SCIENTIFIC OPINION

On Ph.D. thesis about acquire the educational and scientific degree "**Doctor**" in the scope of higher education 6. Agricultural sciences and veterinary medicine. Professional field 6.1. Crop science, scientific specialty Fruit growing

Author of the thesis: George Ivanov Govedarov, PhD student of self-study in Department of Fruit growing at the Agricultural University-Plovdiv

Title of the thesis: „Opportunities for accelerated production of pear and quince trees on various quince rootstocks"

Prepared by: Prof. Dr. Nikolay Dimitrov Panayotov, Agricultural University-Plovdiv, Higher Education Area 6. Agricultural Sciences and Veterinary Medicine, Professional Scope 6.1. Crop Science, Scientific Speciality Vegetable Production, Appointed as a member of the Scientific Jury with Ordinance No. РД 16-1374/ 13.12.2019 of the Rector of the Agricultural University-Plovdiv

1. The relevance of the problem.

Orchard planting materials are produced primarily through grafting by different methods. In practice, the T-section of a sleeping bud (eyes) is used in practice, which is associated with two years of growing the plants in a nursery. Accelerating up the production of planting material and improving its efficiency and quality is one of the main tasks in modern scientific studies, and at the same time, it is very well accepted in practice.

Quince and pear are one of the main fruit crops, not only for our country. The fruits are characterized by very good taste and high biological and nutritional value. The economic efficiency of their cultivation is high. One of the promising ways to produce planting material faster is by grafting on an awake bud in the spring. Considering the above, the research in this dissertation work is extremely actuality in point of view of the possibility of accelerating the production and obtaining better-grafted material. At the same time, the economic impact of the studies has been achieved.

2. Purpose, tasks, hypotheses, and methods of research.

The purpose of this thesis is to identify opportunities to accelerate the process of pear and quince tree production, using the ability of quince rootstocks for early spring restoration of juice movement. To achieve this goal, four well-formulated tasks are set out that are fully responsive to the research scope and the goal. The hypothesis on which the goals are built and the research is carried out is to produce quality quince and pear trees in a one-year-old nursery based on the early restoration of the juice movement on quince rootstocks.

The methodology has been developed very well and allows the fulfillment of the set goals and tasks. The experiments were carried out in a nursery for vegetative rootstock in the experimental field of the Department of Fruit Growing at the Agricultural University-Plovdiv. The studies during growth and dormancy have

been performed, and indicators related to growth dynamics to earthing up, indicators to describe rootstocks, morphological studies. The experiments are carried out on the different combinations of rootstocks from the quince rootstocks Provence quince, MA, BA 29 and B 12 with a scion of pear varieties - Popska pear and Pas Krasan, and for quince - Assenitsa, Triumph, Hemus. The experiments were conducted in two directions - the traditional technology, with a duration of two years and accelerated, studied in this dissertation method for one year. Indicators involved are essential and they help to accomplish the tasks set and to achieve the intended purpose. A detailed meteorological characteristic has been prepared, comparing with the biological requirements of the species.

3. Visualization and presentation of the results obtained.

The dissertation work is very well illustrated. It contains 113 standard typescript pages, 25 figures and 29 tables. The data obtained from the study are presented in a very appropriate form, tabular or graphical, depending on the study direction and the attribute they describe. They are easy to perceive and give a complete picture of the trends that emerge from the results.

4. Discussion of the results and the literature used.

The literature review is comprehensive, covering sources related to the topic of the study. The included titles are 139, of which 36 are in Cyrillic and the rest are in Latin. Literary sources, most of which are contemporary, are systematized and very well interpreted according to the research guidelines, which helped the PhD student to outline important theoretical and practical trends in the development of research in this field. A considerable number of features are covered and quite many indicators are examined. The characteristics of the morphological features of the rootstocks and the scion were investigated in their entirety. Considerable attention is paid to rooting and the characteristics of the rootstocks, which is of great importance for this kind of scientific study. In addition to the detailed analyzes were conducted in dynamics also in the nursery. An important place is also given to the growth peculiarities of the individual varieties on the different rootstocks. The results obtained are subjected to analysis of variance. The conduct of the experiments, the analysis and the interpretation of the results are the work of the PhD student himself, which demonstrates very good theoretical knowledge and the ability to conduct independent experimental work. Depending on the specifics of the study, 14 conclusions are formulated into groups, and the section concludes with a summarize.

5. Contributions of the thesis.

The mentioned contributions present the positive aspects of the thesis. They are based on established results and formulated conclusions. I fully accept the presented contributions. They can be divided into two groups, the more important being:

Origin scientific contributions

The quince has been founded as the most appropriate method for producing

fitted for grafting on awake bud cuttings and timing for its preparation.

The high agricultural technology is an excellent prerequisite for the production of standard pear and quince trees in an annual nursery.

Scientific and applied contributions

The most appropriate planting period and rootstocks thickness for best the interception, as well as the period of defoliation, are indicated.

6. Critical notes and questions.

Considering the very well-designed dissertation work I have no significant remarks. I recommend the PhD student to distribute the research method to producers, as well as maintain his authorship on it through patenting. It would be better if the purpose and tasks are presented in a more appropriate section. About this work I can ask the following questions:

1. Except for the tested rootstocks, can other quince rootstocks be used in applying this method?

2. Does the PhD student consider this accelerated method suitable also for other fruit species?

7. Published articles and citations.

In connection with his thesis, G. Govedarov has published three articles in renowned scientific journals. No citations are given. The abstract presented objectively reflects the structure and content of the dissertation work.

CONCLUSION:

Based on the studied and applied from PhD student various methods of research, the correctly performed experiments, the summaries and the conclusions made, the dissertation submitted meets the requirements of the a Law for the development of the academic staff in the Republic of Bulgaria and the Agricultural University Rules for its application, which gives me a reason to evaluate it POSITIVE.

I allow myself to offer the honorable Scientific Jury also to vote positively and to award George Ivanov Govedarov the educational and scientific degree of "Doctor" in the scientific specialty Frit Growing

Date: 17.01.2020 г.
Plovdiv

PREPARE THE OPINION:

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(Prof. Dr. Nikolay Panayotov)