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Review of doctoral dissertation

THE APPLICATION LEVEL OF SCIENTIFIC RECOMMENDATIONS BY FARMERS IN LUBLIN PROVINCE OF POLAND TOWARDS THE OPTIMAL USE OF FERTILIZERS IN THE CONTEXT OF AGRICULTURAL EXTENSION

presented by Ahmed Awad Talb Altalb

1. Introduction

Agriculture is currently the fourth largest sector of economy in Poland and its contribution to the country's GDP (Gross Domestic Product) is much higher than the European average. Rural areas constitute 93% of Polish territory and are inhabited by nearly 40% of the population. The agrifood sector is an important component of the country's economic potential as it accounts for almost 8% of the total Gross Value Added. It also provides employment for nearly 20% of economically active population. The export of agrifood products represent almost 12% of total Polish export. After Poland's accession to the EU, the intensity of plant production has increased significantly. This is a result of administration of nutrients, fertilizers use and improving the properties of soil and development of soil susceptibility to agricultural production, as well as the re-evaluation of the farmers. The farmers are not only involved in agricultural production, but they also participate in the economic and social fields and other fields of rural development.

The agriculture in Poland is characterized by a great diversity of natural and socio-economic conditions. The agricultural productivity largely determines to the intensity of plant production technology. The fertilizer dosage is one from more important factor in the cultivation technology in plant production system. This factor determine approx. 40-60% of total cost production depending on the intensity of production. The nutrient utilization by crops is also diversified depending on level of fertilizers and the weather conditions during the growing season. For example, the utilization of nitrogen may be in the range from 20 to 60%, the utilization of phosphorus does not exceed 25%, and potassium approx. 60%. The

rest unutilized nutrients from fertilizers can be dispersed to the air or water. It should be noted that while it is relatively easy for balancing the phosphorus and potassium, than balance of nitrogen in the field and farm scale is very complicated, due to the high mobility of this element in the ecosystem. From this reason an one important role is advisory system especially fertilizer decision support system and its level of use by farmers. It is the main aim of the dissertation.

2. Formal review

The reviewed dissertation includes of 222 pages, consists of 7 main chapters – including introduction and research problem, literature review, materials and methods of research, results and discussion, conclusions, recommendations and suggestions, references and appendixes. At the end of the study are provide a bibliography includes 334 items. The research tool - questionnaire is also included as the Appendix. The proportions of the each chapters of the dissertation are correct and already apparent from the substantive content. Discussion of the results in the individual chapters is well founded and quite clearly leads the reader around the each issues.

3. Substantive review

The doctoral dissertation is very interested from practical point of view. In Poland we still have a big problem with transfer knowledge from scientific institutions – universities and institutes to the practice, therefore, a lot of innovation is unused by farmers. The doctoral dissertation provides some information how to improve the agriculture recommendation system and what practical information should be transferred to the farmers (especially from the area of fertilizer application).

The use of fertilizers plays a key role in maintaining the appropriate crop potential production of the soil and in ensuring high-quality arable crops. It is very important to follow up farmers, in how to use fertilizers on agricultural crops and follow-up methods of applying fertilizers to cultivated crops, in order to ensure high agricultural production. The objectives of this research are to identify and evaluate the application level of scientific recommendations in respect to the optimal use of fertilizers by farmers in the Lublin province.

In the scope of author research, the following (six) objectives are presented:

- identify the application level of scientific recommendations by farmers (respondents) towards the optimal use of two kinds of fertilizers - mineral and organic,

- identify personal, social, communicative and economic characteristics of farmers (respondents) in the Lublin province,
- identify a correlation between the application level of scientific recommendations by farmers towards to optimal use of two kinds of fertilizers - mineral and organic, and between independent variables,
- determine the differences between the application level of scientific recommendations by farmers towards the optimal use of organic fertilizers and between mineral fertilizers,
- identify the most important problems faced by farmers in agriculture and during the use of fertilizers,
- identify the knowledge level of farmers in Lublin Province towards the agricultural extension in general and in each statement of the knowledge scale,
- identify a correlation between the application level of scientific recommendations by farmers towards the optimal use of fertilizers and between the knowledge level of farmers towards the agricultural extension service.

In order to obtain data for the research, a research tool (a questionnaire) was designed.

The data of research were collected in 2015 during individual interviews with farmers (respondents) in the Lublin province with a help of the staff of the Agricultural Extension Center in Końskowola in Lublin Province. During the study period, the author visited many farms in the Lublin province. During the visits, the author met the owners of the farms. The farmers gave detailed descriptions of their farms to the author.

