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Vision Analysis on the Type of Agriculture Agricultural Producers Deemed Necessary to be Practiced in the Arges County Production Growth and Yield Return

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Abstract

This paper aims at presenting a study on the prospects of agriculture through the vision Arges farmers. This paper will disseminate some of the information obtained via a questionnaire survey data evaluation was performed association test (Chi, Chi-square, χ^2 Hi or theoretically) standardized residue (R), contingency coefficient C Pearson's correlation coefficient V of Cramer. People who have been interviewed representative's farms with legal form and the individual holdings without legal form.

The purpose of the questionnaire was to identify opinion of farmers by type, landform and size classes of holdings the following aspect: the type of agriculture practiced considered necessary to Arges County.

As a result of the survey revealed that farmers in a 62% deemed necessary for high productivity agriculture, large farms that use chemical fertilizers, herbicides, etc., and only 38% are for sustainable agriculture eco traditionally practiced. By using nonparametric correlations was observed that the type of agriculture considered as practiced by farmers is influenced by the type, landform and size classes of holdings.

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1. Introduction

Measures to protect the environment, natural heritage conservation, pollution prevention currently form the core of sustainable development strategies and their implementation farm is closely linked to changing agricultural practices environmental law.

At European level since 1991 have been implemented widely different systems of farming out the interaction with the environment, based on a number of specific indicators.

In Romania, the practice of industrial agriculture has led to negative effects on the environment, so that by 1990 production activity has generated various types of pollution: soil pollution, air pollution, water pollution, etc.. Following the development of the fertilizer industry and the pesticide in the second half of the twentieth century, in parallel with the expansion and diversification of mechanization and automation works, agriculture received the growing industrial, agricultural and natural ecosystems being replaced gradually with agro-ecosystems artificial strong anthropic. In recent years, especially after 2007, Romania has promoted the creation of a legislative and institutional framework to facilitate various types of pollution reduction by converting conventional farming systems to sustainable agriculture (Camelia Burja, Vasile Burja, 2008).

Obtaining high yields in a prolonged energy crisis without harming the environment and public health professionals requires agriculture, ecology and animal hygiene, to develop optimal cultivation technologies, ensuring comfort and safety for livestock production food.

The solution is just sustainable agriculture, sustainable and environmentally integrated, allowing secure and consistent profits with minimum negative effects on the environment, ensuring food security of the population.

Moving towards sustainable agriculture implies that economic activities to meet the requirements of protecting and preserving the ecological balance and quality of life.

At farm level shift towards sustainable agriculture requires an intense activity of restructuring and resizing function to ensure the creation of a productive system with superior economic characteristics.

Compared to this, the paper has proposed the analysis of a study on the prospects of farmers to the type of agriculture practiced considered to be the county Arges.

2. Material and Method

Central objective of this research is the analysis of their vision of the type of agriculture practiced considered necessary to Arges county, and factors that determine the impact on farmers as the world is the tendency of concentration of agricultural production to meet new production technologies (Micu M.M., 2012).

The collection of data we took into account: relief areas (plains, hills and mountains), legal (individual holdings and holdings legal form) and size classes of land used by farmers.

The size of a unit is given in the first row of the main volume of the production medium, supplemented by volume of the other resources. In crop production, the main means of production is the earth. The land area of a unit expressing the first condition of its existence and basic indicator of size (Stoian Elena, Dinu Toma, 2003).

Since this was taken into account in the interpretation of statistical data collected from different sources of information, in conjunction with theoretical analysis which allowed farmers pragmatic vision of the prospect to join in the near or distant future.

This vision could be captured by the application of a questionnaire for farmers in Arges County. To establish the statistical significance of the data collected by questionnaire Chi-square test was used.

The first stage which was reached before the development of the questionnaire was such that the elements have been identified that would be obtained by the questionnaire also took into account several aspects: the purpose of the investigation, the territorial area of Arges County legal form of holdings, formulating questions, conducting interview, analyze the data contained in the questionnaires, and so on, and on this basis were formulated questions and structure of the questionnaire.

Questionnaires were applied during July to November 2011 in 34 villages of the 95 villages as Arges county totals after the dominant landform lies municipalities questionnaires were applied:
- in 17 communes in the plains of the 32 communes are located in the plains of Arges;
- in 14 communes in the hills, of the 53 communes in the hilly ranges of Arges;

- 3 common in the mountain area of the 10 communes in the mountain ranges of Arges.

