ACADEMIA ROMÂNĂ
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Anexa nr.6

SUMMARY OF THE HABILITATION THESIS

Plant resources of economic interest - fundamentals for sustainable exploitation and conservation

Habilitation Domain: *Biology*

Author: Dr. Catană Rodica Daniela

Doctoral studies, focused on the *ex situ* conservation of plant species from the Piatra Craiului Massif, were conducted at the Institute of Biology Bucharest of the Romanian Academy (IBB) under the guidance of Dr. Aurelia Brezeanu. To carry out this research project intended for young doctoral students, between 2007 and 2010, obtained funding through a national competition, financed by the Executive Unit for Financing Higher Education, Research, Development and Innovation - UEFISCDI.

The habilitation thesis *"Plant resources of economic interest - foundations for sustainable valorization and conservation*" highlights the original results published after obtaining the PhD degree in Biology (June 2010).

The habilitation substantiates the original contribution of own research to the current scientific landscape, demonstrating the relevance of the addressed topics, elements validated by the impact of studies in a national and international context; impact achieved through publications in scientific journals, including from the Q1 and Q2 quartiles according to ISI-WoS – SCIE (Clarivate), through the number of citations made from the main academic databases (e.g., ISI Clarivate, Scopus), which indicates a notable influence on the scientific contributions.

The habilitation thesis is divided into three sections: Section I. "Professional, scientific and academic achievements", developed by the author, with a detailed description of the representative scientific results organized by research directions. Section II. "Professional, scientific and academic career evolution and development plan" presents the proposed objectives and future research directions, and section III. "Selective bibliographic references" include the bibliographic notes supporting the research conducted.

In Section I. "*Professional, scientific and academic achievements*", the major scientific achievements are divided into three research directions that include the most representative own contributions to the multidisciplinary scientific activity. In the first direction, I presented the subject of bioprospecting of plant resources, which represents a multidisciplinary effort to explore plant resources to identify, evaluate and valorize them. The research, published in international scientific journals of impact, highlights the therapeutic potential of indigenous phytoresources with curative potential, but also demonstrates that the success of bioprospecting critically depends on understanding the metabolic variations determined by biotic and abiotic factors. In the second direction, I described the most relevant research on the valorization of plant resources, such as the evaluation of the capacity of the *Pleurotus ostreatus* species to utilize various types of waste in order to obtain benefits for human health and environmental protection. In the last part, *Ex situ* Conservation of Plant Resources, research is presented on the conservation protocol for the

Gongolaria barbata species - a species of particular importance from a scientific, economic and ecological point of view; *Polypodium vulgare* - a species of ethnobotanical, economic and ecological importance (indicator of environmental quality), but also a synthesis of the current achievements and limitations of the technology for performing somatic embryogenesis as a tool oriented towards sustainable valorization and conservation of plant resources represented by trees with medicinal properties.

The multidisciplinary research was carried out in collaboration with colleagues from the Institute of Biology Bucharest, the Romanian Academy, but also with collaborators from other university centers in the country and abroad.

In section II of the habilitation thesis "*Professional, scientific and academic career evolution and development plan*" the continuity elements that will be reflected in the evolution and development of my own professional career are briefly presented. Thus, I propose to improve my research and educational skills by acquiring new knowledge and skills through continuous training, participation in workshops and specialization courses, and coordinating a research team, including doctoral students whom I will guide after obtaining the habilitation degree.

Future research directions, based on the research conducted to date, are focused on developing new strategies for the conservation of plant biodiversity, developing applied studies on plant extracts, integrating multi-omics analyses in the study of plant adaptation to stress, artificial intelligence in the sustainable use of plant resources, ecological restoration of different types of habitats, etc.

These directions underline the essential foundation for understanding plant adaptation to stress and for guaranteeing a sustainable use of plant resources in the context of current global challenges.

The results could be significantly improved if the research team were expanded with doctoral students, coordinated as a result of obtaining of the Habilitation degree.