

SUMMARY

The habilitation thesis entitled "Improving the utilization of climatic factors and advanced technologies in protected spaces for a more efficient and ecological agriculture", authored by myself, Assoc. Prof. Dr. Jerca Ionuț Ovidiu, represents a synthesis of the most remarkable achievements in the professional, academic, and scientific domains accumulated over a period of 9 years, starting from the attainment of the doctoral title up to the present moment.

In the first section of my habilitation thesis, I have outlined the initially established objectives and the level at which they have been achieved, while also highlighting the significant results obtained. The central subject of this work focuses on the detailed and synthesized presentation of the professional, academic, and scientific progress.

My research and academic activity have focused on both scientific studies and interaction with students from the Faculty of Land Reclamation and Environment Engineering, participating in the writing and editing of course materials, as well as in the development of specialized works. I have consistently directed my efforts towards developing the skills and abilities necessary to advance in my academic career and to maintain a high level of professionalism in all my teaching activities.

My professional achievements in the field of horticultural research have harmoniously integrated with research and teaching activities, significantly contributing to the development of skills that have qualified me to be part of working teams for national and international research projects. This experience has helped me become a recognized professional and expand my expertise both locally and internationally.

My active participation in research has materialized through success in national and international competitions, where I have won four projects as a project director. The results obtained in my scientific research activities have laid the groundwork for articles presented at international congresses and published in specialty journals. This experience has not only solidified my contribution to the field but also my contribution to the international scientific community.

I have closely collaborated with students and master's students within project teams. Their inclusion in these teams represented a special opportunity for them to enrich their bachelor's and master's theses with practical information and experiences. Additionally, presenting their scientific papers at international congresses and publishing them in specialized journals also gave them the chance to showcase their own research and findings to the global scientific community. This not only strengthened their understanding and knowledge in their field of study but also brought them valuable recognition in the academic sphere. By actively participating in these projects, they had the opportunity to collect relevant data, conduct experiments, and analyze results, working directly with real and applied situations.

In this habilitation thesis, I have addressed four thematic areas in the field of agriculture:

1. **Efficient Energy-Centric Climate Control:** This section focuses on optimizing climate control in agricultural environments, with a particular emphasis on energy efficiency.
2. **The influence of differential application of irrigation and fertilizers on tomato crops and soil characteristics, and the impact of Biochar on soil improvement:** Here, the study focuses on how variable irrigation and fertilization affect tomato growth and soil properties, including the beneficial effects of biochar utilization for soil improvement.
3. **Studies on the impact of non-conventional cultivation technology NFT on certain vegetable species, with a focus on production and quality parameters:** This section addresses how the cultivation technology in the Nutrient Film Technique (NFT) system affects the growth and quality of certain vegetables.
4. **Studies on the remediation of agricultural lands contaminated with petroleum residues and residual salts:** This section investigates methods and techniques for rehabilitating agricultural lands affected by pollution from petroleum products and residual salts.

The last chapter of my work is dedicated to future plans for advancing my academic, professional, and research career. Here, I underline the importance of continuous development and the adaptation of study programs to train qualified specialists in the fields of Land Improvements and Horticulture, aligned with the current dynamics and requirements of the job market. This section reflects my vision regarding the necessity of addressing contemporary challenges through innovative education and research.

My plans include not only improving the content of courses and practical work but also refining teaching methods and communication with students and master's students. This

specifically targets the preparation of engineers in the context of plant vegetation status analysis, diagnosis, decision-making based on environmental conditions, and the application of correct irrigation standards. It relies on the specific requirements of plants in different growth stages and the irrigation needs of agricultural crops. The objective is to encourage the most promising specialists to deepen their knowledge and continue their studies by participating in doctoral programs, thereby contributing to the advancement and continuous innovation in the field.

To ensure efficient dissemination of scientific research results, my intentions include the following main directions:

- Encouraging doctoral students to publish their research results, providing them with support and guidance throughout this process;
- Consistently participating, on an annual basis, in specialized conferences both domestically and internationally, to maintain an active exchange of knowledge and ideas;
- Focusing on research topics that align with new technologies, current societal demands, as well as climate change and its influence on cultivation technologies.
- Publishing the results obtained in collaboration with the team in prestigious ISI-indexed journals and international databases (BDI), as well as presenting them at international congresses with broad participation from specialists in the field;
- Maintaining constant attention to training and participation in working teams for new research projects, actively involving undergraduate, master's, and doctoral students to facilitate their development of teamwork skills.

One of my main objectives in career development, especially in the field of research, is to build a highly competent research team capable of producing high-level scientific results and securing funding for research projects at both national and European levels. This will contribute to raising the profile and impact of my research and ensure a valuable input to the scientific community.