



**UNIVERSITY OF AGRICULTURAL
SCIENCES AND VETERINARY MEDICINE
"ION IONESCU DE LA BRAD" DIN IASI**

DOMAIN: HORTICULTURE

HABILITATION THESIS

-SUMMARY-

**RESEARCH FOCUSED ON BIOLOGICAL, ECOLOGICAL AND
TECHNOLOGICAL CHARACTERISTICS FOR MAIN FRUIT
TREE SPECIES TO IMPROVE TECHNOLOGY OF
CULTIVATION AND PRODUCTION FRUIT TREE
PLANTING MATERIAL**

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SUMMARY

Habilitation thesis presents the results of research obtained after the PhD thesis entitled "Contributions for the establishment cherry assortment of N-E of Moldova" sustained in 1999 at ASAS Bucharest, under the coordination of Prof. Ioan MILI IU PhD

The work is divided into four research directions, regarding on fruit tree species: apple, cherry, sour cherry, walnut and apricot.

Chapter I, entitled "Researches on biological, environmental and technological particularities on apple" presents: the influence of the soil maintenance, fertilization, pruning and fruit quality on production at some apple varieties; effectiveness of newer herbicides in weed control; apple pest and disease control.

The productive potential of intensive apple orchards is influenced by several factors like: variety, age, fruits buds degree differentiation, fruit settings, crown volume and climatic conditions of the previous year and the harvesting year.

Soil management in orchards is largely dependent by cultivation system, land orography, climatic conditions, soil physical characteristics and technical equipment. The results obtained on apple fruit production using two versions of soil management emphasize the superiority of the black field compared with grassing land. Foliar fertilization is a complementary measure, and that has the advantages because the fertilizing products go much faster in metabolic circuit of the plant, root fertilization compared with cannot be replaced. Following observations and measurements made with Fertifol fertilizer applied in concentrations of 0.2 and 0.3% has a positive influence on the growth of fruit from all three varieties with yield increases from 5.7 to 12.4 t / Ha.

The results regarding the influence of pruning system on the level of fruit, emphasize superiority variant V1 ($\frac{1}{4}$ cut the annual branches) for Idared variety where they obtained 49.3 t / ha compared to 42.9 t / ha at V3 (thinning and cut the annual branches to 3-4 buds) and 40.1 t / ha at V2.

Phytopsanitary protection of orchards is applied depending on the biological reserve of the main pathogens and pests, and sometimes depending on the availability of plant protection.

Weather conditions in the period under study were very favourable for pests and diseases evolution. 12 phytosanitary treatments were applied, including two before flowering.

For weed control in studied apple orchard were used following herbicides: Roundup, Touchdown, Sanglypho and which have the same active ingredient (glyphosate), but with another trade name by origin.

Chapter II entitled "Research on biological, environmental and technological particularities for sour and sweet cherries" presented the results achieved in improving the assortment of national and sour cherry.

Current concerns related to improving the sour cherry assortment, is focussed on varieties which have a high content of anthocyanin pigments and exclude the use of synthetic dyes in processing (Amy lezzoni 1995). Besides differences in the color of flesh and juice, sour cherry varieties differ: sugar content, fruit size, firmness of flesh, kernel size and shape (lezzoni, A. F., 1986, Brown, S. K., 1988).

It was decided the most appropriate assortment for Iasi district, one of the most favorable for growing cherries, with a conveyor that would ensure the fruits for fresh consumption, especially for providing raw materials for export and industrialization.

The objective of breeding program in Romania for cherry assortment was to obtain new varieties of fruit, corresponding to the general objectives such as different ripening fruit periods, to the existing culture; reduced vigor, self fertility, high environmental adaptability, disease resistance, etc.).

Thus, national cherry assortment suffered a permanent regeneration through continuous selection of local biotypes valuable and not least by introducing new varieties abroad and new Romanian creations obtained in Bistrita, Pitesti and Iasi.

In the Project CEEEX no. 37/2006 "Assessment of potential agrobiologic of new varieties and hybrids of sweet cherry to improve the assortment nationally to exploit the natural resources in sustainable agriculture" SCDP Iasi has completed the documentation for the approval of four varieties of cherry: Lucia, Oana, Radu, George ; I.C.D.P. Pitesti M r cineni has evaluated the validity term, according to the methodology UPOV, elite hybrid 53/49 HC to complete information package and S.C.D.P. Bistrita recorded BN elites cherry 3 / 29-6 (proposed name: IVONA) and -BN 2 / 158-6 (proposed name: GLORIA) in network ISTIS for review and approval as new varieties.

Also, it has developed documentation for approval of a selection of cherry CRISTIRIN.

In Chapter III, "Research on biological, environmental and technological walnut particularities" presents some partial results on walnut grafting in protected areas and the approval of a selection of walnut (variety named GRADINAR)

Unlike other tree species, walnut grafting technology is a sequence that requires special conditions to achieve good results.

Environmental conditions during and after grafting have a very important role in callus formation in walnut (Avanzato and Atef, 1997)

The objective of this study is to highlight the possibility of walnut grafting under shelter (greenhouses).

Chapter IV. "Research on biological and ecological apricot particularities show things about the favorability of the Iasi area for this species.

Iasi district is for apricot tree the northern limit of culture, the limiting factor for expanding the culture of this species is the winter hardiness of varieties.

Good placement for orchards, depending on the area, the thermal regime and careful selection of resistant varieties to frost and winter may diminish production losses.

Professional and scientific developments and plans for development of teaching and research are presented in a synthesis that completes this sentence.

At the end of the paper was submitted a few references associated with the first two sections.