



AGPI
AGENCIA DE STAT PENTRU
PROPRIETATEA INTELLECTUALA
A REPUBLICII MOLDOVA

PROCESS OF PRODUCING SPARKLING WINE WITH ADVANCED FOAM INDICES

Dr. Hab, prof. univ. Taran Nicolae, dr. Morari Boris, Nemțeanu Silvia, dr. Soldatenco Olga, dr. Ponomariova Irina.

I.P. Scientific Practical Institute of Horticulture and Food Technologies, Republic of Moldova (SPIHFT)

INFOINVENT



ABSTRACT

This scientific paper discusses an innovative method for producing sparkling wine in the wine industry. The process involves using raw material wines from newly selected grape varieties, such as Floricica, Viorica, and Riton, in a specific ratio with local variety Plăvaie. The expedition liquor is prepared using Plăvaie grape variety wine, which results in improved foaming and pearling indices. This method offers a novel approach to enhancing the quality of sparkling wines by utilizing a combination of grape varieties.

KEYWORDS

Sparkling wines, foaming indices, new grape variety, aromatic compounds,

INTRODUCTION

The wine industry in the Republic of Moldova is increasingly focusing on utilizing native and newly selected grape varieties to produce high-quality sparkling wines. Of notable interest are new selection grape varieties Floricica, Viorica, and Riton. Additionally, the native Plăvaie grape variety stands out due to its suitability for temperate climates, making it an ideal choice for sparkling wine production. Viorica, a grape resulting from crossbreeding, lends sparkling wines their unique basil and white flower aromas. Riton, a recently selected variety, shows great potential for producing sparkling wines with advanced foaming properties. Floricica, which is resistant to frost and diseases, presents opportunities for enhancing foam in sparkling wines. This strategic effort aims to address the growing demand for top-quality sparkling wines and has the potential to boost the wine industry in the Republic of Moldova, particularly within European markets.

MATERIALS AND METHODS

Research was conducted during the period 2020-2023 in the laboratory of "Biotechnologies and Wine Microbiology" at the Scientific and Practical Institute of Horticulture and Food Technologies (ISPHTA), using dry white wines from grape varieties Viorica, Floricica, Riton and Plăvaie. These grapes were processed under microvinification conditions, following the technological for sparkling wine production. These research activities included the evaluation of foam-related indices of the wines, such as foam capacity, using the "Mosalux" installation from France. Additionally, chromatographic analyses were conducted to determine the aromatic composition of the wines.

RESULTS

Studies have revealed that wines produced from Plăvaie grape variety wine, known for its low ethanol content (9-11% vol.) and high titratable acid content (8.00-10.00 g/dm³), is the most suitable choice to complement wines produced in base of Floricica, Viorica, or Riton grape varieties for sparkling wines production.

The process outlined in this invention involves utilizing base wines derived from the new selection grape variety Floricica, Viorica and Riton and the indigenous variety Plăvaie in proportions of (60-80):(40-20)% respectively.

In the case of sparkling wines produced from the Floricica grape variety (as demonstrated in Figures 1 and 2), the incorporation of 30% of Plăvaie base wine into the blend results in advanced foaming and effervescence properties. It possesses a pale-light coloration and boasts a multifaceted and varietal aroma with hints of tropical nuances. Furthermore, it offers a clean, full, harmonious, delicate, and floral flavor profile, with a thorough saturation of carbon dioxide.

When it comes to the production of sparkling wines using the Viorica grape variety (as illustrated in Figures 3 and 4), introducing 30% of Plăvaie base wine into the blend yields heightened foaming and effervescence characteristics and imparts a pale-light hue. Additionally, it has enhanced the equilibrium of volatile compounds, consequently leading to an elevated organoleptic rating characterized by a crisp, intricate aroma featuring subtle basil notes, a pure, floral, concentrated, balanced flavor profile, and thorough saturation with

carbon dioxide. Concerning the production of sparkling wines using the Riton grape variety, as demonstrated in Figures 5 and 6, the inclusion of 40% Plăvaie base wine in the blend leads to heightened foaming and effervescence properties, resulting in a light, pale color. This addition also contributes to improved stability in the balance of volatile compounds, ultimately resulting in a superior organoleptic assessment. This evaluation is marked by a fresh, clean, and subtle aroma with faint floral undertones, delivering a light, delicate, and refreshing flavor that is well-saturated with carbon dioxide. It's important to note that even though the Riton grape variety initially exhibits lower foaming indices when compared to base wines produced from Floricica and Viorica varieties, the higher proportion of Plăvaie in the blend effectively brings about similar foaming index values.