The data of research was analyzed through the use of statistical methods (Pearson correlation, Spearman correlation and T- test). The studies have been carried out correctly in terms of methodology and statistical analyses.

The results presented in the dissertation are very interested and they have practical significance to the farmers.

1. The results showed some significant information about knowledge of farmers in Lubelskie Province of mineral and organic fertilizer application and provide the information that farmers needs more information about negative effects of excessive use of mineral fertilizers, especially biogenic nutrients - nitrogen and phosphorus.
2. Farmers have suitable information and knowledge about the timing of the use of organic fertilizers in crop production. Unfortunately, they have low information and

knowledge about the benefits of use of organic fertilizers in crop production and their impact on soil fertility.

3. The farmers with larger holdings provide more information to increase the application level for scientific recommendations relating to the optimum use of mineral and organic fertilizers. This would increase the productivity of agricultural land.
4. There is a significant difference in the knowledge of application level of scientific recommendations by respondents towards the optimal use of organic fertilizers and mineral fertilizers for the benefit of the use of mineral fertilizers. The author concludes that the accessibility of mineral fertilizers is easier and faster, also mineral fertilizers increase the rate of production of agricultural crops more, compared with organic fertilizers.
5. There is a significant correlation between the application level of scientific recommendations by farmers to the optimal use of two kinds of fertilizers. The author concludes that farmers use the agricultural recommendations that get it from agricultural extension workers that are related to the use of fertilizers as a result of high confidence with agricultural extension workers.
6. The most important problems faced by farmers (respondents) in agriculture and during the use of fertilizers, are:
   - difficulties in selling agricultural products,
   - underdeveloped market for services,
   - low prices and below the cost of production per unit.

There is very interested recommendations for Agricultural Extension Center in Lublin.

The Agricultural Extension Center in Lublin province should continuously focus on promoting and increasing farmers' knowledge and information, especially in the fields of:

- adverse effects of excessive use of mineral fertilizers,
- methods of the use of mineral fertilizers in general,
- the benefits of the use of organic fertilizers in general,
- adverse effects of the use of organic fertilizers in general.

This can be achieved by farmers' participation in specialized training courses in these fields.

The Agricultural Extension Center in Lublin province, should continue to develop farmers' knowledge about the role of agricultural extension in rural development and agriculture. Conduct studies and research in various other agricultural sectors and in different regions in Poland in order to identify the actual reality for farmers in the use and management of

information, tools and resources of agricultural production. As well as to identify the problems that farmers face in their production.

4. Remarks

To the chapter 3 Materials And Method of Research

There is no information in the dissertation on the total number of observations and there is no distribution the farms (respondents where the data were collected) on the map of Lublin province.

To the chapter 5.1. Conclusions

In my opinion the conclusions 5,6 and 7 should be completely reward. In this conclusions the different groups of factors (age, gender, diversity of land usage, diversity of soil classes, the percentage of crop groups cultivated in farm, average production, methods of agricultural production) are included to one "collection bag" and only then compare to the farmer knowledge in the optimal use of mineral and organic fertilizers. In my opinion it should be analyzed in separated group of factors, for exam. first group is personal factors – age and gender, second group is soil factor - diversity of soil classes, next group is agricultural factors – the percentage of crop groups cultivated in farm, average production, methods of agricultural production. The results from this analyzes were to be more reliable probably.

To the chapter 5.2. Recommendations

Helping farmers by finding solutions to the problems by assisting in the sale of agricultural products, providing services to farms and agricultural work tools and finding solutions to the problem of the distance between the house and the farm and concertation of land use – **the underlined sentence is not clear, please explain for clarification!!!**

The concept of dissertation and basic methodological assumptions can be evaluate positively, recognizing the desire to give the issue of agricultural extension service and its knowledge by farmers. I believe the author has a very good understanding of the problems of agricultural extension service in particular the of fertilizers recommendation system.

Considering the methods and research methodology and the manner of preparing doctoral thesis, the dissertation of Ahmed Awad Talb Altalb deserves the honorable mention in accordance with the principles of rewarding and highlighting this type of studies.

After a thorough and detailed review of Doctoral Dissertation I hereby conclude in an unambiguous manner that it meets the requirements pertaining to doctoral dissertations pursuant to the Polish Act of 14 March 2003 on Academic Degrees and Academic Title and Degrees and Titles in Art (Journal of Laws of the Republic of Poland of 2003 No. 65 item 595) and thus, I make an application to accept the submitted Doctoral Dissertation and allow Mr. Ahmed Awad Talb Atalb to undertake a public defense.

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