People who have been interviewed representatives of both farm and legal form of individual holdings without legal form.

In each village were applied by three questionnaires (if applicable), their totals were in number of 100 questionnaires farm in the county of Arges.

Evaluation of data from the survey was conducted with the association test (Chi, Chi-square, χ2 Hi or theoretically), this test involves checking the hypothesis of association between: a questionnaire responses from a question alternatives and verification of a particular set of data that may follow a known statistical distribution. The socio-economic problems after compiling applies contingency tables in which the data are classified by one, two or more variables of segmentation (Mihăiţă N.V.).

This test allows to highlight the existence / non-existence of a link of association between variables created in the communities studied segmentation.

Because the chi-square test expression is obtained from observations that is a statistic and therefore is not a parameter, so it is also called non-parametric statistical test or distribution free test, therefore, it is a test a test that does not depend on the form of the original law base (Iosifescu M., 1985).

According to the methodology for the application of the test is based on the following assumptions:

- H_0 between the observed and expected no significant differences, which implies that the two variables analyzed are not related;
- H_1 there are significant differences between observed and expected frequencies, which means there is a link between the variables analyzed (Tudor V., Sipică AL., 2012).

For example, from data obtained through the questionnaires, analyze the structure of respondents' opinion on the type of agriculture (extensive or intensive) found it necessary to increase the production and profitability of farms in the county Arges depending on the type of relief that match the holdings owned by respondents.

Formulating the null hypothesis H0, which states that the two variables are not questions segmentation causal or association;

X - What type of agriculture practiced as appropriate for the county? (extensive or intensive).

Y – Relief form, that match the holdings held by respondents (plains, hills, mountains).

Table 1. Contingency table of variables X and Y for the observed

Specification	Extensive	Intensive
Plain	11	40
Hill	17	21
Mountain	10	1

Source: Data processing by: "questionnaire on farmers association in Arges County"' (Micu M.M., 2011);

The probable contingency table values (theoretical expected) is calculated from the frequencies actually incurred (observed) to the total responses. For example:

- the total number of subjects who agreed with the statement (extensive) is 38. Since all are 100 subjects who responded to the questionnaire, the percentage of those who agreed with the statement is 38 /100, which is 38 % in the group. So, if there is no difference between the group of respondents who own farms in the lowlands, the group of respondents who own farms in the hill and the group of respondents who own farms in the mountains (the null hypothesis), then 38 % of respondents who have farms in the lowlands (0.38 x 51 = 19.38), 38 % of respondents who own farms in the hill (0.38 x 38 = 14.44) and 38 % of respondents who own farms in the hilly (0, 38 x 11 = 4.18) should be agreed with the statement (theoretical frequency) (Table 2 .)

- the total number of subjects who agreed with the statement (intensive) is 62. Since all are 100 subjects who responded to the questionnaire, the percentage of those who agreed with the statement is 62/100, which is 62% in the group. So, if there is no difference between the group of respondents who own farms in the lowlands, the group of respondents who own farms in the hill and the group of respondents who own farms in the mountains (the null hypothesis), then 62% of respondents who have farms in the lowlands (0.62 x 51 = 31.62), 38% of respondents who own farms in the hill (0.62 x 38 = 23.56) and 62% of respondents who own farms in the hilly (0, 62 x 11 = 6.82) should be agreed with the statement (theoretical frequency) (Table 2.).

Table 2. Calculation of the expected theoretical frequencies

Specification	Extensive	Intensive	Total
Plain			
Observed	11	40	51
Probable (theoretical expected)	19.38	31.62	
Hill			
Observed	17	21	38
Probable (theoretical expected)	14.4	23.56	
Mountain			
Observed	10	1	11
Probable (theoretical excepted)	4.18	6.82	
Total	38	62	100

Source: Data processing by: "questionnaire on farmers association in Arges County'" (Micu M.M., 2011);

Formula's Chi-square (χ2) (Sava F.A., 2002):

$$\chi2 = \sum \frac{(O-E)^2}{E} \tag{1}$$

Where: - O = observed frequency (frequency effect occurs);
     - E = expect frequency (frequency probable theoretically expected frequency).

