UNDER PEER REVIEW

The study of farmers' knowledge about the role of agricultural extension in the agriculture development in Opolski County, LubelskieProvince, Poland

ABSTRACT

This research carried out to identify the farmers' knowledge in Opolski County about the role of agricultural extension in the agriculture development, identify the farmers' knowledge in each itemin this researchand identify a correlation between farmers' knowledge and independent variables (age, education level, size of farm, contact degree with sources information about role of agricultural extension in the agriculture development).

To collection the data of study, it has been designed questionnaire. It consists of two parts: The first part: Included personal variables that related to farmers and farms (age, education level, size of farm, sources information about role of agricultural extension in the agriculture development).The second part: Included the scale for farmers' knowledge about the role of agricultural extension in the agriculture development, the scale consist of 20 statement (item).

The results showed that the farmers' knowledge in Opolski County about the role of agricultural extension in the agriculture development is medium tend to high degree. The results showedalso, the farmers' knowledge is high in the following items: (Agricultural extension methods help to transfer of agricultural information and new knowledge to farmers). The results showed also there is significant correlation between farmers' knowledge and variables (age, sources of agricultural informationand methods of agricultural production). Also, the results show there is no significant correlation between knowledge level and independent variables (education level, size of farm).

Keywords: agricultural, extension**,** farmers' knowledge**.**

INTRODUCTION

The agricultural extension services are very important in development of rural knowledge and innovation system for farmers. Agricultural extension services are established to improve the knowledge and skills of farmers on farming practices, and make their attitudes positive towards agricultural innovations(Aldosari 2013).

The objectives of agricultural extension are to bring about behavioral changes desirable and specific in the individual's behavior. These changes begin in knowledge and individual inclinations and beliefs and change in skills of farmers until you reach the desired change (Jonna 2012).

UNDER PEER REVIEW

The agricultural extension was primarily undertaking technology transfer activities in the past but now it also focuses on the facilitation of all the steps involved in the whole farming process. Today, extension goes beyond training, learning and helping farmers in forming farmer groups. Now in its wider working sphere, it also takes initiatives to address the marketing issues and joins hands to enter into partnerships with the wide-range of service providers and other related organizations (Birnor et al. 2006). Agricultural extension today is partner of all those organizations that support, facilitate and assist the farming communities involved in agricultural production [Aldosari 2013].

The agricultural extension system has existed in Poland for more than 100 years. It is estimated that agricultural extension institutions in Poland developed simultaneously with agricultural education. The origins of the extension organizations date back to the second half of the nineteenth century and were forced by the development of the capitalist relations in agriculture. The first instructor in agricultural was hired by agricultural society in Poland 1883. At the same time the first farmer groups were organized and they became the basis for agricultural extension and its development in Poland (Kania et al. 2014).

Agricultural extension works in a wider knowledge system that embraces different components of which research and agricultural education are some (Altalb et al 2015). According to Jones and Garforth (1997), agricultural extension is important because in the first place, information about good or new agricultural practices in a particular environment from research station or farmers experience can be assembled, synthesized and made available to use. Secondly, this information can be used especially for educational purpose to further investigate it or to disseminate knowledge. Thirdly, it results in creation of organizational and administrative setup which can make dissemination of technologies easier. Natural calamities such as famine, crop failure and problems like soil degradation and economic crises can also result in immediate initiation of extension work.

As a result for important of agricultural extension importance in achieving in rural and agricultural development, it is necessary to conduct studies and research in order to identify the information and knowledge possessed by farmers about the role of agricultural extension in the development of the agricultural sector and agricultural development. It has been selected for the Opolski County-Poland for the implementation of this study to: Identify the farmers' knowledge in Opolski County about role of agricultural extension in the agriculture development; Identify the farmers' knowledge in each itemof the research; Identify a correlation between the farmers' knowledge and independent variables in this research (age,

UNDER PEER REVIEW

education level, size of farm, sources information about role of agricultural extension in the agriculture development).

METHODS OF RESEARCH

The research community consists of all farmers in Opolski County. It has been taken a simple random sample, the total number of farmers in the research sample was 50 farmer. It has been designed questionnaire. Questionnaire were designed as tool to collect data required in order to achieve the research objective. It consists of two parts:

The first part: Included personal variables that related to farmers (age, education level, size of farm, sources information about role of agricultural extension in the agriculture development).

