



OPINION

on a dissertation for obtaining an educational and scientific degree "Doctor", field of higher education: 6. Agricultural Sciences and Veterinary Medicine, professional field: 6.1 Plant Breeding, Department of Plant Breeding.

Author of the dissertation: Yordan Rangelov Yordanov, part-time doctoral student at the Department of Plant Breeding at the Agricultural University, Plovdiv.

Topic of the dissertation: "Research on the main units of the technology of *Triticum monococcum* L., *Triticum dicoccum* Sch. I *Triticum spelta* L., in the conditions of organic farming "

Opinion: Assoc. Prof. Dr. Natalia Hristova Petrovska – Institute of Maize, Knezha, 6.1 Plant breeding, scientific specialty 04.01.05. "Selection and seed production of cultivated plants", appointed a member of the scientific jury by order № RD – 16 -149/28.02.2022 by the Rector of the Agricultural University, Plovdiv.

1. Relevance of the problem.

The dissertation presented for opinion is a study of the main elements of the technology of cultivation of *Triticum monococcum* L., *Triticum dicoccum* Sch. I *Triticum spelta* L. under different sowing rates and fertilization options in organic farming and optimizes it according to the strategy of the CAP "From the farm to the table for a fair, healthy and environmentally friendly food system."

2. Purpose, tasks, hypotheses and research methods.

The main goal of the dissertation research is to optimize the main elements of the technology – density of sowing and fertilization – in three ancient types of wheat – *Triticum monococcum* L., *Triticum dicoccum* Sch. and *Triticum spelta* L., in the conditions of organic farming.

In order to achieve the main goal, the following research tasks have been solved:

- A comparative characteristic of the phenological development of the three types of wheat in the conditions of the vegetation years has been performed. Dependences between the duration of the interphase periods and the vegetation period with the tested factors were observed.
- The dynamics of growth, fraternization and the formation of productive stems were monitored, and the influence of different sowing and fertilization densities on them was established.

- The photosynthetic activity of the three types of wheat was determined and its dependence of the tested factors was analyzed.
- The influence of sowing and fertilization density on the productivity of *Triticum monococcum* L., *Triticum dicoccum* Sch. and *Triticum spelta* L. was evaluated, as well as the correlations between yield and class components.
- The elements of productivity and their relative influence on the yield in relation to the tested factors – year, type, density of sowing and fertilization have been established.
- The physical qualities of the grain in the tested factors of the study, as well as the biochemical composition and the content of some macro- and microelements in the grain of the three types of wheat were studied.

The following methods were used to prove the thesis in the research process: Two-way analysis of variance (ANOVA) and correlation analysis. The specialized software product SPSS V. 9.0 for Microsoft Windows according to the method of Duncan, Anova was used for statistical processing of the experimental data.

3. Visualization and presentation of the obtained results.

The dissertation is presented in ten sections, located on 155 standard pages. The bibliography sources used are 204. The study is illustrated with 86 tables and 12 figures. The work is well structured and includes all the necessary elements. In terms of volume, structure and bibliography, the dissertation meets the requirements of the Law on Scientific Degrees and Titles.

4. Discussion on the results and the used literature.

The proposed dissertation shows that the author has achieved the expected results as well as contributions in scientific and applied aspects. The research was conducted in accordance with the set goal, subject and tasks. The scientific literature related to the topic of the dissertation is at the required high level and presents authors both in Bulgaria and abroad, which speaks of the very good awareness of the candidate.

5. Contributions of the dissertation.

The following scientific and applied contributions can be highlighted in the dissertation, which I confidently confirm:

- For the first time in a complex multifactor study the influence of increased sowing rate and fertilization is established in local forms of the three

ancient wheat species – *Triticum dicoccum* Sch., *Triticum spelta* L. and *Triticum monococcum* L.

- The influence of the growing sowing rate from 500 to 900 hp / m², in combination with two fertilizer products – soil fertilizer Italpolina and foliar fertilizer Naturamin, on the growth, development and formation of productivity of local forms of two-grain einkorn, spelt and single-grain einkorn, in the conditions of the biological system of agriculture.
- Specific conclusions and recommendations have been made for the individual species related to sowing rate and fertilization, based on their comparative evaluation in the experiment, analysis of variance and the established correlation dependencies.
- A set of physiological parameters has shown that the applied soil and foliar fertilization improves the photosynthetic activity of spelt, single-grain and two-grain einkorn plants.
- A comparative assessment of the physical, biochemical qualities and mineral composition of the grain (naked and weedy) in the conditions of the tested factors and the biological system of agriculture is made.

6. Critical remarks and questions.

In the dissertation I have not found omissions, inaccuracies or contradictions and **I have no critical remarks**. I recommend the PhD student to expand his future research for the regions of Northern Bulgaria (Danube Plain and Dobrudzha), as in recent years there has been increased interest in useful organic foods of natural origin. Throughout the country there are suitable conditions for the development of organic farming as well as suitable crops, some of which are *Triticum dicoccum* Sch., *Triticum spelta* L. and *Triticum monococcum* L. These recommendations in no way minimize the significance of the presented dissertation work.

7. Published articles and citations.

The presented abstract of the dissertation objectively reflects the structure and content of the dissertation work. It has been developed in accordance with the norms of the ZRASRB and the Regulations for its implementation. It fully meets the requirements for content and layout.

The publications presented by the doctoral student are author's as well as co-authored and are in the field of research.

Yordanov, Y. (2021) Growth and Development of Spelt Wheat (*Triticum spelta* L.) in Conditions of Varying Sowing Rate and Fertilization. In

Journal of Mountain Agriculture on the Balkans (Vol. 24, Issue 1, pp. 126-147)

Yordanov, Y., Georgieva, T., & Berova, M. (2021). Productive Elements of the Spelt Wheat Head (*Triticum spelta* L.) at Varying Sowing Rates and Fertilization in the Conditions of Organic Farming. In Journal of Mountain Agriculture on the Balkans (Vol. 24, Issue 2, pp. 134-151).

CONCLUSION

Based on the various research methods applied by the doctoral student, the correctly performed experiments, the summaries and conclusions made, I believe that the presented dissertation meets the requirements of ZRASRB and the Regulations of the Agrarian University for its application, which gives me reason to evaluate it **POSITIVE**.

I would like to suggest to the esteemed Scientific Jury to vote positively and to award **YORDAN RANGELOV YORDANOV** an educational and scientific degree "Doctor" in the scientific specialty "Plant Breeding".

Date: 09.04.2022

Knezha

Подписите в този документ са заличени

във връзка с чл.4, т.1 от Регламент (ЕС) 2016/679

(Общ Регламент относно защитата на данни).

The opinion prepared by

Assoc. Prof. Dr. Natalia Hristova Petrovska