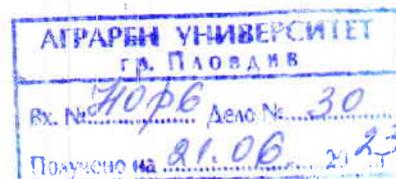


## POSITION



Considering the dissertation for obtaining a PhD degree based on the area of higher education, classified as code - 6. Agricultural Sciences and Veterinary Medicine, professional direction - 6.1 Plant Production, scientific specialty - Viticulture.

**Author of the dissertation:** Aneliya Svetoslavova Popova, a doctoral student in independent training at the Department of Viticulture and Fruit growing at the Agricultural University - Plovdiv.

**Topic of the dissertation:** "Comparative Study of Vegetative and Reproductive Manifestations of Some Clones of the Syrah Variety."

**Reviewed by:** Associated Professor PhD Galya Stoeva Dobrevska, Department of Viticulture and Fruit Growing at the Agricultural University, Plovdiv; area of higher education, classified as code 6. Agricultural sciences and veterinary medicine, professional field code 6.1. Plant production, scientific specialty "Fruit Growing", appointed as a member of the scientific jury based on issued order No. RD-16-660/07.06.2023.

### 1. Problem overview:

Viticulture is one of the most important sub-sectors of agriculture, which involves the cultivation of significant grape varieties, the adoption of increasingly advanced technologies for their cultivation, and the need to study their biology. Additionally, successful grape and wine producers traditionally pay great attention to the micro-zoning of these grape varieties, which is closely related to their biological potential.

In this context, the red wine variety Syrah, also known as Shiraz, is of great interest to viticulturists and winemakers. This variety has French origins and is widely cultivated in France, occupying approximately 64,000 ha or 34% of the global scale. It is also found in almost all other European countries with favorable soil and climatic conditions for red wine production. Its global cultivation area is nearly 200,000 ha, and there is a tendency for further expansion in the near future.

Currently, significant changes in the varietal composition of Syrah have led to improved economic qualities. The introduction of new clones has contributed to these improvements.

In modern conditions, there is overproduction and intensified competition in the wine industry. However, significant problems still exist regarding wine varieties with good quality characteristics, suitable cultivation technologies, and precise micro-zoning for them. Therefore, the comparative study of vegetative and reproductive manifestations of some clones of the red wine variety Syrah, as presented in this dissertation, is highly relevant and significant. The results of this study provide valuable economic information about specific clones that are influenced by factors affecting changes in the viticulture and winemaking industry.

### 2. Objective, Tasks, Hypotheses, and Research Methods.

The objective of the doctoral research is clearly and precisely formulated, focusing on the investigation of the vegetative and reproductive manifestations of

clones with numbers 100, 174, 470, and 524 of the Syrah variety, grafted on SO4 rootstock and cultivated in the area of Brestnik village. The research also includes an overall evaluation of the wines obtained, aiming to improve the vine cultivation and grape processing technology.

There are nine specific tasks outlined, all subordinated to the main objective of the research. These tasks include investigations on:

- Establishing the climatic and soil conditions in the area of the Rhodope Mountains and their impact on grape yield and quality.
- Examining the characteristics of the major phenological stages during the vine's growth cycle.
- Studying indicators characterizing the actual fertility of the vines.
- Determining the photosynthetic activity of the leaf mass.
- Assessing the ripening dynamics of the grapes.
- Quantitative changes in grape yield and quality.
- Technological peculiarities during grape vinification through comprehensive physicochemical analysis.
- Investigating the content of C13-norisoprenoids ( $\beta$ -damascone,  $\alpha$  and  $\beta$ -ionone), which contribute to the typical aromatic components of wines.
- Conducting sensory evaluation of the experimental wines to identify the organoleptic profile characteristics, depending on the clone.

To properly achieve the stated objective and tasks, a well-planned methodology section has been provided. A significant amount of work has been carried out, including precisely designed laboratory experiments. A large number of indicators have been monitored and analyzed using carefully selected modern techniques and technologies.