The second part: Included the scale for farmers' knowledgeabout role of agricultural extension in the agriculture development.This scale consist of 20 item. The author has been used (Pearson correlation coefficient, Equation of Spearman-Brown) to find if there is a correlation between farmers' knowledge and independent variables in this research.The independent variables has been measured, as following:

- Age: It has been measured through the age of farmers during the time of collectingthe data of study.
- Gender: It has been measured through (2 levels) (males - females) it has been given the following degrees: Male: It has been given 2 degrees, and female: It has been given 1 degree.
- Education level: It has been measured according to the following levels: Primary School - secondary school - High school, it has been given the following degrees: Primary school - It has been given 1 degree, Secondary school - It has been given 2 degrees, High schooland university- It has been given 3 degrees.
- Size of farm: It has been measured by (ha.).
- Sources of information about agricultural extension: This variable was measured through the four sources (Centers of agricultural extension, agricultural Newspapers, others farmers, Radio and TV programs in the media). It has been given degree for answer ranging from (1-10 numeric value) for each source. Through the collected the answer of farmer about the sources of information, the author in the end will get the final degree for farmer answer (from 40 numeric value) about this variable. Thus, the range of answer for this variable (sources of information) between (1-40 numeric values).

UNDER PEER REVIEW

The Measuring of dependent variable was measured through the scale of farmers' knowledge, it consists of 20 statement (item), relating to the role of agricultural extension in the agriculture development, was put in front of each item (4 alternatives/options), it has been given the following degrees, namely:

1. I know significantly, it has been given 4 degrees,
2. I know moderately, it has been given 3 degrees,
3. I know slightly, it has been given 2 degrees,
4. I do not know at all, it has been given 1 degree.

Through the collection the answers of farmer about the items, the author will get the final degreeforfarmer knowledge about the role of agricultural extension in the agriculture development.The author was used (Pearson correlation coefficient, Equation of Spearman-Brown) to find if there is a correlation between farmers' knowledge and independent variables in the research.

It has been used the method (Range and category length) to divide the independent variables to the (3 categories), these variables (age, Size of farm, sources of information about agricultural extension)and to divide the categories of dependent variable also, as following:

Range = $Y_{max} - Y_{min}$ (max value – min value)

Range = $Y_{max} - Y_{min}$ (max value – min value)

$$\text{Category Length} \quad \frac{\text{Range}}{\text{Number of categories}}$$

RESULTS, DISCUSSION:

1. **Identify the farmers' knowledge in Opolski Countyabout role of agricultural extension in the agriculture development.**

The results showed that the numericvalues that wereobtained by farmers and which represented the farmers' knowledge about role of agricultural extension in the agriculture development, wasthe highest value is 82 and lowestvalue is 20. Farmers were distributed to

UNDER PEER REVIEW

three categories according to the farmers' knowledgeabout agricultural extension, as shown in the table1:

Table1. The distribution of farmers according to the knowledgeabout role of agricultural extension in the agriculture development.

Categories	Frequency	Percentage %
Low (20 – 40)	5	10
Medium (41 – 61)	37	74
High (62 – 82)	8	16
Sum	50	100

Mean of knowledge level (56 year).

The table 1 shows that the highest proportion of farmers was in the medium category, which accounted for 74%. This means that the farmers' knowledge about role of agricultural extension in the agriculture development is medium tends to high degree. This maybe because the farmers in study region they always visiting the agricultural extension centers in order to know and see the activities of agricultural extension through participating in the training courses in the different topics of agricultural extension topics.

2. Identify the farmers' knowledge in Opolski County in each item of research.

It has been identified the farmers' knowledge in each item about the role of agricultural extension in the agriculture development and it has been ranking in descending order, according to the centennial weight of items. As shown in table 2.

Table 2. Ranks of items according to the centennial weight of the items.

No.	Statements (Items)	centennial weightof items
1	Agricultural extension methods help to transfer of agricultural information and new knowledge to farmers.	84.76
2	Agricultural extension helps farmers to solve their problems on their own.	83.21
3	Agricultural extension helps farmers on the proper use of pesticides.	83.10

UNDER PEER REVIEW

4	Agricultural extension contributes to the training of farmers in different areas of agricultural work.	80.23
5	Agricultural extension helps farmers on how to eliminate the insects and diseases that affect the crops.	77.25
6	Agricultural extension helps in providing farmers with information and new agricultural technologies for agricultural production.	76.87
7	Agricultural extension plays an important role in livestock development.	75.23
8	Agricultural extension helps farmers on the proper use of fertilizers.	74.97
9	Agricultural Extension contributes to the increase of agricultural production in quantity and quality.	71.32
10	Posters and bulletins of extension help to increase information and knowledge farmers in the cultivation of different crops.	67.11
11	Agricultural extension helps farmers to exploit the agricultural land in scientific way.	63
12	Agricultural extension contributes in help of rural women.	61.87
13	Agricultural extension contributes in help of rural youth.	58.32
14	Agricultural extension helps on how to exploit the natural and human resources in rural areas.	56.98
15	The visits of workers agricultural extension to the farmer's farms, will be help solve farmers' problems.	53.13
16	Agricultural extension has important role in agricultural marketing.	48.65
17	Agricultural extension helps farmers on how to carry onagriculture.	45.87
18	Agricultural extension helps farmers how to use agricultural mechanization in agriculture.	40.65
19	Agricultural extension helps farmers on the water management in agriculture.	39.11
20	Agricultural extension contributes in the development of the fisheries.	37.34

