



## REVIEW

On dissertation work for obtaining an educational and scientific degree "Doctor" in the field of higher education: 6. Agricultural sciences and veterinary medicine, professional direction: 6.1 Plant breeding, scientific specialty: Viticulture

**Dissertation author:** assistant Anelia Svetoslavova Popova, doctoral student of self-preparation at Department of Viticulture and Horticulture at the Faculty of Viticulture and fruit growing at Agricultural University – Plovdiv.

**Dissertation topic:** "Comparative study of vegetative and reproductive manifestations of some Syrah variety clones"

**Reviewer:** Prof. Slavcho Georgiev Pandeliev, DSc, academician at the Bulgarian Academy of Sciences and Arts – Sofia. Field of higher education: 6. Agricultural sciences and veterinary medicine, professional direction: 6.1 Plant breeding, scientific specialty: Viticulture

### 1. Brief biographical information about assistant Anelia Popova

Assistant Anelia Popova was born on 21.08.1975 in town of Karlovo. She completed her secondary education in 1994 at the Professional High School of Architecture, Construction and Geodesy "Arch. Kamen Petkov" in the city of Plovdiv. From 1994 to 2000, she obtained a Master's qualification - agronomist engineer, specialty Agricultural engineering of tropical and subtropical agriculture at AU - Plovdiv. From 2001 to 2003, she defended her Master's degree in International Economic Relations, Paisii Hilendarski University of Plovdiv. From 2005 to 2010, she worked as an associate in the Marketing Department of BTC-Sofia. During the period 2011-2019, she worked as a chief expert in the Department of Viticulture. From 16.09.2019 until now, she works as an assistant in Department of Viticulture and Horticulture. Conducts exercises and practices in the disciplines "Fundamentals of Viticulture" and "Technologies in Viticulture" with students from full-time and part-time education, Bachelor.

On 02.06.2023, she was awarded with the right of defense for the educational and scientific degree "Doctor" in the field of Higher education 6. Agricultural sciences and veterinary medicine, Professional direction: 6.1. Horticulture, scientific specialty Viticulture. From 07.10.2022 is enrolled in the doctoral course of an independent form of study.

During the period 2020 - 2023, she took part in two scientific projects at AU - Plovdiv. She is the supervisor of 11 graduates, two of whom successfully defended.

## **2. Relevance of the problem**

During the last 20 years in Bulgaria, some wine and table grape varieties have been introduced in different country regions by analogy, without conducting research on their reaction under specific growing conditions. Thus, some varieties fall into unsuitable conditions and they cannot express their biological potential. This also happens with some Syrah variety clones as well. There is great clonal diversity in the Syrah variety. Sixteen clones enter the production of many countries around the world. In the Educational and experimental vineyard of the Agricultural University, the clones Syrah -100, 174, 470 and 524 were planted for experimental purposes. Syrah 524 was isolated later than the first 3 clones. They are planted in an area typical for red wine varieties – the northern slopes of the Rhodopes. In this sense, I find that the topic is correctly chosen. The information about the reaction of these clones along the so-called Rhodope collar is very important, because the Rhodope collar covers a large area from town of September to Svilengrad town with an altitude of 160 to 300 m above sea level. The information obtained would be useful for the introduction of valuable Syrah clones to fall into in the most suitable habitat for them.

## **3. Aims, tasks and methods of the research**

The research purpose is precisely formulated, namely: to study the reaction of the Syrah clones - 100, 174, 470 and 524 grown under specific soil and climatic conditions along the Rhodope collar, an area suitable for the development of red wine varieties. The complex research was carried out by setting 9 tasks with which it is searched the necessary information to assess the extent to which the biological potential of these Syrah clones has been realized in the conditions of the Northern slopes of the Rhodopes at an altitude of about 200 m. The tasks cover the soil-climatic conditions, the photosynthetic activity of the leaves, the fertility of the vines, the dynamics of grape ripening, the technological features of grape vinification, as well as a large number of indicators used to assess the character and organoleptic profile of the wines.

## **4. Level of the research work. Transparency and presentation of the obtained results**

The methodical plan for the development of the dissertation work has been carefully prepared. Four clones with specific biological characteristics are included – strength of shoot growth, bud fertility, dynamics of grape ripening, tendency to accumulate sugars, etc. This of course makes the PhD student's task more difficult. A large number of indicators also are included. Modern research methods are used. In addition to the classical methods for researching the indicators of fertility, vines yield and grape quality, modern methods such as:

Analyzes for determination of trans-resveratrol in the accredited testing laboratory at the National Institute for Study of Wine, Spirits and Essential Oils Ltd. - Sofia. The analyzes of C13 - Norisoprenoids /derivatives of carotenoids/ of which were studied /  $\beta$ -damascenone,  $\beta$ -ionone and  $\alpha$ -ionone in the laboratory of the Institute Jules Guyot, University of Burgundy, France.

