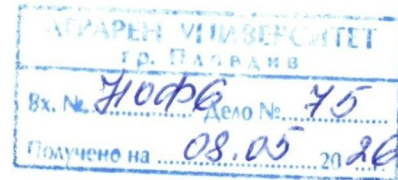


## OPINION



on a dissertation for obtaining the educational and scientific degree "**doctor**" by field of higher education 6 *Agricultural Sciences and Veterinary Medicine*, professional field 6.1 *Plant Breeding*, the scientific specialty *Plant Breeding*.

**Author of the dissertation:** Bozhidar Franzov Tanchev

Full-time doctoral student at the Department of *Plant Breeding* at the Agricultural University, Plovdiv

**Topic of the dissertation:** *Responses of Bulgarian sunflower hybrids (Helianthus annuus L.) to contrasting agroecological conditions*

**The opinion was prepared by:** Prof. Alexander Todorov Matev from SSA, IRGR - Sadovo, higher education area 6, professional field 6.1. Plant breeding, scientific specialty Plant breeding, appointed as a member of the scientific jury by order No. RD-16-476/02.04.2026 by the Rector of the Academy of Sciences.

### 1. Educational part of the doctoral program

The doctoral student Bozhidar Tanchev is an agronomist who has completed both degrees of higher education at the Agricultural University - Plovdiv. He has a bachelor's degree in *Agronomy - Field Science* and a master's degree in *Digitalization and Management of Plant Production*. The doctoral program in the Department of Plant Production appears as a natural continuation and upgrade of the already accumulated knowledge and skills. With regard to the educational part of it, the candidate has completed all activities provided for in his individual plan, including exams passed and courses taken. Based on this, he has been discharged with the right to defend. To this part of the doctoral program, I would also add the knowledge that he acquires in parallel with the derivation of the experience and the processing of the data. They are related to the methodology of setting up the field experiment, its conduct, collection of current information, harvesting and analysis of the plant material. An essential part of the doctoral student's training is working with specialized software for statistical processing of the results of the experiment and correct interpretation of the results obtained. All this is impossible without the active participation and assistance of the scientific supervisors. Last but not least, an important educational element of the doctoral program is the collection of specialized scientific literature and the preparation of a literature review, which in turn served to clarify the scientific problem in detail and refine the tasks related to achieving the set goal. All this finds its place and is clearly visible in the final version of the submitted dissertation.

### 2. Scientific part of the doctoral studies

#### **Relevance of the problem a**

Sunflower is the main oilseed crop for the conditions of Bulgarian agriculture and any study that would lead to an increase in yield, sustainability of crops and a decrease in the cost of production can be considered relevant. Here the emphasis falls on the Bulgarian selection and the reaction of the tested hybrids in the conditions of different climatic regions. Since the study is complex (quantitative and qualitative indicators), the results of this dissertation would guide agricultural producers to the right choice of

hybrid for the two regions – Zhitnitsa (Plovdiv region) and G. Toshevo (Dobrich region).

#### ***Purpose, tasks, hypotheses and research methods***

The goal of the dissertation is set clearly and precisely and is based on the trends in modern sunflower production, as well as on the basis of scientific achievements presented in the literature review. It includes a total of 167 sources. There are a total of 5 tasks. They are formulated correctly and are sufficient to achieve the goal. The methodology on the basis of which the experiment was conducted is consistent with the goal and the tasks set. The experiment is two-factor, with one of the factors being the hybrid (6 hybrids), and the other – the growing region (Zhitnitsa and General Toshevo). Biological indicators were monitored during the experiment and after its harvest. The necessary chemical analysis of the soil (before the beginning of the vegetation period) was carried out, as well as a full chemical analysis of the seeds. The agrotechnical measures are consistent with those current for the crop to date. The selection of statistical methods and software used in the dissertation makes a very good impression. Their correct selection and application plays a crucial role in the correct interpretation of the results of the experiment.

#### ***Visualization and presentation of the results obtained***

The results begin with a presentation of the two agroecological regions, such as soils and climate, as well as the specific manifestation of meteorological factors during the experimental years. The data are presented in an appropriate manner and are illustrated graphically. The section with the results of the experimental part follows, which occupies a significant part of the dissertation (85 pages or 52%). The presentation follows the chronological order of the tasks and the arrangement of the studied indicators in the methodological part. The text is illustrated extremely well, using 26 tables and 27 figures, most of which are a set of separate graphs. It makes a very good impression that, simultaneously with the analysis of the data, other independent literary sources are used for comparison. In this section, the doctoral student does not consistently present results and discussion, but unites them, integrating the relevant tables and graphs into the text. In this particular case, this option is more suitable, since a complex picture of each of the analyzed indicators is obtained, and this contributes to the easier and more accurate formulation of the conclusions and contributions of the work. Based on the analysis of the results of the experiment, the doctoral student formulated a total of 13 conclusions. They are relatively short and at the same time comprehensive. The manner of their presentation shows another successful element of the candidate's training.

#### ***Contributions of the dissertation work***

The doctoral student has indicated 4 scientific and theoretical contributions related to the phenological development of the studied hybrids in the two agro-ecological regions and the stability in terms of yield. The relative share of the individual organs of the plant has also been established. Correlations have been established between seed yield and indicators such as oil yield, mass and number of seeds in the cob. It is proven that the correlation between oil yield and hectoliter weight is positive, and that between oil yield and crude protein yield is negative.

Four scientific and applied contributions are also indicated. They are related to the performance of the studied hybrids in the two regions, with an emphasis on yield and quality. Specific recommendations are made, useful for practice.

I accept without reservation the claims for contributions from the dissertation work presented in this way.

#### ***Critical notes and questions***

The dissertation work is conceived, structured and written correctly, clearly and competently, the goal has been achieved, and as a result, there are contributions sufficient for obtaining the educational and scientific degree of Doctor. Therefore, I have no questions, remarks or recommendations. I congratulate the doctoral student and his scientific supervisors for the large-scale experiments carried out, since experimental field work with a scientific purpose is becoming increasingly difficult for a number of reasons.

#### ***Published articles and citations***

Admission to the defense of a dissertation is related to the fulfillment of specific scientometric norms, in connection with which the doctoral student has submitted a certificate certifying this: A total of two publications have been submitted, of which he is the first author. These cover the requirement of a total of 30 points.

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

### **CONCLUSION:**

Based on the various research methods learned and applied by the doctoral student, the correctly conducted experiments, the generalizations and conclusions made, I believe that the presented dissertation meets the requirements of the Law on the Scientific Research of the Republic of Bulgaria and the Regulations of the Agrarian University for its application, which gives me reason to evaluate it **POSITIVELY**. I would like to propose to the esteemed Scientific Jury to also vote positively and award Bozhidar Frantsov Tanchev the educational and scientific degree "**Doctor**" in the scientific specialty of Plant Breeding.

Подписите в този документ са заличени

Date: 17.04.2026  
Plovdiv

REVIEWE

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