The table 2 shows the items that took the first three rank in the centennial weight and respectively, are (Agricultural extension methods help to transfer of agricultural information and new knowledge to farmers, agricultural extension helps farmers to solve their problems

UNDER PEER REVIEW

on their own, agricultural extension helps farmers on the proper use of pesticides). This mean that farmers have the knowledge and information about the role of agricultural extension in the development of agriculture, special in the role of extension in transfer the new information and technology to the farmers and helping them to use these technology in their farms, this maybe because the farmers in study region they trying to getting the new of technology through the agricultural extension centers, that is why they have information and knowing in this topics.

The items, that took the last three three rank the centennial weight and respectively, are (Agricultural extension contributes in the development of the fisheries, agricultural extension helps farmers on the water management in agriculture, agricultural extension helps farmers how to use agricultural mechanization in agriculture). This mean that farmers have low knowledge and information in these topics, special in the role the agricultural extension in the development of the fisheries, this maybe because the farmers in study region they don't have interesting to breeding the fishes.

3. **Identify a correlation between thefarmers' knowledge and independent variables in the research.**

- **The age**:

The results show that the highest age of farmers 70 year, and the lowest age 38 year, and the mean (54 year). The farmers were distributedto categories according to the age. The results showing that the medium category has higher percentage 76%. Also, the results found there is positive correlation between the farmers' knowledge about role of agricultural extension in the agriculture development and the age. The value of Person correlation coefficient is (0.3112) and it is significant (p-value = 0.0004**). Table 3 explain that. It means that the farmers' knowledge about the role of agricultural extension in the agriculture development depend on age of farmers, maybe because the elderly farmers they will have knowledge and information about the role of agricultural extension through the experience which they have through the participating in the activities of agricultural extension centers, also they have knowledge from another sources.

- **Education level:**

The farmers were distributedto categories according to theeducation level. The results showing that the category of secondary school has got the higher Percentage 64%. Also, the results found there is no correlation between the farmers' knowledge about role of

UNDER PEER REVIEW

agricultural extension in the agriculture development and education level. The value of Spearman correlation coefficient is 0.2090 and it is not significant (p-value = 0.2867). Table 3 explain that. It means that the farmers' knowledge about the role of agricultural extension in the agriculture development not depend on education for farmer, but maybe depend on other variables.

- **Size of farm**:

The results show that the highest size of farms 30ha., and the lowest size 4 ha.and the mean 18 ha,. The farmers were distributedto categories according to the size of farm. The results showing also that the low category has higher percentage 80%. Also, the results found there is no correlation between the farmers' knowledge about role of agricultural extension in the agriculture development and the size of farm. The value of Person correlation coefficient is (0.4030) and it is not significant (p-value = 0.1346). Table 3 explain that. It means that the farmers' knowledge about the role of agricultural extension in the agriculture development not depend on size of farm, but maybe depend on other variables.

- **Sources of agricultural information:**

The results show that the highest numeric value of sources of agricultural information, is (29) and the lowest value 3, and the mean 15. The farmers were distributedto categories according to thesources of agricultural information. The results showing that the medium category has higher percentage 80%. Also, the results found there is positive correlation between the farmers' knowledge about role of agricultural extension in the agriculture development and sources of agricultural information. The value of Person correlation coefficient is (0.4421) and it is significant (p-value = 0.0031**). Table 3 explain that. It means that the farmers' knowledge about the role of agricultural extension in the agriculture development depend on sources of agricultural information. This means, if the farmers use more sources of information about the agricultural extension, this will lead to the increase their knowledge in the topics of agricultural extension.

- **Methods of agricultural production:**

The farmers were distributedto the categories according to themethods of agricultural production. The results showing that the category the (methods of plants-Animals) has got the higher percentage 80%. Also, the results found there is positive correlation between the farmers' knowledge about role of agricultural extension in the agriculture development and

UNDER PEER REVIEW

the methods of agricultural production, The Spearman correlation coefficient is significant is 0.5131 and it is significant (p-value = 0.0040**). This means that the farmers' knowledge depend on methods of agricultural production. Maybe because the farmers who use the methods of plants and animals, they will trying to know and getting the information and knowledge about the role of agricultural extension from different sources in order to use these information and knowledge in their farms and agriculture work.