Table 3. Calculation of Chi-square (χ2)

O - E	(O – E) ²	(O – E) ² / E
-8.38	70.22	3.62
2.56	6.55	0.45
5.82	33.87	8.10
8.38	70.22	2.22
-2.56	6.55	0.28
-5.82	33.87	4.97
Calculated Chi-Square (χ2)=		**19.65**

Source: Data processing by: "questionnaire on farmers association in Arges County'" (Micu M.M., 2011);

Choosing the materiality level or α and calculating the number of degrees of freedom of the table the formula (Sava F.A., 2002): (r-1) * (c-1); (ex: (3-1) * ((2-1) = 2), where r is the number of rows and number of columns c, on the basis of these data, it takes in the value of χ2 distribution table, the theoretical χ.

Searching the table of significance at df = 2 (df = degrees of freedom), we see that df = 2 has a value of 5.99 at p <0.05.

Comparing the results obtained (Merce, E., 2010) that there are situations:

-     if the null hypothesis is rejected and therefore there is an association or relationship potential between variables;

-     if it admits the existence of a null hypothesis and therefore there is an association or potential relationship between the variables studied.

The value obtained by Chi-square 19.65 is definitely significant. This tells us that the null hypothesis should be rejected.

To determine which category made major contributions to achieving significant differences calculated standardized residue (R). Its formula is:

$$R = \frac{O-E}{\sqrt{E}} \tag{2}$$

This formula is applied in each situation. If standardized residue is greater than 2 (in absolute value, regardless of sign) we believe that the item has brought an important role in obtaining a significant χ2. In this case we observe

significant differences particularly in respect of holdings that are found in the 5-10 ha size class and type of extensive agriculture.

   Note the use of **chi-square** test ($\chi2$)
   For tables of type 2 x 2 contingency is necessary to apply a correction, called Yates correction for continuity. It operates a decrease of 0.5 the difference between the observed and theoretical (expectations) before picking up the square (Sava F.A., 2002):

$$\chi2 = \sum \frac{(O-E-0,5)^2}{E} \qquad (3)$$

   Also, for the evaluation of survey data were used **contingency coefficient C Pearson correlation coefficient V of Cramer**. These two factors perform similar functions and are used to identify the association between two nominal variables (categorical) whose conduct is greater than 2 x 2, which can reach 10 x 10.
   Contingency coefficient C of Pearson's formula can be generalized to any number of rows and columns. To calculate the coefficient C but first we need to find the value of $\chi2$. Deficiency of this factor appears in the formula to be presented below and is that it can never take the value 1, even if a perfect combination. So, a table of the type 3 x 3, the maximum value reached is 0.82, for a type 4 x 4 it reached 0.87. As the size of the table increases, the limit of C is moved to 1, so that said ratio is recommended in particular in the case of large contingency tables (rows or columns 7-8 of the above). Here is the formula of C:

$$C = \sqrt{\frac{\chi^2}{N+\chi^2}} \qquad (4)$$

   To overcome this impasse under unitary value, Cramer Association proposes the following coefficient, size can reach a value of 1:

$$V = \sqrt{\frac{\chi^2}{N(s-1)}} \qquad (5)$$

   Where are needed:
   - $\chi2$;
   - N - the total number of subjects in the study;
   - s - the lowest number of rows and number of columns.

   Interpretation of C, and V is theoretically based on the idea that an outcome as close to 1 indicates a positive correlation and a negative coefficient indicates an inverse association. It can be said that the two variables there is an association.

3. Result and Discussions

   In this paper we analyzed and interpreted some of the data obtained using a questionnaire that was applied to agricultural producers, being pursued their vision of the type of agriculture practiced considered necessary to the Arges County. The results, in conjunction with theoretical allowed a pragmatic analysis on the prospects of agriculture in Arges county through the vision of farmers in the study.
   Following data analyzed in Table 4 notice that prevails farmers who believe that the county Arges need for intensive agriculture (62%) given the increased production and farm profitability and a 38% respondents considered necessary type extensive agriculture.
   From the distribution type of agriculture in the county of Arges deemed necessary by the legal personality of farms owned by farmers interviewed, note that the type of farming is distributed at a rate of 53 % for farms with legal

personality on the type of extensive agriculture is distributed in proportion to the individual farm level (87 %) (Table 4, Table 5 and Table 6).

