

Implementation Tehniques of the Muscat Ottonel Maceration

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Abstract. This work is a study of the grape harvest in 2010 of the „Muscat Ottonel” variety in the vineyard „Târnavé” and some technological options were studied, in which the behavior of enzymes and yeasts were tested to produce aromatic wines as Muscat type, in order to reflect the behavior of enzyme preparation and the selected yeasts.

Keywords: wine, maceration, Muscat Ottonel, aromatic substances.

INTRODUCTION

The grape variety used for obtaining aromatic wine is „Muscat Ottonel”, which records values of the sugar content exceeding 210 g/L sugars and the acidity exceeding 4g/L H₂SO₄, with a high content of aromatic substances, and productions that can reach 6-8 tons/ha in the vineyard „Târnavé”(Buia, 1977).

The production technology of quality fragrant white wines was developed in order to achieve wines of fine, elegant and competitive types on the European market which have a much more complex aromatic expression besides the fermentation aromas, also including the primary flavours of grapes (Tardea, 2000).

To produce aromatic wines, more complex technological schemes are used, based on the principles of crushing and moderate pressing of grapes obtaining technology yields less than 60-70%; pre-fermented maceration, a rigorous separation of must according to quality; corrections composition of must composition; in the primary phase of winemaking the use of selected yeasts strains and enzyme preparations; the use of moderate doses of sulfur dioxide and bentonite; stopping the process of alcohol fermentation to preserve the sugars in wine (Tardea, 2007).

MATERIALS AND METHODS

Grape harvesting was performed manually in plastic boxes. Grapes were transported and processed in the winery complex.

Grapes were processed following the general technological flow for obtaining aromatic wine, but the focus was on the stage of maceration, performed in classical way both by maceration on beeswax and enzymatic one.

With the types of wines obtained this way, the following physical-chemical analyses were performed: alcohol % vol., complete acidity (g/L tartaric acid), complete acidity (g/L sulphuric acid), volatile acidity (g/L CH₃ COOH), non-reducing sugar (g/L), free SO₂ (mg/L), total SO₂ (mg/L), dry extract (g/L), sensory analysis.

Version V0. witness sample

„Otonel Muscat” grapes were processed following the steps of the general technological flow for getting flavoured white wines. Thus, after the grapes were separated from the bunches, they were crushed and pressed.

Fermentation took place through the work of indigenous yeasts. Wines were drawn, conditioned, filtered and bottled.

Version V1. Classical maceration / on beeswax

Effect –highlighting the typical colour of the variety for white wines;

Crushed grapes underwent 12-hour classical maceration (for extraction of aromatic substances found in skin) and an easy 2-3g sulfitation SO₂ / hl to prevent oxidation of aromatic substances, after that they fermented with yeast in winemaking „Elite Moscato”, at low temperatures of 15 ° C.

Wines were drawn, conditioned, filtered and bottled.

Version V2. Enzymatic maceration

Effect- demolition of cell walls by the fragmentation of chains of polysaccharides hastens maceration, increases the efficiency in must, shortens the time of pressing and favours colour extraction.

The action of enzyme preparations for maceration takes place from the inside to the outside of grapes (Bellu, 1960).

Maceration with enzymes was carried out using commercial enzyme products OE Z Skin in a dose of 2 g/hl. There were also used specific yeasts of aromatic varieties Elite Moscato. *Saccharomyces cerevisiae* – is a ferment that is able to respect, characterize and enhance the character of typical Muscat variety suitable for aromatic varieties in a dose of 20 g/hl (Lepadatu, 1965). Must treated this way with enzymes was then pressed with a pneumatic press, and then past in tanks to complete alcoholic fermentation at a controlled temperature, with yeasts used as shown above.

After fermentation, the wines were drawn, conditioned, filtered and bottled.

RESULTS AND DISCUSSION

Physical- chemical analysis has the advantage of being objective and of giving us criteria that can be expressed numerically, while methods of sensorial evaluation are subjective, therefore, based on criteria that are not controlled in all cases and under all conditions (Matran,1960).

In terms of 2010 in „Târnavé” vineyard there were obtained aromatic dry wine with alcoholic strength exceeding 12.0% vol., and total acidity over 6 g / l tartaric acid.

The wines are specific to the variety, with freshness and fruitiness, their analysis at the end of alcoholic fermentation shows a good trend to wine DOC-CMD.

Wines- Version 0 produced dry wines with 4 g /L non -reducing sugar; it did not exceed the level of 12.4 vol. % alcohol, with well-outlined vineyard features, discreet perfume and fine flavour.