Table 3.The distribution offarmersto categoriesaccording tothe independentvariablesandits correlation withfarmers' knowledge.

Independent variables	**Frequency**	**Percentage %**	**Person correlation**		**Spearman correlation**	
			Pearson correlation coefficient	p-value	Spearman correlation coefficient	p-value
Age (year)						
38- 48	9	18	0.3112	0.0004**		
49 - 59	38	76				
60- 70	3	6				
Sum	100	100%				
Educationlevel						
Primary School	8	16			0.2090	0.2867
Secondary School	32	64				
Higher Schooland university	10	20				
Sum	100	100%				
Size of farm(ha.)						
4-12Low	40	80	0.4030	0.1346		
13-21 Medium	7	14				
22-30 High	3	6				
Sum	100	100%				
Sources of information (numeric values)						
3-11Low	2	4	0.4421	0.0031**		
12-20Medium	40	80				
21-29High	8	16				

UNDER PEER REVIEW

Sum	100	100%				
Methodsof agricultural production						
Plant	10	20			0.5131	0.0040**
Plant s-Animals	40	80				
Sum	100	100%				

(**)Significant at the level (0.01)

CONCLUSIONS

Depending on the results of this research, the author conclude the following:

1. Farmers have information and knowledge about the role of agricultural extension methods in agricultural development in different topics in agriculture.
2. Farmers in Opolski County, have high knowledge about the rolethe methods of agricultural extension in transfer of agricultural information and new knowledge to farmers.
3. Farmers are suffering also from a lack and have low knowledge about the contribution of agricultural extension in the development of fisheries.
4. The variable (age, sources of agricultural information methods of agricultural production) it have effect in the development the farmers' knowledge about the role of agricultural extension in agricultural development.
5. The variables (education level, size of farm) they don't have effect a clear role in the development of the knowledge level and information of farmers about the agricultural extension.

REFERENCES

1. Aremu,P.,Kolo, I., Gana A. &Adelere, F. (2015).The crucial role of extension workers in agricultural technologies transfer and adoption, Global advanced research journal of food science and technology, Vol. 4, No. 2, (2015), 014-018.
2. Aldosari, M.(2013). Agricultural Extension in Asia: Constraints and Options for Improvement, TheJournal of Animal & Plant Sciences, 23(2), 919-632.
3. Altalb, A., Filipek, T. &Skowron P. (2015). The Role of Agricultural Extension in the Transfer and Adoption of Agricultural Technologies, Asian Journal of Agriculture and Food Science, Volume 03 (5), 500 -507.
4. Anderson, J. Feder, G. (2004). Agricultural Extension: Good Intentions and Hard Realities, The World Bank Research Observer, vol. 19, no.1, 41-60.

UNDER PEER REVIEW

5. Altalb A. T. (2015)Models and Methods that Use in Agricultural Extension, Conference for Current Issues Moved By Young Scientists, A special issue of the Conference, Krakow, Poland.
6. Birner, K., Davis, J., Pender, E.,Nkonya., P.,Anandajayasekeram, J.,Ekboir, A.,Mbabu, D.,Spielman., D., Benin., H.,& Cohen, M. (2006). From best practice" to "best fit": A framework for designing and analyzing pluralistic agricultural advisory services Worldwide, International Food Policy Research Institute, Washington, Discussion Papers 37.
7. Davis, K. (2008). Extension in Sub-Saharan Africa: Overview and assessment of past and current models, and future prospects, Journal of International Agricultural and Extension Education, Vol. 15(3), 15-28.
8. Jonna, L. (2012). A comparison of extension methods used by different agricultural extension service providers inNyandaruaCounty. University of sciences. Kenya.
9. Kania, J., Vinohradnik, K., Tworzyk, A. (2014). Advisory services in Poland, Report for the AKIS inventory of the PRO AKIS project, Poland: p. 2-20.
10. Kebede, B. G. (2008). Agricultural extension and its impact on food crop diversity and the livelihood of farmers in guduru, eastern wollega, Ethiopia, A thesis in agriculture extension, Master theses, Norwegian University of Life Sciences, Norway.
11. Rivera, W. M. Qamar, M. K and Crowder, L.V. (2001). Agriculture and Rural Extension World Wide: Options for Institutional Reform in the Developing Countries. FAO, Extension, Education and Communication Service; Research, Extension andTraining Division, Rome.