By testing statistical association (Chi - square = 14.4***; critical value 6.63 at a probability <0.01) on the opinion of farmers interviewed on the type of agriculture need to be used depending on the county Arges legal personality of the holdings they have, it appears that there is a highly significant association between the respondents' opinion based on the legal personality of the farms on the problem analyzed and the analysis of R (standardized residual) observed significant differences especially regarding holdings legal form and type of extensive agriculture, however allowed us to conclude that the type of agriculture emit considered necessary in view of increasing production and farm profitability is influenced by the legal personality of the holding. (Table 4).

Also the interpretation of Pearson's C, and Cramer's V, in this case it can be said that among the respondents' opinion considered necessary in the county of Arges and legal personality of holdings held by the respondents (Pearson's C = 0.37, Cramer's V = 0.40), no association between aspects analyzed, the type of agriculture considered necessary legal personality is influenced by the farm (Table 4).

Table 4. The structure of the respondents' opinion on the type of agriculture considered necessary to increase the production and profitability of farms according to legal form to the county Arges

After the legal form of holdings held by respondents					
Specification	U.M.	extensive	intensive	Total	
		No.	No.	No.	%
Holding the legal form	No.	5	33	38	38
Individual holding	No.	33	29	62	62
Total	No.	38	62	100	-
	%	38%	62%	-	100
Standardized residue					
Holding the legal form	No.	**-2.48**	1.94		
Individual holding	No.	1.94	-1.52		
Calculated Chi-Square =	**14.4*****	Critical value (theoretical)=	0.45	p > 0.5(*)	
			2.71	p > 0.1(**)	
Degrees of freedom (df) =	**1**		**6.63**	**p > 0.01(***)**	
Cramer's V =	**0.40**	Pearson's C =		0.37	

Source: Data processing by: "questionnaire on farmers association in Arges County" (Micu M.M., 2011);
Note: (*) significantly distinct, (**) significant (***) very significant;

From the point of view of landforms where farms are located consider that almost half (51 %) of all respondents have holdings that are found in the lowlands of Arges, in the hills are located 38% of holdings and on the opposite side are those who own farms in the mountains (11%) (Table 5).

Table 5. The structure of the respondents' opinion on the type of agriculture considered necessary to increase the production and profitability of farms according to the form of relief in the county Arges

After landform that match the holdings held by respondents					
Specification	U.M.	Extensive	Intensive	Total	
		No.	No.	No.	%
Plain	No.	11	40	51	51
Hill	No.	17	21	38	38
Mountain	No.	10	1	11	11
Total	No.	38	62	100	-
	%	38%	62%	-	100
Standardized residue					
Plain	No.	-1.90	1.49		
Hill	No.	0.67	-0.53		
Mountain	No.	**2.85**	**-2.23**		
Calculated Chi-Square =	**19.65*****	Critical value (theoretical)=	1.39	p > 0.5(*)	
			4.61	p > 0.1(**)	
Degrees of freedom(df) =	2		**9.21**	**p > 0.01(***)**	
Cramer's V =	**0.44**	Pearson's C =		0.41	

Source: Data processing by: "questionnaire on farmers association in Arges County" (Micu M.M., 2011);
Note: (*) significantly distinct, (**) significant (***) very significant;

If we look at the distribution of the type of farming in the county of Arges deemed necessary according to the form of relief where you are located holdings owned by farmers interviewed, note that for intensive agriculture is distributed at a rate of 65 % for farms that are in the plains, while the type of agriculture is widely distributed in the proportion to the holdings situated in the hilly (45 %). By testing statistical association (Chi - square = 19.65***, critical value = 9.21 at a probability < 0.01) on the respondents' opinion on the type of agriculture need to be used in the Arges County according to the form of relief where farms are located in their possession, shows that there is a highly significant association between the respondents' opinion based on landform where farms are found in the study on the problem analyzed and the analysis of R (standardized residual) observed significant differences in particularly in respect of holdings located in the hill and both types of farming (extensive / intensive), all of these have allowed us to conclude that the type of agriculture emit considered necessary in view of increasing production and farm profitability is influenced by the shape relief where the holding is located (Table 5).

Also the interpretation of C, and V, in this case it can be said that among the respondents' opinion considered necessary in Arges county landform where you are located holdings held by the respondents (Pearson's C = 0.41, Cramer's V = 0.44) association between aspects are analyzed, the type of agriculture considered necessary is influenced by landform where the holding is located (Table 5)

We note that respondents who own farms predominate an area 20-50 ha (23%), followed by those who own farms with an area of between 10 to 20 ha (17%) still being found farms surface between 5-10 ha and the area of over 200 hectares (13%), followed by agricultural holdings are between 150-200 ha (7%). At the opposite pole are respondents who own farms with areas 1-5 and 150-200 ha (3%) (Table 6).