Also it is advisable to utilize expedition liquor prepared using wine derived from the indigenous Plăvaie grape variety, as it can potentially enhance foaming and pearling indices.

The production of sparkling wines with advanced foaming and organoleptic characteristics from indigenous grape varieties enables the diversification of sparkling wine offerings in the local market and strengthens competitiveness in the international arena.

Patent application No.

Floricica: s2022 0044 / 07.12.2022 (MD)
Viorica: s2022 0045 / 07.12.2022 (MD)
Riton: s2022 0046 / 07.12.2022 (MD)

CONTACT

Soltan ANA
Apartenență: SPIHFT
E-mail: condreaana@yandex.ru
Telefon: +37379372683
Website: www.ISPHTA.md

NOTE: The research is conducted as part of the project titled "The industrial-scale utilization of the oenological potential of newly selected and native grape varieties and clones for the production of competitive wine products on international markets" under the State program "20.80009.5107.05."

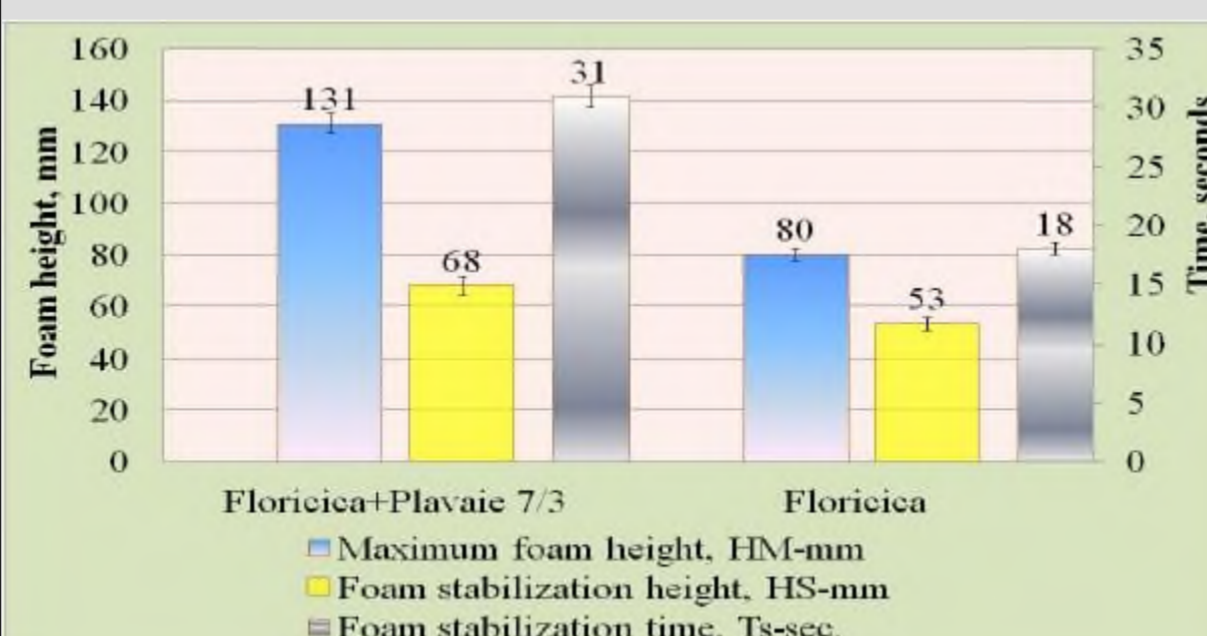


Figure 1. Foam indices in sparkling wines produced in base of Floricica grape variety

