

STATEMENT

on a dissertation thesis submitted for the award of the educational and scientific degree **“Doctor”** in the field of higher education **6. Agricultural Sciences and Veterinary Medicine**, professional field **6.5 Forestry**, scientific specialty **“Forest Reclamation, Forest Protection and Special Forest Uses”**

Author of the dissertation thesis:

Eng. Veselin Georgiev Ivanov

Title of the dissertation thesis:

**HEALTH STATUS OF TREE VEGETATION IN SHELTERBELTS IN
NORTHEASTERN BULGARIA AND MEASURES FOR ITS IMPROVEMENT**

Scientific supervisor:

Corresponding Member Prof. DSc Georgi Tsvetkov Georgiev

Member of the Scientific Jury:

Assoc. Prof. Dr. Katya Georgieva Trencheva

Professional field **6.2 Plant Protection**, scientific specialty **Plant Protection (Entomology)**,
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1. Brief presentation of the doctoral candidate.

The doctoral candidate Eng. Veselin Georgiev Ivanov holds a Master's degree in Forest Economics Engineering, obtained from the University of Forestry – Sofia in 2013. His professional development has been entirely related to the forestry sector, where during the period 2013–2024 he held various positions within the forest management system. As a forester at the Territorial Division of the State Forestry Enterprise – Dobrich and as Head of a Forest Management Unit at the Territorial Division of the State Hunting Enterprise – Balchik, he gained extensive practical experience in the management, maintenance, protection and regeneration of forest territories. Since 2024, the doctoral candidate has been an Assistant Professor at the Forest Research Institute of the Bulgarian Academy of Sciences, where he conducts scientific research in the field of forest protection. His work includes field investigations, assessment of the health status of tree vegetation, identification of insect pests and fungal pathogens, as well as participation in scientific research projects. The combination of his practical experience and scientific activities provides a solid professional background and the necessary expertise for the development of the presented dissertation thesis.

2. General characteristics of the dissertation thesis – volume and structure.

The submitted dissertation thesis consists of **153 pages** and includes **82 figures**. The thesis is structured according to the requirements for scientific research works and contains the main sections: introduction, literature review, aim and objectives, materials and methods, results and discussion, conclusion, conclusions, scientific and applied contributions, and references. The presentation is logically organized, with the individual sections being well connected and providing a consistent presentation of the research problem. The literature review reflects the current state of scientific knowledge, the methodology is clearly described, and the obtained results are presented with appropriate visualization through tables, figures and graphs. The

dissertation is characterized by a well-balanced structure, combining theoretical background, methodology, experimental results and practical conclusions. The volume and content of the thesis meet the requirements for awarding the educational and scientific degree “**Doctor**”.

3. Relevance of the research problem.

The issues related to the condition, sustainability and management of shelterbelts in Northeastern Bulgaria are highly relevant and possess significant scientific and practical importance. Shelterbelt systems perform important ecological, soil protection and economic functions associated with reducing wind erosion, regulating microclimatic conditions, conserving soil moisture and improving the resilience of agricultural landscapes. The relevance of the study is also determined by the recently observed processes of deterioration in the health status of a number of tree species within shelterbelts. Drought periods, climate change, ageing of plantations and increasing biotic pressure from pests and pathogens create a need for in-depth studies and the development of approaches for the restoration and sustainable management of these systems. In this context, the presented dissertation addresses an important and insufficiently studied problem, which has both fundamental and practical significance for forestry science and practice.

4. Literature awareness.

The literature review demonstrates very good knowledge of the author regarding the development, essence and contemporary importance of shelterbelt forestry as a branch of agroforestry. The main theoretical concepts related to the functions of shelterbelts, their historical development, principles of establishment, species composition and management practices are discussed. The author correctly presents shelterbelts as complex agroforestry systems whose effectiveness depends on the interaction between tree vegetation, environmental conditions and appropriate management. The ecological functions of shelterbelts are well described, including microclimate regulation, reduction of wind erosion, improvement of water balance and enhancement of the sustainability of agricultural territories. A positive aspect is the use of a broad range of scientific sources – a total of **151 publications**, including **55 sources in Bulgarian and 96 in Latin script**. The literature review includes both fundamental works related to the development of shelterbelt forestry theory and practice, as well as contemporary studies concerning remote sensing methods for monitoring and assessment of forest ecosystems.

