone to take over the business, on the other hand, for 22 of them there is no such certainty and 16 respondents stated that it is possible.

Regarding the exploitation of ecological production, it turns out that the destination of production is 41.4% only in the country, 11.4% outside the country and 37.1% both in the country and outside the country.

## REFERENCES

- [1]Billen, G., Aguilera, E., Einarsson, R., Garnier, J., Gingrich, S., Grizzetti, B., Lassaletta, L., LE NOE, j., Sanz Cobena, A., 2021, Reshaping the European agro-food system and closing its nitrogen cycle: The potential of combining dietary change, agroecology, and circularity, JRC Publications, [https://www.cell.com/one-earth/fulltext/S2590-3322\(21\)00289-X?\\_returnURL=https%3A%2F%2Flinkinghub.elsevier.com%2Fretrieve%2Fpii%2FS259033222100289X%3Fshowall%3Dtru](https://www.cell.com/one-earth/fulltext/S2590-3322(21)00289-X?_returnURL=https%3A%2F%2Flinkinghub.elsevier.com%2Fretrieve%2Fpii%2FS259033222100289X%3Fshowall%3Dtru), Accessed on 15.07.2023.
- [2]Bruyninckx, H., 2019, A healthy environment is indispensable for a sustainable economy and a fair society, <https://www.eea.europa.eu/ro/articles/un-mediu-sanatos-este-indispensabil>, Accessed on 14.07.2023.
- [3]European Council 2022 UN Paris Climate Change Conference 30 November - 12 December 2015, <https://www.consilium.europa.eu/ro/meetings/international-summit/2015/11/30-12/>, Accessed on 12.07.2023.
- [3]de Assis, R.L., 2003, Globalização, desenvolvimento sustentável e ação local: o caso da agricultura orgânica. *Cadernos de Ciência & Tecnologia*, 20(1), 79-96.
- [5]De Schutter, O., 2010, Rapport du rapporteur spécial sur le droit à l'alimentation (p. 23). Nations Unies, [https://www2.ohchr.org/english/issues/food/docs/A.HRC.16.49\\_fr.pdf](https://www2.ohchr.org/english/issues/food/docs/A.HRC.16.49_fr.pdf), Accessed on 10.07.2023.
- [6]Griffon, M., 2006, Nourrir la planète, pour une révolution doublement verte, Paris, Odile Jacob,

- <https://agritrop.cirad.fr/532422/>, Accessed on 15.07.2023
- [7]GRISE, P.-N., 2013, La possibilité d'une transition agroécologique, dans une communauté d'agriculteurs familiaux au Brésil. Thèse de doctorat, DE L'université de Versailles-Saint-Quentin-en-Yvelines, [https://tel.archives-ouvertes.fr/tel-01250525/file/These\\_Pierre-Nicolas%20GRISEL%20-%202013.pdf](https://tel.archives-ouvertes.fr/tel-01250525/file/These_Pierre-Nicolas%20GRISEL%20-%202013.pdf), Accessed on 12.07.2023.
- [8]IAASTD, 2009, Agriculture at a Crossroads - Rapport Global, <https://wedocs.unep.org/handle/20.500.11822/8590>, Accessed on July 12, 2023.
- [9]IFAD, 2010, Rapport sur la Pauvreté Rurale 2011, [https://www.ifad.org/documents/38714170/39150184/Rural+Poverty+Report+2011\\_f.pdf/dbd888b3-dad4-41b8-b2c4-0e3049b6a888?t=1509365267000](https://www.ifad.org/documents/38714170/39150184/Rural+Poverty+Report+2011_f.pdf/dbd888b3-dad4-41b8-b2c4-0e3049b6a888?t=1509365267000), Accessed on 17.07.2023.
- [10]MADR, 2022, Certified Organic Farming Operators 2020, <https://www.madr.ro/agricultura-ecologica/operatorii-certificati-in-agricultura-ecologica-2020.html>, Accessed on 12.07.2023.
- [11]Marcuta, L., Popescu, A., Tindeche, C., Smedescu, D., Marcuta, A., 2021, Food Security of The European Union and The Influence of COVID-19. Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development, 21(2), 383–392. [http://managementjournal.usamv.ro/pdf/vol.21\\_2/Art46.pdf](http://managementjournal.usamv.ro/pdf/vol.21_2/Art46.pdf), Accessed on 12.07.2023
- [12]Marcuta, L., Panait, R., Marcuta, A., 2021, The Relationship Between the Circular Economy and Sustainable Waste Management in European Union. Journal of Business Administration Research, DOI:10.30564/jbar.v4i1.2709, Accessed on 12.07.2023.
- [13]Menezes, F., 2001, Durabilité alimentaire: une nouvelle manière? In H. Zanoni, Magda; Lamarche (Ed.), Agriculture et ruralité au Brésil - Un autre modèle de développement (pp. 277-294). Paris: Karthala.
- [14]Meredith, S., Lampkin, N., Schmid, O., 2018, Action Plans for the Ecological Sector: Development, Implementation and Evaluation, Second Edition, IFOAM EU, Bruxelles, [https://www.nord-vest.ro/wp-content/uploads/2016/06/9.GHID-Metodologic-elaborare-PlanActiuneEcologic\\_2018.pdf](https://www.nord-vest.ro/wp-content/uploads/2016/06/9.GHID-Metodologic-elaborare-PlanActiuneEcologic_2018.pdf), Accessed on 19.07.2023.
- [15]Mihăiță N. V. et al. 2013, Strong, hidden, false and illusory statistical relationships, [www.biblioteca-digitala.ase.ro/biblioteca/carte2.asp?id=388&idb](http://www.biblioteca-digitala.ase.ro/biblioteca/carte2.asp?id=388&idb), Accessed on 12.07.2023.
- [16]Sabău, F.S., 2015, Study on the ecological behavior of consumers of agro-food products, [econ.ubbcluj.ro/Scoala\\_Doctorala/rezumat/SABAU Florentina Simona.pdf](http://econ.ubbcluj.ro/Scoala_Doctorala/rezumat/SABAU_Florentina_Simona.pdf), Accessed on 2.07.2023.
- [17]Shiva, V., 1991, The violence of the green revolution. Third world agriculture, ecology and politics. Zed Book Ltd. London and New Jersey, <http://www.trabal.org/courses/pdf/greenrev.pdf>, Accessed on 2.07.2023.
- [18]SOS FAIM, 2011, L'agroécologie, une solution?, [https://www.sosfaim.be/wp-content/uploads/2014/09/defis\\_sud\\_103\\_agroecologie\\_solution.pdf](https://www.sosfaim.be/wp-content/uploads/2014/09/defis_sud_103_agroecologie_solution.pdf), Accessed on 22.07.2023.
- [19] SRAC, 2022, What is organic farming? [https://www.srac-eco.ro/?gclid=Cj0KCQjwntCVBhDdARIsAMEwACIIfPlvgCmRhy2p23rdpMd8IV9RHBXusMnV3tAzFXW3FoE0cmh03YIaAkVGEALw\\_wcB](https://www.srac-eco.ro/?gclid=Cj0KCQjwntCVBhDdARIsAMEwACIIfPlvgCmRhy2p23rdpMd8IV9RHBXusMnV3tAzFXW3FoE0cmh03YIaAkVGEALw_wcB), Accessed on 15.07.2023.
- [20]World Bank, 2007, World Development Report 2008: Agriculture for Development (pp. 1-366). World Bank, <https://openknowledge.worldbank.org/bitstream/handle/10986/5990/WDR%202008%20-%20English.pdf?sequence=3&isAllowed=y>, Accessed on 12.07.2023.