The experimental data were processed using the dispersion analysis method using the SPSS program, which not only achieves the reliability of the information obtained, but also enriches the knowledge of the doctoral student.

A mode of comparison and search for the best in clone performances has been successfully implemented. The analyzes are done critically, and the differences between the studied variants were established with Duncan's monorank test /LSD – 0.05 /5%/.

## **5. Results discussion and literature used.**

The dissertation is well designed. The experimental material is well illustrated and arranged in tables, graphs and figures.

It includes: introduction, literature review, aim and tasks, material and research methods. The obtained results cover detailed climatic characteristics, soil characteristics, phenological observations, research on the physiological state of the vines. Indicators that characterize the vines fertility, yield and grape quality. The necessary space is devoted to the shoots growth dynamics, the mass of mature growth and the biochemical composition of vine canes.

The results obtained for the physico-chemical and organoleptic analysis of the wines are very well presented. The results of the analyzes of C13 - norisoprenoids, trans-resveratrol and anthocyanins in wines have been thoroughly reviewed.

Much space is devoted to the literature review. On 42 pages, the problem state in the world is presented in detail. This is necessary for the researcher to ensure a good start in the research work.



A huge volume of scientific information was collected, which allowed the doctoral student to draw conclusions and recommendations useful for practice. The dissertation contains 174 pages, including 28 tables, 62 figures, 3 appendices and 257 literary sources, of which 245 are in Latin and 12 in Cyrillic. The good knowledge of the doctoral student and the precise interpretation of literary sources are impressive.

Despite the fact that the methodological plan is very large, extensive and comprehensive, the analysis of the obtained results is competently presented and the exposition is compact in a refined scientific style. This is commendable for a young scientist.

## **6. Contributions of the dissertation work**

- I accept as original the contribution of the doctoral student, which established for the first time the reaction of the Syrah variety, clones 100, 174, 470 and 524 grown in the conditions of the Rhodope collar, high-stemmed with a short pruning system and loading with 12 buds per vine. Syrah 100 and 524 clones have shown their biological potential to the greatest extent. With this contribution, the cultivation technology of the Syrah 100 and 524 clones is being improved.

- I find original and obtained results for the content of C13 - norisopriocene /  $\beta$ -damascenone,  $\beta$ -ionone and  $\alpha$ -ionone, which changes significantly depending on the clone biology and the cultivation technology. This explains why the wines obtained from grapes on the Rhodope collar are distinguished by a rich aromatic complex.

- For practice, it is important to note when normalizing the yield from Syrah – 524, 100, wines with more coloring matter and a higher content of trans-resveratrol are obtained, which makes them suitable raw materials for the production of anti-oncological and other drugs diseases.

- The results obtained for the wines quality produced from the grapes grown during summer pruning operations, such as pruning, reducing the bunch numbers, etc., have an applied nature. This is done in addition to the technology maps in their development.

- Based on a large number of indicators and convincing results from tasting evaluations of the wines, I find it correct to give a high rating to Syrah wines - 100, which have the most intense dense and sparkling color, well structured, light and harmonious.

Ultimately, the resulting wines are suitable for combating cardiovascular and neurodegenerative diseases in aging.

## **7. Critical notes and recommendations**

I do not make notes and recommendations on the dissertation work, because I did this during its formation and the author took them into account during its final editing.

## **8. Published articles and citations**

There is one scientific article related to the dissertation / Popova, A. /2021/. Influence of the biochemical composition of vine canes on cold resistance of buds in different "Syrah" clones. Scientific Papers Series B. Horticulture, 65 /1/, 328 - 333

and one paper was presented at an International Scientific Symposium in Romania.

The reference to the scientific and applied contributions is true and reflects the results actually obtained. The abstract is well structured and presents the dissertation work concisely and faithfully.

## **Conclusion**

Based on the results obtained from in-depth complex studies on the reaction of the Syrah clones - 100, 174, 470 and 524 under the specific soil-climatic conditions for the Rhodope collar region and the original contributions made and those of a confirmatory nature, I consider, they meet the requirements of the National Legislation and the Regulations of the Agricultural University-Plovdiv, which gives me reason to evaluate it POSITIVELY.

I take the liberty of proposing to the members of the Honorable Scientific Jury to award the educational and scientific degree "Doctor" to assistant Anelia Svetoslavova Popova.

Date: 16/06/2023  
Plovdiv

Reviewer:  .....  
/Acad. prof. Sl. Pandeliev, DSc/