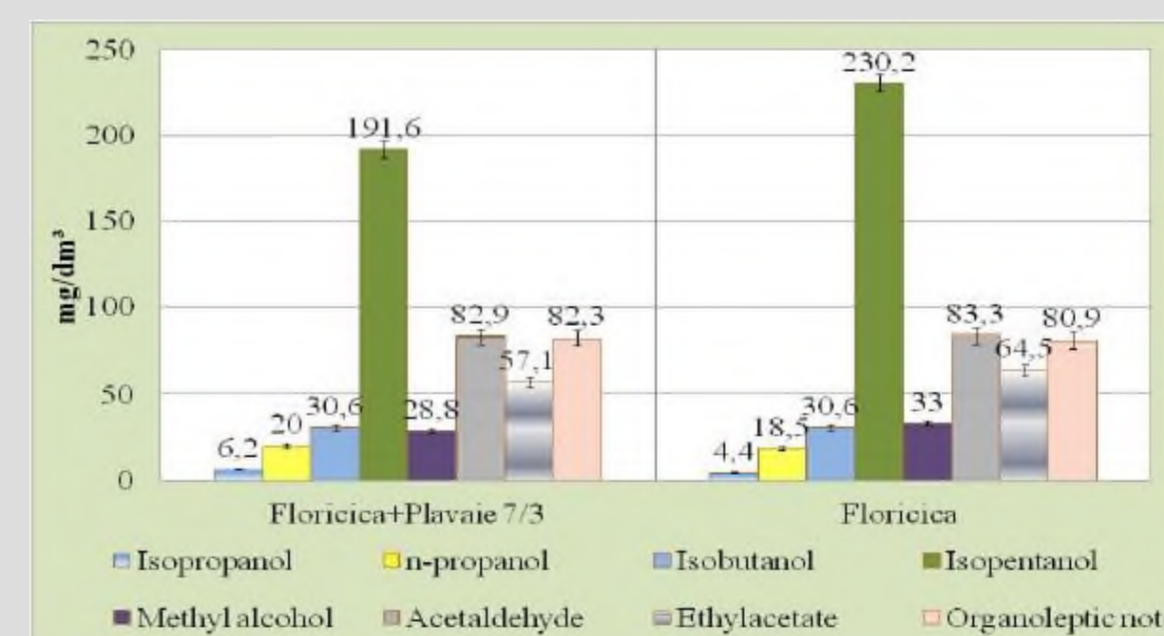


Figure 2. Aromatic compounds in sparkling wines produced in base of Floricica grape variety

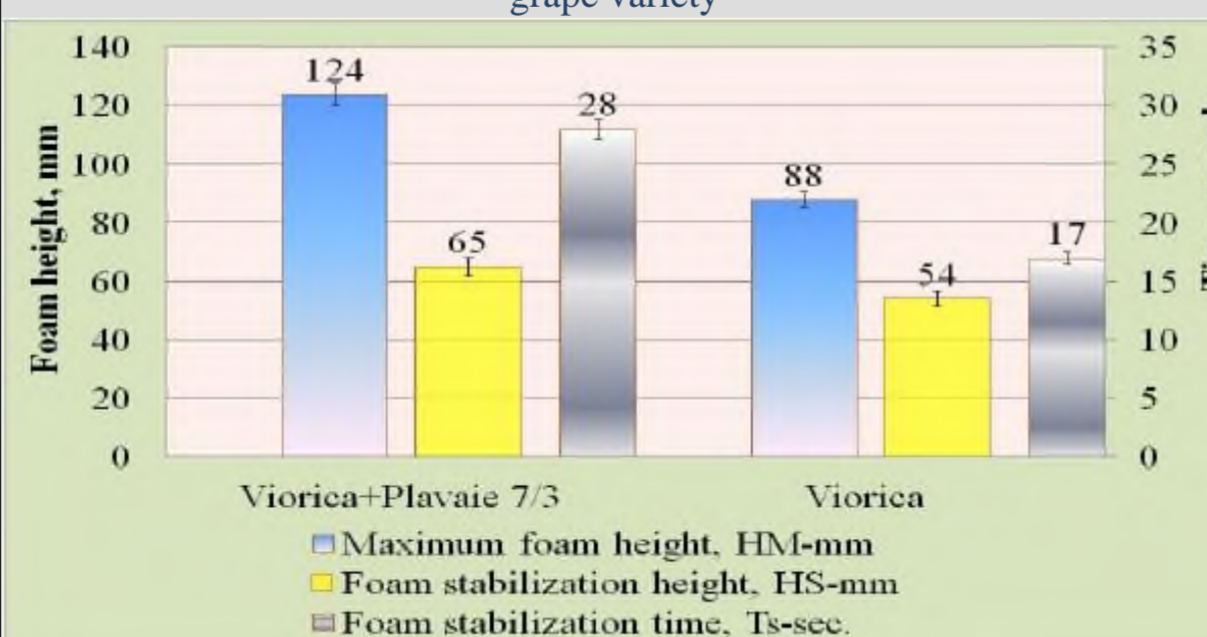


Figure 3. Foam indices in sparkling wines produced in base of Viorica grape variety