### **3. Clarity and presentation of the obtained results.**

The dissertation consists of 174 typewritten pages and is very well-structured into 10 sections. The standard volume and balance between the different parts have been maintained. The obtained results have been summarized and are presented in a detailed and visual manner through the use of 28 tables, 62 figures, and an index of abbreviations.

### **4. Discussion of results and literature used.**

The literature review is comprehensive and presents the current state of the problem. It is based on 257 literature sources, including 245 in Latin script and 12 in Cyrillic. Scientific publications related to climate as a primary factor and challenge for grape and wine production, soil as an indicator of grape and wine yield and quality, vineyard terroir as an integral part of the authentic character of grapes and wine, clone selection, grapevine phenology and physiology, selective thinning of grape clusters as a technological practice affecting grape composition, yield, quality, and wine characteristics have been analyzed.

The presented literature review, as well as the conclusions drawn from it, demonstrate the researcher's solid theoretical preparation regarding the issues directly related to the subject of the dissertation.

The discussion of the results is in-depth and is based on precise analyses and their interpretation. A well-structured scientific style has been used in presenting and discussing the obtained results. Specific statements and conclusions have been formulated based on the analysis of the results, which are summarized in 13 main findings reflecting the achievement of the dissertation's objectives and tasks.

## **5. Contributions of the doctoral thesis.**

Based on the conducted experimental activities and the analysis of the obtained results, the doctoral thesis has formulated 3 scientific contributions and 2 applied contributions.

### **Scientific contributions:**

1. For the first time, the reaction of clones 100, 174, 470, and 524 of the Syrah variety, grown in the conditions of the Rhodope Mountains, high-cordon trained with short pruning and a vine load of 12 winter eyes, has been established. Clones Syrah 100 and 524 have demonstrated their biological potential to the greatest extent.

2. The content of C13-Norisoprenoids ( $\beta$ -damascenone,  $\alpha$ -ionone, and  $\beta$ -ionone) in the wines varies significantly depending on the clone's biology and cultivation practices. Wines produced under the soil and climatic conditions of the Rhodope Mountains exhibit a rich aromatic profile.

3. Wines made from Syrah clone 524, with regulated yield, stand out with the highest organoleptic qualities - high total and non-reducing extract content, anthocyanins content, total phenolic compounds, greater color intensity, aroma, finesse, body, harmony, taste length, and fruitiness.

### **Applied contributions:**

1. Wines produced from Syrah 524 and Syrah 100 with regulated yield exhibit the highest content of coloring matter and trans-resveratrol, making them suitable for the pharmaceutical industry in the production of drugs for cardiovascular, cancer, neurodegenerative, and other diseases.

2. The quality of wines obtained from clones 100, 174, 470, and 524 of the Syrah variety is significantly higher when summer pruning operations such as shoot thinning and regulation of cluster numbers are applied. This necessitates determining the optimal number of grape clusters as a mandatory practice.

## **6. Critical remarks and questions.**

I have no questions for the doctoral candidate.

## **7. Published articles and citations.**

One independent publication directly related to the doctoral thesis has been included. The score, according to the requirements of the National Academic Information Center, is 30.0, which meets the minimum scientometric requirements for

obtaining the educational and scientific degree of "Doctor" according to the Law on the Development of the Academic Staff.

No citations are mentioned.

The presented abstract objectively reflects the structure and content of the dissertation.

**CONCLUSION:**

Based on all evidence provided by the PhD student, including the various research methods, correctly performed experiments, summaries and conclusions, I believe that the presented dissertation meets all requirements of LDASRB and the Code of Agricultural University for its implementation, which allows me to evaluate it **POSITIVE**.

I would also like to propose to the esteemed Scientific Committee to vote positively and award Aneliya Svetoslavova Popova the educational and scientific degree of "Doctor" in the scientific specialty of Viticulture.

Date: 21.06.2023

FORMAL OPINION PREPARED BY: .....

(Assoc. prof. PhD Galya Dobrevska)

