

SCIENTIFIC OPINION

АГРИКULTУРЕН УНИВЕРСИТЕТ	
гр. ПЛОВДИВ	
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Получено на 30.04.2020	

on dissertation for obtaining the educational and scientific degree "doctor" in:
field of higher education - social, economic and legal sciences, professional field
3.8 Economics, scientific the specialty Economics and Management
(Agriculture)."

Author of the dissertation: DOBRI MATEEV DUNCHEV, full-time doctoral student at the Department of ECONOMICS, at the Agricultural University, Plovdiv

Dissertation topic: EVALUATION OF INNOVATION TECHNOLOGIES IN PRECISION AGRICULTURE

Reviewer: Assoc. Prof. Dr. Hristina Stefanova Harizanova-Bartos, UNWE, Department of Economics of Natural Resources, professional field: 3.8 Economics, Economics and Management

appointed a member of the scientific jury by order № RD- 16 546 / 25.06. 2020 by the Rector of AI.

1 . Relevance of the problem

The development of the agricultural sector is in a new competitive environment, and in order to meet the increased requirements for production and sale of products, it should implement innovative practices to support this process, applied through precision agriculture. Precise agriculture is presented as innovative technology and information based on intelligent approach for identification, analysis and management of variables to obtain cost-effective production with optimal production and conservation of resources. Sustainable development requires agricultural production to be optimized in order to achieve the necessary yields with the lowest possible cost of resources and it is the search for appropriate methods and their application justifies the relevance of the chosen topic.

2 . Purpose, tasks, hypotheses and research methods.

The goal (to analyze the technical and economic efficiency of innovative technologies in agriculture, based on which to assess the possibility of their implementation in Bulgaria in the sector-specific production and institutional conditioning) is precisely formulated and is in line with the set tasks.

The setup tasks are formulated as stages and they are 7, which consistently show the development of the dissertation.

In the dissertation the subject of the research (assessment of the effect of the application of the innovative technologies in the precision agriculture) and the Object of the research (the soft fruit sector) are correctly formulated.

There is one main hypothesis - the introduction of innovations helps to increase the technical and overall economic efficiency, which the author proves in his dissertation.

The set up methodological approach is "Case study", examining five farms, which are subject to analysis and assessing the application of innovative

technologies in precision agriculture based on an author's study conducted in the UK and Bulgaria (2016-2019).

3 . Visualization and presentation of the obtained results.

Thesis is in a volume of 217 pages, of which the main part is 194 pages. The thesis is divided into three chapters (Chapter first: Theoretical conceptualization of sustainable development and dependence him of innovation and technology; Chapter Two: study of technology in the production of soft fruits and analysis of the technical and economic their effectiveness; Chapter Three: opportunities for technological development of Bulgarian agriculture on the basis of digitization). The text in the dissertation is written in a high style, and the author consistently covers the theory, methodology and the results. Some of the results are presented by figures and tables.

4 . Discussion of the results and used literature.

The dissertation is based on 331 literature sources, of which 17 in Cyrillic, 294 in Latin and 19 based on the Internet sources.

The first chapter of the research, Mr. Dunchev uses a variety of literature sources, which build a solid theoretical framework, based on which the theoretical framework of the study is adapted. The chapter includes: 1) An overview of the evolution of innovation concepts these processes, as well as their peculiarities in agriculture; 2) Different definitions for precision agriculture are traced and the main technologies in the cultivation of different crops are presented. 3) On the basis of the theoretical analysis a methodological framework of the research is chosen.

The second chapter examines the technologies in the production of soft fruits and analyzes their technical and economic efficiency. A comparison of the economic efficiency in Bulgaria and the United Kingdom in the production of soft fruits is made, based on several studied cases.

The third chapter presents a synthesis of possible opportunities for technological development of Bulgarian agriculture on the basis of digitalization, covering those innovative solutions that are suitable for the production of soft fruits.

Based on the three chapters, specific proposals and opinions are presented for improving the processes in the production of soft fruits.

5 . Contributions to the dissertation.

The main scientific and applied contributions indicated by the dissertation are the result of the conducted research.

Scientific contributions

The formulated contributions in the dissertation work fully correspond to the ones described in the thesis. They are as follows:

- Based on a study of various literature sources, a theoretical model for identification of the nature, types and features of innovations in agriculture is presented.
- Based on the analysis and evaluation of different concepts, a definition and main components of precision agriculture are outlined.
- A methodology for research and assessment of the effect of innovation technologies in precision agriculture is selected.

Scientific and applied contributions

The proposed scientific and applied contributions are 4 and correspond to the developed dissertation. The contributions are formulated as follows:

- Based on the comparison, the differences in productivity, costs and revenues for different production technologies are highlighted.
- Based on the methodological approach, the effect of innovation technologies in the soft fruit production has been assessed.
- The role of research and development for innovation activity in the agricultural sector is studied.
- The opportunities for institutional support for implementation of innovations and digitalization of rural areas are presented.

6. Critical remarks and questions.

The dissertation would be with increased quality if a list of tables and figures was displayed for easier tracking of the results shown by visual methods.

Published articles and citations.

There are 4 publications proposed for review, of which one is independent and one is in print. The publications are published in prestigious journals in the subject area in which the doctoral student works. I evaluate the publications at a very high level, and they are related to the dissertation and correspond to its content.

The presented abstract objectively reflects the structure and content of the dissertation.

CONCLUSION:

Based on scientific and applied by doctoral student and other research methods, correctly deduced experiments made summaries and conclusions considers that the dissertation meets the requirements of Law and Regulations of Agricultural University for its application, which gives me reason to evaluate it **POSITIVE**.

- I dare to propose to the respected scientific jury also to vote positively and to award Mr. Dobri Mateev Dunchev the educational and scientific degree "doctor" on scientific specialty Economics and Management (Agriculture).

Date: 29.07.2020, Sofia

Prepared by:

assoc. prof. dr. Hristina Harizanova-Bartos