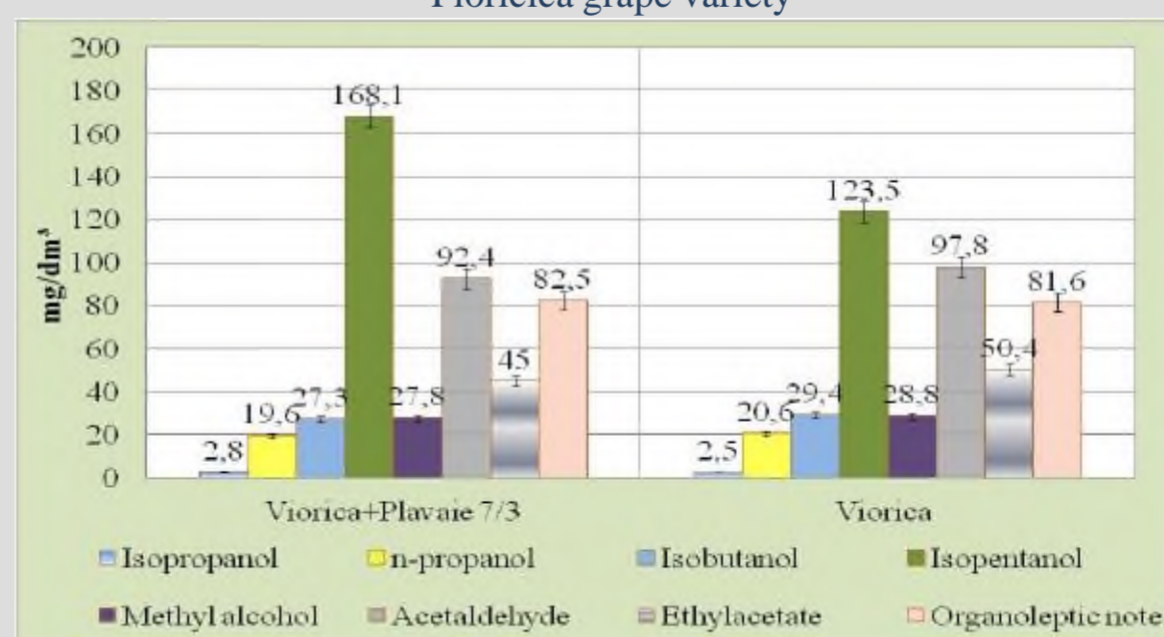


Figure 4. Aromatic compounds in sparkling wines produced in base of Viorica grape variety

