Universitatea Transilvania din Brașov

HABILITATION THESIS

SUMMARY

Title: Genetic variability of trees and the perspectives of its exploitation in different forest species

Domain: Forestry

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(A) Summary

The habilitation thesis entitled "Genetic variability of trees and the perspectives of its exploitation in different forest species" summarizes the most relevant results of the scientific and professional activity published by the candidate, after obtaining the doctoral degree in 2011 and prior to the submission of the habilitation file. According to the CNATDCU guidelines, the thesis briefly presents the evolution and development of the candidate's academic, scientific, and professional career, demonstrating her ability to integrate the results in the use of research and pedagogic activities and ponts out the significance of these contributions. At the same time, the work highlights the candidate's personal contributions in the current context of forestry, both nationally and internationally, emphasizing the importance, timeliness, and relevance of the addressed topics, as well as their originality and validity, through a well documented and reasoned approach.

Although the research and achievements in forestry have had a profound scientific character, it is also worth noting their practical and applied nature, especially the research related to the ecological reconstruction of forest areas affected by calamities, using modern technologies which can be integrated into the sustainable forest management approach. All of these efforts contribute to increasing the biodiversity of forest ecosystems, by applying modern technologies aimed at ensuring the success of mixed regenerations through the use of containerized seedlings to complement natural regenerations, considering also to maintain the continuity of forests and ensure their sustainable management, with particular applicability in mountainous areas.

The predominantly scientific nature of the research and achievements is also demonstrated by the way the results have been valorized, with a consistent and high-quality scientific output, as evidenced by the specialized journals in which the resulting papers have been published. Thus, the research results have been materialized in various scientific papers, published in journals indexed in internationally recognized academic databases, such as ISI Clarivate (Web of Science), Scopus, ProQuest, EBSCO, CAB Direct, etc.

The content of the thesis is structured into three main sections: (i) the first section, which presents the scientific, professional and academic achievements, the main themes, and research directions; (ii) the second section, which outlines the tree species studied for the evolution and development of the professional, scientific, and academic career, as well as future research directions and their practical implementation methods; (iii) the third section, which includes the bibliographic references associated with the content of the first two sections.

The habilitation thesis synthesizes the most relevant results of the scientific and professional activity, as reflected in publications in the field of "Forestry," following the

attainment of the doctoral degree. The knowledge and experience achieved during the doctoral period, and later as a teacher at USAMV Cluj-Napoca, provided a solid scientific and professional foundation for the successful continuation of research.

The professional experience obtained through research on genetic variability and tree improvement in certain forest species, initiated during the doctoral period, opened the way for new scientific approaches, as well as new research directions and themes. A significant part of the research conducted and the valorization of the results focused on the following aspects: the response of trees to the main pests, eg. *Coleophora laricella* Hb. (the larch casebearer moth) and *Adelges laricis* Vall. (the woolly aphid); the use of genetic markers (SSR, RAPD), which led to the identification of a wide molecular polymorphism, which further illustrates that geographical origins can constitute valuable sources of germplasm, respectively offering a genetic background; the evaluation of different provenance sources of silver fir (*Abies alba*) as potential seed sources, based on the main morphological traits of the seed material and the germination capacity of the seeds; the use of effective treatments for seed germination and the stimulation of seedling' growth in the early stages for black locust (*Robinia pseudoacacia*) and other coniferous and the identification of valuable genetic resources for the production of forest reproductive material.

The results presented in the hereby thesis highlights several significant aspects related to the candidate's activity and achievements: the main research directions carried out through grants and/or institutional projects; the publication of results in specialized journals, including high-prestige ones in the Q1 and Q2 quartiles according to ISI-WoS – SCIE (Clarivate); the visibility and international recognition of the research through acceptance and publication in indexed journals, as well as through citations in publications from major academic databases (e.g., ISI Clarivate, Scopus).

At the time of submitting the habilitation thesis (2024), the candidate has a scientific portfolio that includes 17 publications indexed in the ISI Clarivate database (WoS-SCIE), in journals with impact factors (IF). Academic performance is also reflected in the Hirsch index (h-index) of 5, indicating a notable influence of the research on the scientific community, demonstrating the relevance and quality of the scientific contributions in the domain.

The candidate's professional and academic training reflects not only her commitment to research directions of major interest for forestry,but also the recognition of her work through publications in prestigious scientific journals. These contributions strengthen her position within the academic community, demonstrating both the proffesionalism of her expertise and her ability to address innovative topics with significant impact on the field of forestry research.