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Scientific field: ANIMAL SCIENCE

HABILITATION THESIS

Contributions to study of sericulture resources in Romania

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A. ABSTRACT

The habilitation thesis entitled "*Contributions to study of sericulture resources in Romania*" represents a synthesis of the most relevant results of the research activity in an important field of animal husbandry, such as sericulture, as well as other evolution of my professional, scientific and academic career.

The thesis is structured according to legislation, as CNATDCU and USV Iași regulation regarding the organization and development process used to obtain the qualification certificate, for the following sections: A – Summary; B - Scientific and professional achievements; career development and development plans; B.I. – Scientific, professional and academic achievements; B.II. – Plans for the evolution and development of professional, scientific and academic career and B.III. - Bibliographical references.

The results selected to highlight the dynamics of personal scientific career, after obtaining the PhD title in Agricultural and Forestry Sciences domain – Animal Sciences in 2005, are presented in the B.I. section, grouped in two subchapters that include researches over the quality of sericulture resources, both those related to silkworms as well as those to mulberry leaf. To realize this part of the habilitation thesis, I used articles that I published between 2005 and 2022. The results present the current state of scientific research in animal sciences, highlighting the original contributions and their relevance for this domain.

The results of the studies are briefly presented in two research directions, in Chapter I. Scientific achievements.

The first direction was related to genetic resources of *Bombyx mori L.* species, where, starting from the idea that it represents an excellent material for genetic studies, the amelioration and preservation were considered as vital for this species.

Thus, regarding the diversification and maintenance of gene stocks of *Bombyx mori sp.* through appropriate "in situ" or "ex situ" conservation procedures, study results aimed to analyze the phenotypic characters variability, in relation to development stages are presented (egg, larva and pupa) of 72 breeds. The gene stocks existence is essential for breeding programs development.

Also, there were presented the results of a study which have the purpose to determine the coefficient of hereditary transmission of main productive characters in some Romanian silkworms breeds, in relation to their use in selection programs. High values of h^2 for the main selected characters (cocoon weight, silk coat weight, and silk percentage) provide information over the selection effect in F2 and subsequent generations.

Since it is necessary to ensure valuable hybridization systems for silkworms, the results of some exposed researches aimed to obtain information about the quality of commercial hybrids produced in Romania and Bulgaria and also about obtaining good quality silkworm eggs. The hybrids were characterized based on a number of nineteen biological, technological, and production characters.

Finally, starting from the purpose and importance of parental lines in commercial hybrids creation, from the necessity of their periodic replacement according to production requirements, the results of a study on related crosses and their consequences on phenotypic and genotypic characteristics of silkworms, creating inbred lines and using them to obtain commercial hybrids were exposed. The researches presented a fundamental and applied importance over the impact of inbreeding and hybridization on some defining quantitative and qualitative parameters for silkworms and allowed the selection of a number of 6 inbred lines and 8 hybrids characterized by biological parameters and superior technologies recommended for sericulture production. The second direction of research pursued within this thesis included research on the quality of sericulture fodder resources, as the mulberry leaf.

Regarding these aspects, the results of a research were presented, which aimed to assess the protein value of the leaves of mulberry varieties: China 32, Eforie, Ichinose, Ukraine 107 and Kayrio Nezumigaeshi, based on four amino acids: glycine, alanine, serine and tyrosine, which form 90% of the silk proteins.

The results of some research were also presented, which mainly focused on the nutritional value of the mulberry leaf of Kokuso 21 and Eforie varieties and the silkworm use from the Romanian hybrids: Triumf, Băneasa Super, and Zefir.

In Chapter II. Professional achievements - the most important results I have achieved professionally and academically were: 145 scientific papers published and 13 reference books, 4 of which as single author and 2 as first author; project director of two projects obtained through competition and member of another 10 grants; 3 prize winner.

In B.II Section I have included the proposed objectives for career development both for teaching and science, according to strategic research objectives of Faculty of Food and Animal Sciences and of University of Life Sciences in Iași, as well as different possibilities of their implementation.