

ABSTRACT

The habilitation thesis summarizes the most significant scientific and academic results obtained after doctoral studies. According to the elaboration methodology, the habilitation thesis is structured in three chapters: in the first chapter the academic and professional career is described, oriented mainly towards educational and research activities.

The second chapter briefly presents the most relevant research results, obtained through collaboration, both with colleagues in the discipline and following interdisciplinary collaboration in projects carried out as a director or active member of the research teams of which I was part.

The third chapter presents the plan for the development and evolution of the teaching career and the future research directions, with mention on the perspectives that the activity with doctoral students opens in the field.

The scientific activity was focused on topics specific to the field of Agronomy and were oriented towards the study of biology, phenology, biotechnology and the quality of hops and medicinal plants, but also to studies of flora and vegetation from different areas of Transylvania. The last concerns were directed towards the identification and study of new species, with multiple uses that allow the diversification of the range of plants cultivated by farmers. The results obtained were materialized by the elaboration of scientific books (4), ISI / ISI proceeding papers (14), 52 BDI papers and 3 patents, awarded at various competitions and invention salons.

The research directions addressed in the habilitation thesis entitled "Researches on biological aspects and diversification of the assortment of cultivated plants by introducing in the culture new species with medicinal, food, technical and phytoremediation" are: (1) Research on the biotechnology of hops free viruses, (2) Aspects regarding the morphology, phenology and phytopharmaceutical properties of some medicinal plants, (3) Studies on the vegetation of some areas of Transylvania and (4) The study of new species introduced in culture in local conditions: medicinal, food, technical and with phytoremediation potential.

Chapter 2.1. "Research on the biotechnology of the production of virus-free hop cuttings" presents the results obtained from the studies on the optimization of the biotechnology for the production of virus-free hop cuttings, which would allow their commercial production in order to rehabilitate hop plantations. Romania, which is in an

advanced stage of virus infection. Thus, combining the advantages of different methods of obtaining well-known hop cuttings, taking into account the material possibilities existing in our country, within the research program "Hop culture" was developed an original method of obtaining devirozed hop cuttings, which takes place in several stages and which finally allows to obtain high quality cuttings.

Chapter 2.2. "Aspects regarding the morphology, phenology and phytopharmaceutical properties of some medicinal plants" addresses the biology, cultivation technology and quality of cultivated medicinal plants. The approaches in this field have been multiple and have mainly focused on studies on seed germination, optimization of crop substrate and seedling production, the effect of growth hormones on rooting and growth rate, aspects of biology and growth potential. production depending on the time of harvest; comparative studies on the quality of the biological plant product in cultivated species compared to those harvested from spontaneous flora.

Plant cultivation is part of the conservation of biodiversity, while improving the quality and availability of medicinal plants for sale. Cultivation offers a number of advantages over stocks harvested from spontaneous flora for the production of herbal medicines. These include high reliability, proper botanical identification, sustainable supply, pre-arranged volume and purchase price agreements, quality control, certification and homogeneity of the raw material. Successful cultivation of medicinal plants depends on various biotic and abiotic factors that can modulate the composition of secondary metabolites and essential oils. There also seems to be a preference for organic or nature-based agriculture without the application of chemical fertilizers and pesticides.

Chapter 2.3. "Studies on the vegetation of some areas of Transylvania" aims to inventory and describe the flora or plant associations in different areas of Transylvania, in order to give a complete picture of the vegetation and behavior of some species to the main ecological factors, in order to capitalize on them. efficient and rational, as well as for the conservation of species of interest. The chapter focuses on highlighting botanical aspects within the perimeter of Suatu Nature Reserves, nature conservation and biodiversity in Cluj County, by inventorying habitats in the county and surrounding areas (Alba and Bihor counties), the study of biological, ecological and agricultural of the flora of the meadows from the Aghireșu area, Cluj and the mapping of the wood species that compose the arboretum from the USAMV Cluj-Napoca campus.

Chapter 2.4. "Study of new species introduced into culture in local conditions: medicinal, food, technical and with phytoremediation potential" focused on highlighting

the peculiarities of growth and development (phenology) of new species, for introduction into culture, to expand the range of cultivated plants. For this purpose, medicinal, food, technical and phytoremediation plants less known in Romania were identified and tracked. These studies have provided valuable insights into the behavior, phenotypic, growth and development potential of these species in local conditions, which allow growers to select the most appropriate options. At the same time, some recommendations have been made that could guarantee the predictability of cultivation with greater reliability, and farmers can make informed choices.

The activity of scientific and journalistic research after the completion of the doctoral thesis materialized in: 4 specialized books at national publishing houses, 6 didactic manuals and 8 guides of practical works. I have published as the main author / correspondent or co-author of 14 ISI / ISI proceeding articles and 52 BDI articles. I am co-author of 3 patents in the field of hop and medicinal plant research.