Prof. dr hab. Tomasz M. Gruszecki
Department of Small Ruminants Breeding
and Agriculture Advisory
Faculty of Biology, Animal Breeding
and Bioeconomy
University of Life Sciences in Lublin

Review

of the doctoral dissertation by mgr Ahmed Awad Talb Altalb entitled "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", written under the guidance of prof. dr. hab. Tadeusz Filipek

Efficiency increase in the production of particular economy sectors has become a challenge of the 21st century. The achievement of this goal requires providing innovative solutions directly stemming from the latest scientific accomplishments. A crucial role in the related transfer of knowledge is played by the extension system. In the case of agriculture, consultancy services must, on the one hand, include modern technologies that are economically justified under specific management conditions and, on the other hand, take account of the response of the natural environment. Contemporary farming product buyers are sensitive to the state of the surrounding nature. Moreover, they expect food to fulfil dietary requirements and recommendations while retaining its flavours. Therefore, agricultural extension has to be multi-faceted and take into account not only the aforementioned factors but also the developing mind set of rural communities.

It is usually difficult to analyze such conditions due to their complexity. Thus, any investigations need to rely on concrete examples. In the case of the reviewed dissertation, the example concerns the usage of organic and mineral fertilizers in cultivated plants. I consider this approach to be correct since fertilizer application is one of the most important factors that affect both the quantity and quality of obtained crops.

Taking into account the aforementioned arguments I think conducting research aimed at describing the conditions of farmers' use of the latest findings in fertilizer application is fully justified. I particularly appreciate the fact that numerous aspects of the issue have been taken into account, as evidenced in insightful hypotheses and research objectives. Such

comprehensive approach to the issue shows the author's good understanding of the subject matter.

The doctoral dissertation I was presented with contains as many as 222 pages of typescript. The entire work has altogether 6 chapters, complemented with an annex containing 6 parts and including a description of the research tool, which was a questionnaire, detailed questionnaire study results and a scheme of the organizational structure of extension in Iraq. In addition, the work contains as many as 26 tables and 20 diagrams. I have no objections to the layout of the work which forms a logical unit and has been constructed in a way which enables the reader to clearly see all the details.

The 'Introduction' familiarizes the reader with the theme of the dissertation, and subsequently the main aim and detailed research objectives. The next part of the discussed chapter presents the research hypotheses and describes the significance of fertilization in a synthetic way. I have no objections to this part of the work. The detailed research objectives have been defined. They comprehensively specify the problem defined in the main research objective. The only thing I could suggest is that, prior to printing, the description of the hypotheses should be preceded with a list of individual research objectives that are addressed in the dissertation.

The chapter 'Literature review' is very extensive, both in content and volume. This part of the dissertation acquaints the reader with broadly understood issues of agricultural consultancy. The issues are treated comprehensively – from the history of agricultural extension through new technology implementation aims and procedures to production.

What I found particularly interesting are the subchapters 'Models and methods of agricultural extension' and 'Agriculture in Poland and Iraq', which in great detail compare/present both issues in different countries, with special attention devoted to the problem of the fertilization of cultivated plants.

The comprehensive treatment of the topics discussed on the basis of properly selected, up-to-date and highly numerous sources (334 entries) testifies to a good preparation of the author for the research subject. The substantive value and thematic arrangement of the chapters in question confirm the validity of the undertaken study.

As a whole, the chapter 'Literature Review' is a good material for a separate or even several separate monographs.

The next chapter 'Materials and methods of research' describes the place of the research, i.e. the Lublin Voivodship, and presents in great detail the structure of the fundamental research tool, namely the questionnaire.

I have no objections to the statistical methods used for the analysis of the study results. However, what is redundant are their very detailed descriptions. In a vast majority of cases, these methods are well known and commonly used in scientific publications in the broader field of agriculture. Therefore, it would suffice to use adequate references to relevant literature.

However, what is missing in the discussed chapter is detailed information concerning:

- the method of farm selection for the target test sample;
- the number of farms under analysis; and
- the location of those farms in specific communes or at least districts.

Although the reader can obtain the data concerning the number of the tested units in chapter 'Results and Discussion' but, due to the nature of the study, such information should be included in the description of the methodological means. Information on the method for selecting farms and their detailed/precise location is essential, as it would significantly enhance the universality of the obtained results, with the consequent possibility of practical and appropriate use of the data.

The chapter 'Results and discussion' is an extensive discussion of the questionnaire study results (see the juxtaposition in the Appendices) obtained during the survey. The basic data are presented in the tables and diagrams. I consider the form of result presentation without an excessively elaborated description of the results to be appropriate. The reader can get to know the numerical data and in some cases has the possibility of a more thorough analysis to observe tendencies in changes in the distribution of the values of particular parameters. In my opinion, such presentation of results is especially appropriate when they are numerous.

The results of the author's own research presented in the discussed chapter are referred to studies by other authors. The editing of this part of the work clearly shows the author can interpret research results and accurately generalize, retaining proper objectivism in the discussion of particular issues. As a reviewer I would only point out the fact that some paragraphs are too elaborate in this part of the work and could be synthesized more successfully, which is advisable when editing a print version for a scientific journal.

The chapter 'Conclusions, recommendation and suggestions' reiterates the obtained results and confirms the accomplishment of the assumed main objective and specific research objectives. However, I think that for the sake of clarity and in the context of practical application of the results, a more synthetic approach to this part of the dissertation would be advisable.

After evaluating the merits of this dissertation I am convinced that each of the research objectives listed in Chapter 1.3 has been accomplished and has contributed to enriching the data resources pertaining to agricultural extension or the transfer of knowledge for use in general practice. What I find especially valuable is the comprehensive approach to the particular issues under consideration.

To summarize the review of the doctoral dissertation I conclude that the candidate has shown a profound knowledge of agricultural consultancy, paying special attention to the problem of fertilization and its consequences. The author is able to analyze the results of his own research and in his discussion skillfully refers to other results presented in the literature of the subject. Any remarks contained in the review are chiefly meant to induce a discussion that would lead to an even deeper analysis of the research results and to test the possibility of enhancing the universal character of the results. The study shows the conditions of the transfer of the latest knowledge/technology, especially in reference to the usage of mineral and organic fertilization in agricultural practice. The analysis is comprehensive in the sense that the subject has been dealt with in many aspects and, apart from their cognitive value, the collected analytical data can be used in agricultural practice, especially by professional extension workers popularizing new methods of agricultural production.

In my opinion, the reviewed work, entitled "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" fulfils all requirements for doctoral dissertations described in Art. 13 of the Act on Degrees and Academic Titles in Science and Arts, dated 14 March 2003, along with further changes (Official Journal of Laws, it. 882, dated 21 June 2016).

Considering the above, I request the High Council of the Faculty of Agrobioengineering at the University of Life Sciences in Lublin to admit mgr Ahmed Awad Talb Altalb to further stages of the doctoral procedure.

Lublin, 18/04/2017

Tomasz M. Gruszecki