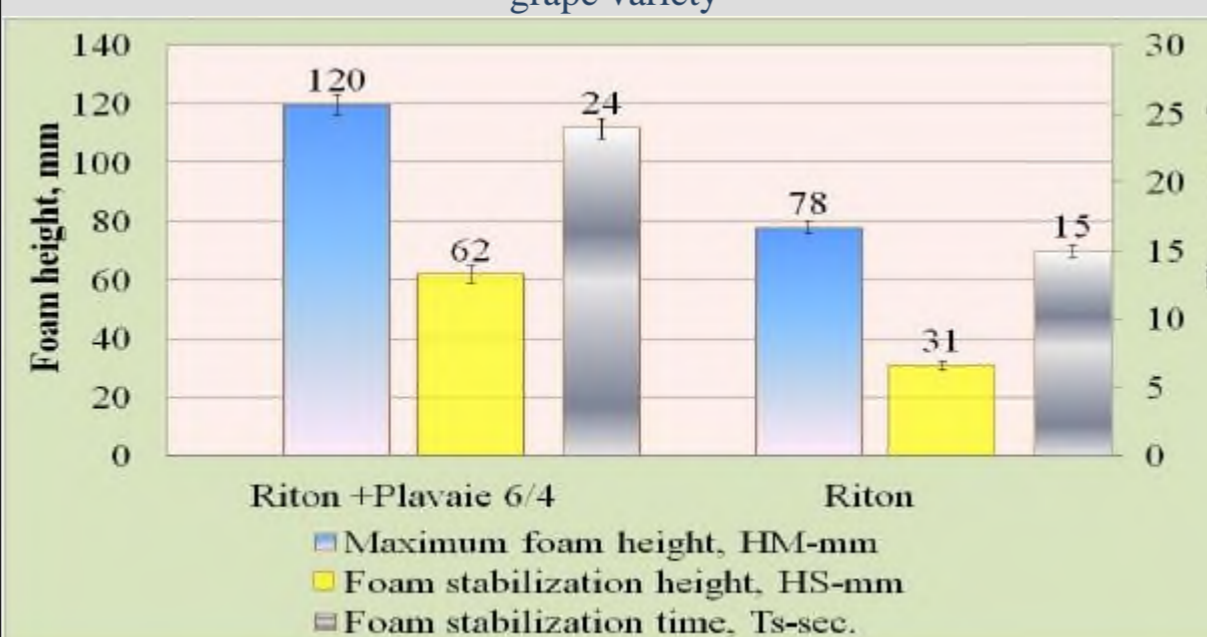


Figure 5. Foam indices in sparkling wines produced in base of Riton grape variety

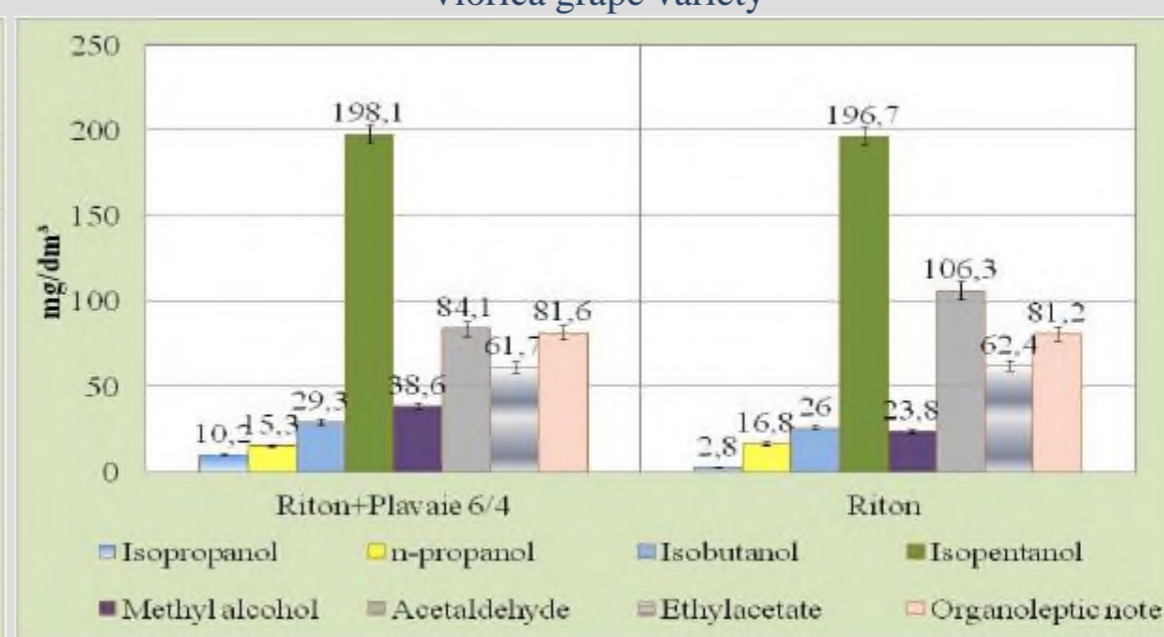


Figure 6. Aromatic compounds in sparkling wines produced in base of Riton grape variety

CONCLUSIONS

Utilizing base wines derived from the indigenous Plăvaie grape variety in proportions ranging from 20% to 40% is highly advantageous when combined with base wines crafted from the newly selected grape varieties Floricica, Viorica, and Riton. This combination facilitates the creation of sparkling wines that exhibit unique organoleptic profiles characteristic of each grape variety, coupled with elevated foaming indices.

Creating sparkling wines using well-balanced blends of Floricica, Viorica, and Riton grape varieties can enhance the competitiveness of sparkling wine produced in the Republic of Moldova, both on local and international markets.