# S U M M A R Y

Of the doctoral thesis entitled:

# RESEARCH ON THE STUDY OF SOME METHODS OF BIOLOGICAL CONTROL IN ORDER TO LIMIT THE SPREAD OF SOME DISEASES AND PESTS IN SOME HORTICULTURAL SPECIES

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The term "Organic Agriculture" is protected and assigned to our country by the EU to define this agricultural system. The same name is also used in other countries such as Denmark, Lithuania, Poland, Slovenia and Sweden.

The term "organic farming" is used in countries such as Cyprus, Ireland, Malta and the United Kingdom or in other member states such as Austria, Belgium, Bulgaria, France, Greece, Italy, Luxembourg, the Netherlands and Portugal.

The processes and procedures for obtaining organic products are subject to strict production rules and principles, starting with the quality of the land should up to the finished organic product.

The process of transition from traditional agriculture to organic agriculture does not happen suddenly, but involves a transition period called "turning point", which farmers can use to adapt the farm to the rules required to obtain an organic product. Agricultural structures, farms or entire plots must be transformed in accordance with national and international ecological standards. The research in this paper carried out over a period of three years 2020-2023 aimed at optimizing the ecological technology of growing vegetables in protected spaces versus conventional technology in order to limit the spread of some diseases and pests, and a statistical study on the economic efficiency of some horticultural crops, more precisely tomatoes, eggplants and peppers, both in conventional and organic systems.

In this article, the results of the research conducted are divided into two parts and consist of seven parts.

The first part of the work consists of three chapters as follows:

**Chapter I** presents the history of ecological agriculture

**Chapter II** refers to the biological control of pests, where the main control methods, the types of biological control agents, the negative results of biological control, methods of using plants in the biological control of diseases and pests, preparations used for the protection of plants against pests, plant insecticides, plant fungicides, repellent plants.

In **Chapter III**, growing conditions and climatic factors are described.

In the second part of the work, six chapters are included, presenting the objectives of the research, and here the ecological conditions of the area where the research was located, the material and working methods, results of the research are presented.

**Chapter IV** states the purpose and objectives of the research, this chapter being carried out in order to establish the technological elements of an effective vegetable culture in a conventional system versus an ecological system, establishing a major objective and five other synthetic objectives in order to achieve the major objective, namely the validation of a ecological

technologies that would be able to maximize the concerns of limiting the spread of some diseases and pests in some horticultural species cultivated in greenhouses and solariums.

In **Chapter V** it is structured in two sub-chapters. The researches were carried out in Bucharest at the Faculty of Horticulture in Bucharest, U.S.A.M.V.B., in the virology laboratory of the Research Center for the Studies of the Quality of Food and Horticultural Products (HORTINVEST Research Center) and in Dâmbovița county in protected areas, Ferma Olaru. The experimental variants were established, presenting the culture system for three vegetable species, pepper, eggplant and tomato, both in the conventional system and in the ecological system.

Also, work methods and techniques are presented, the limitation method, the experimental method regarding the influence of different types of water on the germination of seeds in some vegetable species, the experimental method regarding the particularities of growth in some horticultural species subject to particular conditions of light, water, air and soil proposed for ecological agriculture, the method of studying the economic efficiency of an ecological culture technology, the method of DNA isolation.

For the experimental model the influence of different types of water, the seeds were put to germinate cucumber, bean and tomato seeds, and they were irrigated with four types of water: control - tap water, ozonated water, filtered water (alkaline pH9), magnetized water, following their germination. Thus magnetized water was the best from the point of view of seed germination.

**Chapter VI** presents the results and discussions regarding: the pathogenic material taken for the experiment of limiting the propagation of some pathogenic agents, limiting the manifestations of some diseases by applying biological treatments based on colloidal silver and essential oils, the influence of different types of water on the germination of some plant seeds vegetables, the growth characteristics of some horticultural species subjected to ecological conditions of light, water, air and soil, DNA isolation of tomato, pepper and eggplant genotypes from both culture systems (conventional versus ecological), the economic efficiency of an ecological culture (tomatoes, eggplant and peppers).

It was found that the plants develop very well under the orange light spectrum, irrigated with magnetized water + magnetized fertilizer, and fertilized with magnetic fertilizer (cabbage, peppers), red light, irrigated with ozonated water and fertilized with magnetic fertilizer (eggplant), yellow light spectrum, irrigated with ozonated water and fertilized with magnetic fertilizer (tomatoes). Genomic DNA quantification results showed higher concentrations of genomic DNA in organically grown tomato, pepper and eggplant compared to conventionally grown plants in all three species examined. The results regarding the economic edition showed the fact that in the ecological system the expenses are higher compared to those in the conventional system, but they are strictly related to the acidification of the seedlings.

**Chapter VII** presents results and general conclusions regarding the results presented in the previous chapter.