5. Aim, Objectives and Methods of the Study.

The aim of the dissertation is clearly formulated and is focused on a comprehensive assessment of the health status of tree species in shelterbelts, identification of the main factors responsible for their decline, and development of measures to improve their sustainability. The formulated objectives are logically related to the main aim and cover the key aspects of the research – inventory and assessment of shelterbelt conditions, identification of the causes of degradation processes, investigation of insect pests and fungal pathogens, as well as development of approaches for monitoring and reconstruction. The applied methodology is comprehensive and combines classical forestry methods for assessing the condition of woody vegetation with modern technologies. This approach provides reliable information on the spatial distribution and dynamics of damage processes.

6. Significance of the Obtained Results, Interpretation, Visualization and Conclusions.

The obtained results represent a significant contribution to the knowledge of the condition, sustainability and management of shelterbelts in Bulgaria. The study has high scientific and practical importance, as it represents the first comprehensive and detailed investigation in recent decades of the health status of tree species within the shelterbelt system of Southern Dobrudzha – a region of key importance for the development of protective forestry in the country. The scale of the research is particularly significant, as it covers a representative sample of 190 shelterbelts, including a wide range of tree species differing in origin, age and health condition. This provides a reliable basis for assessing the current status of shelterbelts and identifying the main factors determining their degradation. The results allow a comprehensive evaluation of the impact of abiotic and biotic factors on the health condition of woody vegetation. The identified processes of decline and degradation in important tree species, including representatives of the genera *Fraxinus*, *Quercus*, *Ulmus* and *Acer*, are of considerable importance for the future management and reconstruction of shelterbelt systems. A significant contribution of the study is the clarification of the role of major insect pests and fungal pathogens associated with tree weakening and mortality. The obtained data on species composition, biological characteristics and impact of the identified pests and pathogens complement existing knowledge and provide a basis for developing effective measures to limit negative processes. The application of modern methodological approaches for monitoring should also be positively evaluated. The use of these technologies expands the possibilities for rapid and objective assessment of the spatial distribution of damage and for monitoring the dynamics of shelterbelt health status. The obtained results are well systematized, thoroughly analyzed and illustrated through appropriate tables, graphs and maps, facilitating their interpretation and practical application. The conclusions are logically derived from the conducted studies and reflect the main patterns established during the research. Of particular importance are the recommendations concerning the selection of tree species for future reconstruction and improvement of shelterbelt sustainability, as well as the assessment of weaknesses in their establishment and management. This gives the research not only theoretical but also significant practical value. In conclusion, the obtained results can be considered significant, scientifically justified and of high practical relevance. They contribute to a better understanding of the causes of shelterbelt degradation and provide a scientific basis for their sustainable management, monitoring and restoration.

7. Contributions of the Dissertation.

The dissertation contains significant scientific and applied contributions. The main biotic factors associated with the decline and degradation of major tree species in shelterbelts have been identified. New data have been obtained on fungal pathogens, insect pests and their relationships with tree species, including new records for the country and new trophic associations. Modern methods for assessment and monitoring of shelterbelt condition have been developed and applied. The developed integrated methodology for evaluating the structure, functional condition and health status of shelterbelts has practical applicability in planning management, reconstruction and restoration activities.

8. Critical Remarks and Questions.

I have no critical remarks or questions.

9. Evaluation of the Quality of Scientific Publications.

Three scientific publications related to the topic of the dissertation have been presented for the development and validation of the research results. One of the publications is in an internationally indexed journal with an impact factor, while the others have been published in specialized scientific journals and conference proceedings. The publications present essential results of the dissertation research and demonstrate the necessary scientific activity and contribution of the PhD student.

10. Personal Contribution of the PhD Student.

The PhD student has made a substantial personal contribution to conducting field studies, collecting and analyzing experimental data, assessing the health status of shelterbelts and identifying the main factors associated with their degradation. His personal contribution is also expressed through the application of modern monitoring methods, processing and interpretation of the obtained results, as well as the formulation of scientific and practical recommendations.

CONCLUSION

Based on the research methods learned and applied by the PhD student, the correctly designed experiments, the performed analyses, summaries and conclusions, I consider that the presented dissertation meets the requirements of the Law on the Development of Academic Staff in the Republic of Bulgaria and the Regulations for the Conditions and Procedure for Awarding Scientific Degrees and Holding Academic Positions at the Bulgarian Academy of Sciences.

This provides me with sufficient grounds to give a **POSITIVE EVALUATION** of the dissertation.

I would like to propose to the esteemed Scientific Jury to vote positively and to award **Veselin Georgiev Ivanov** the educational and scientific degree “**Doctor**” in the field of higher education **6. Agricultural Sciences and Veterinary Medicine**, professional field **6.5 Forestry**, scientific specialty “**Forest Melioration, Forest Protection and Special Forest Uses**”.

Date: 10.07.2026

Prepared by:
/ Assoc. prof. Dr. Katya Trencheva/