Tab. 1

Evolution of grape maturation of Muscat Ottonel variety in 2010

| Variety | | Date | | | | | | | | | | |
|-----------------------------|---|-------|-------|-------|------|------|-------|-------|-------|-------|-------|-------|
| | | 17.08 | 22.08 | 27.08 | 3.09 | 8.09 | 13.09 | 14.09 | 17.09 | 20.09 | 23.09 | 25.09 |
| Muscat Ottonel Version 0 | Sugars, (g/l) | 110 | 139 | 148 | 156 | 179 | 184 | 198 | 212 | 213 | 215 | 215 |
| | Total acidity, (g/lH ₂ SO ₄) | 13.86 | 10.29 | 8.28 | 7.39 | 6.71 | 6.41 | 5.97 | 5.63 | 5.53 | 5.43 | 5.29 |
| | Mass of 100 grains, (g) | 98 | 104 | 110 | 118 | 129 | 136 | 140 | 143 | 146 | 143 | 140 |
| | Glucoacidimetric index | 7.9 | 13.5 | 17.9 | 21.1 | 26.7 | 28.7 | 33.2 | 37.7 | 38.5 | 39.6 | 40.6 |
| Muscat Ottonel Version 1 | Sugars (g / l) | 92 | 119 | 134 | 158 | 169 | 178 | 202 | 209 | 210 | 210 | 212 |
| | Total acidity, (g/lH ₂ SO ₄) | 14.5 | 11.02 | 8.86 | 7.49 | 6.9 | 6.6 | 6.1 | 5.8 | 5.68 | 5.58 | 5.34 |
| | Mass of 100 grains, (g) | 84 | 112 | 126 | 132 | 135 | 139 | 143 | 144 | 151 | 150 | 148 |
| | Glucoacidimetric index | 6.3 | 10.8 | 15.1 | 21.1 | 24.5 | 27.0 | 33.1 | 36.0 | 37.0 | 37.6 | 39.7 |
| Muscat Ottonel Version 2 | Sugars, (g/l) | 87 | 107 | 129 | 148 | 162 | 171 | 181 | 189 | 196 | 201 | 210 |
| | Total acidity, (g/lH ₂ SO ₄) | 15.09 | 12.34 | 9.35 | 8.18 | 7.84 | 7.35 | 6.9 | 6.12 | 5.68 | 5.56 | 5.56 |
| | Mass of 100 grains, (g) | 80 | 96 | 112 | 123 | 127 | 130 | 138 | 141 | 148 | 148 | 147 |
| | Glucoacidimetric index | 5.8 | 8.7 | 13.8 | 18.1 | 20.7 | 23.3 | 26.2 | 30.9 | 34.5 | 36.2 | 37.8 |

Tab. 2

The chemical and sensorial composition of wines of Muscat Ottonel of the 2010 harvest at the end of alcoholic fermentation

| Variants | VERSION 0 | VERSION 1 | VERSION 2 | Media |
|---|---|-----------|-----------|-------|
| Alcohol, % vol. | 12.4 | 12.6 | 12.5 | 12.6 |
| Total acidity (g /L tartaric acid) | 6.47 | 6.46 | 6.79 | 6.57 |
| Total acidity, g / L acid sulphuric | 4.23 | 4.22 | 4.44 | 4.30 |
| Volatile acidity (g / L CH ₃ COOH) | 0.32 | 0.3 | 0.32 | 0.31 |
| Reducing sugars, (g / L) | 4.0 | 2 | 2.03 | 2.08 |
| Free SO ₂ (mg /L) | 33 | 37 | 36 | 35.33 |
| Total SO ₂ (mg /L) | 96 | 95 | 92 | 94.33 |
| Dry extract nered.(g/L) | 21 | 21.2 | 21.3 | 21.17 |
| Sensory analysis | „Muscat Ottonel” wines have a pale yellow to golden yellow colour; they are dry, aromatic wines, the finest flavours made with a natural acidity which lends the wine a unique. | | | |

The young wines of „Muscat Ottonel” variety have a pale yellow to golden yellow colour, they are aromatic dry wines.

Pre-fermented maceration is recommended to „Muscat Ottonel” variety (Croitoru, 2003) and the technological process used to extract flavours consists in pre-fermented maceration in tanks (Version 1) for eight hours to extract flavours from the skin of the grapes at temperature 25 ° C.

Version 2 - enzyme preparations for maceration allow acidic and neutral hydrolysis of grape polysaccharides, which are located in the pectocellulosic wall and median slide of grapes cells. When using the enzyme preparation OE Z Skin an increase of efficiency in must rava maximum 10% can be obtained, and the duration of pressing the beeswax can be reduced by 20% to 50%. The wine has a straw yellow to golden yellow colour, strong fragrance and flavour, reminiscent of the ripe grape.

CONCLUSIONS

The opportunity of performing the enzyme treatment in wine industry is justified, as it improves the conduct of certain operations and decisive technological processes for the quality and stability of wine: extraction and de-bourbing of must, clarification, stabilization, filtration and aging of wine; extraction and stabilization of colour, extraction and release of compounds of odorous varietal typical to variety.

The result of Version 1 is the effectiveness of pectolytic enzyme preparations such as OE Z Skin, ensuring temperature of 15 ° C and the duration of maceration with the help of enzymes of 8-10 hours and the optimization of the technology by pressing the must directly, which provides high efficiency in must rava, 60- 65%.

Experiences aim at achieving a uniform and advanced fermentation of sugars, using selected yeasts, to preserve flavour in wine:

- getting a good efficiency in alcohol;
- avoid interruption of fermentation;
- easy sedimentation of yeast.

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