Table 6. The structure of the respondents' opinion on the type of farming required on increased production and farm profitability by size classes of the holding at the county Arges

By size of holdings held by respondents					
Specification	U.M.	Extensive	Intensive	Total	
		No.	No.	No.	%
0-1 ha	No.	2	1	3	3
1-5 ha	No.	3	8	11	11
5-10 ha	No.	10	3	13	13
10-20 ha	No.	6	11	17	17
20-50 ha	No.	11	12	23	23
50-100 ha	No.	1	9	10	10
100-150 ha	No.	3	4	7	7
150-200 ha	No.	1	2	3	3
>200 ha	No.	1	12	13	13
Total	No.	38	62	100	-
	%	38%	62%	-	100
Standardized residue					
0-1 ha	No.	*0.81*	*-0.63*		
1-5 ha	No.	*-0.58*	*0.45*		
5-10 ha	No.	***2.28***	*-1.78*		
10-20 ha	No.	*-0.18*	*0.14*		
20-50 ha	No.	*0.76*	*-0.60*		
50-100 ha	No.	*-1.44*	*1.12*		
100-150 ha	No.	*0.21*	*-0.16*		
150-200 ha	No.	*-0.13*	*0.10*		
>200 ha	No.	*-1.77*	*1.39*		
Calculated Chi-Square =	19.43**	Critical value (theoretical)=	7.34	p > 0.5(*)	
			13.36	**p > 0.1(**)**	
Degrees of freedom (df) =	8		20.09	p > 0.01(***)	
Cramer's V =	0.44	Pearson's C =	0.40		

Source: Data processing by: "questionnaire on farmers association in Arges County" (Micu M.M., 2011);
Note: (*) significantly distinct, (**) significant (***) very significant;

Analyzing the distribution type of agriculture considered necessary in Arges county by size classes of farms owned by farmers interviewed, we note that extensive farming type is distributed at a rate of 29% for farms that are in the size class 20-50 acres on the type of farming is distributed in the proportion of farms in the 20-50 ha size classes (19 %) and 10 to 20 ha (18 %). By testing statistical association (Chi - square = 19.43**, critical value = 13.36 at a

probability <0.1) on the respondents' opinion on the type of agriculture need to be used in the Arges county by size class holdings they hold, it is observed that there is a significant association between the respondents' opinion based on farm size class studied the problem analyzed and the analysis of R (standardized residual) observed significant differences in particular in the farms that are found in 5-10 ha size class and type of extensive agriculture, all these have allowed us to conclude that the type of agriculture emit considered necessary is influenced by farm size class (Table 6).

Also the interpretation of C, and V, in this case it can be said that among the respondents' opinion considered necessary in the county of Arges and size classes of holdings held that by the respondents (Pearson's C = 0.40, Cramer's V = 0 44) no association between aspects analyzed, the type of agriculture considered necessary is influenced by farm size class (Table 6).

4. Conclusions

Analyzing the prospects of agriculture in Arges county through the vision of farmers and representatives of association under study, we can draw the following:

- analyzing the distribution of respondents according to the legal personality structure of farms by type of relief, we note that most individual farms are located in the mountains of Arges, followed closely by those in the hill, and the least of they are in the plains. In respect of holdings with legal form, we see that most are found in the lowlands;
- notice that prevails farmers who believe that the county Arges need for intensive agriculture (62%) and a 38% respondents considered necessary extensive farming type;
- observe statistical testing association considered necessary that the type of agriculture is influenced by the legal personality of farm relief shape and size class of holding;
- significant differences are observed especially in respect of holdings with legal form and type of extensive agriculture , however allowed us to conclude that the type of agriculture emit considered necessary in view of increasing production and farm profitability is influenced by the legal personality of holding;
- significant differences are observed especially in respect of holdings located in the hill and both types of farming (extensive / intensive) , all of these have allowed us to conclude that the type of agriculture emit considered necessary in view of increasing production and farm profitability is influenced by the landform where the holding is located;
- significant differences are observed especially in respect of holdings that are found in the 5-10 ha size class and type of extensive agriculture , all of these have allowed us to conclude that emit considered appropriate type of agriculture is influenced by size class the farm.

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