GRAPE MUST CLARIFICATION BY FLOTATION

Maria Cosmina MARGINEAN
Faculty of Agricultural Sciences ,Food Industry and Environment Protection , "Lucian Blaga" University of Sibiu

Ph.D.eng. Maria Cristina TANA
Faculty of Agricultural Sciences, Food Industry and Environment Protection , „Lucian Blaga" University of Sibiu

Ph.D.eng. Ovidiu TITA
Faculty of Agricultural Sciences ,Food Industry and Environment Protection „Lucian Blaga" University of Sibiu

REZUMAT: Obiectivul lucrării este urmărirea procesului de limpezile a mustului de struguri, prin utilizarea flotaţiei şi avantajele şi dezavantajele acestei operaţii.

Cuvinte cheie: vin, clarificare, claritate, sedimente.

ABSTRACT: The objective of the paper follow the process of clarification of grape must, by using the flotation and the advantages and disadvantages of this operation.

Keywords: wine, clarification, flotation, clarity, sediment.

1. INTRODUCTION

Besides the work of care, young wines are subject to technological measures of conditioning, to accelerate their clarification (Tardea C., 2000).

Clarification is the operation which ensures the obtation of supple wine, finer, cleaner taste and more typical, freshness and with flavor variety.

Watch deposit (sedimentation) material suspended in the table grape (skin, seeds), followed by elimination of coarse deposit formed. Clarification naturally is realized after alcoholic fermentation.

Clarification may be spontaneous or provoked.

Spontaneous clarification is slower and is strongly influenced by environmental conditions, especially temperature, wine composition, size of vessel, such as pressing, etc.. It does not lead to reliable results.

Limpidity is one of the qualities that consumers appreciate and demand to wine (O. Tita, 2004). A weak disorder however, he considered a sign of alteration, even if taste qualities remain unchanged. Limpidity is a basic condition of finished wine, evolved. Lack of it indicates age or instability of microbiological, chemical or biochemical (Cotea V, 1982). In determining of limpidity wine are examined transparency, by careful observation on a white background, reflective light. Terms that are used to assess limpidity wine: cloudy, opalescent, frosted, clear, bright, crystalline. Musts and wines have different colors, depending on grape type, variety, age and technology used to prepareClearing methods allow to obtain a long clarity, which does not affect wine quality.

There are several *methods of clearing grape must*:

- flotation
- sulfitation
- centrifugation
- filtering
- clarification by decantation, after 6-12 hours and bentonization
- must clarification by cold settling at 6-10 ° C, after 18-24 hours
- clarification with enzymes.

Flotation is a recently operation and it started to be used often for must grape clarification, because it is rapidly and because it has good results.

2. MATERIALS AND METHODS

Flotation is a process of clearing must grape, which has been a clear separation of sediment from clear liquid, by raising the surface of solid particles from the grape musts mass. We can make the flotation at white and red musts (Banu C., 1999).

"Flotation" word comes from English and means "to float", "to rise to the surface." Clarification by flotation has long been a common method for treating waste water. In recent years used more frequently at must clarification. Today can be used as a process for improving wine quality confirmed.

There is a condition for must grape clarification: flotation should start immediately after pressing. Is not allowed to begin alcoholic fermentation, because

exist an accumulation of CO2, which stoped the flotation.

Flotation installation Kiesel Floatclear

Flotation for clarification of white must - you need the following:

1. receiving hopper
2. smashing
3. press
4. pump must
5. tank for gross must
6. stirrer
7. dosage agents for clarification (gelatin) in the tank with must or continuous flow flotation equipment
8. installation Kiesel Floatclear
9. tank for flotation
10. pump for clear must extraction.

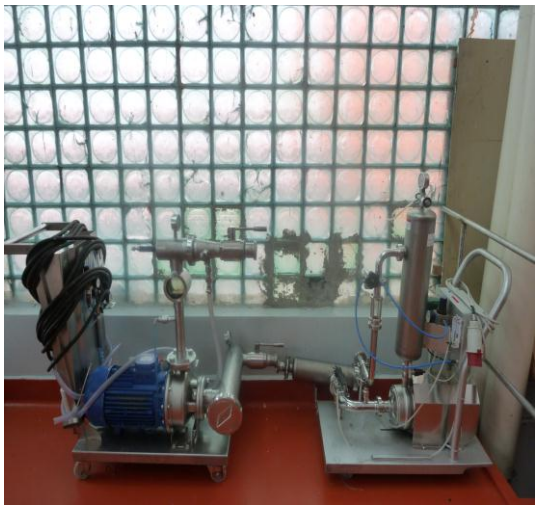
Flotation for clarification of red must – you need the following:

1. receiving hopper
2. smashing
3. pump for must with seeds and skin
4. tank for contact between the two phases
5. press
6. pump for must
7. tank for must
8. stirrer
9. dosage agents for clarification (gelatin)
10. installation Kiesel Floatclear
11. tank for flotation
12. pump for clear must extraction.

Equipment for clarification by flotation

1. flotation installation
2. a must gross tank, incomes from the press for flotation
3. a reservoir for clarified must.

Flotation installation is so designed that it can works without people. Once you have adjusted, you have guaranteed a process without problems.



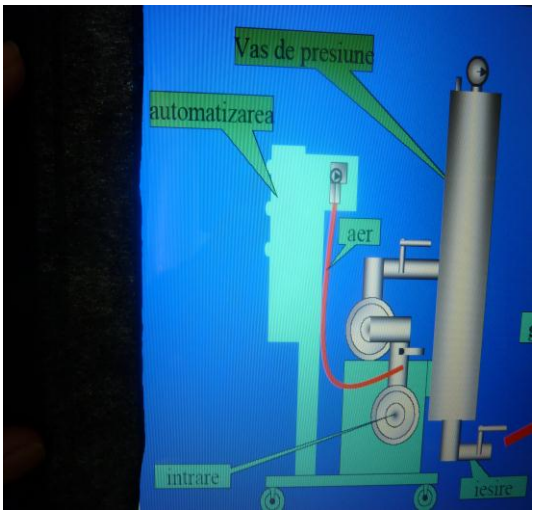


Fig. 1 *Flotation installation*

Procedure

- Using a compressor from flotation device, we must introducing continually air in the must at a 6 bar pressure. The required amount of air can be read on the air flow sensor and is adjusted with a control valve metric fine. No loss of color when air is

used as a flotation gas for clarification of red musts.

- Use gelatin as fining agent in the form of colloidal solution, which has an excellent action for clarification and stabilization, gives fine aromatic, eliminating components that can divert that must characteristics. It is a beige liquid, obtained from macromolecules from collagen derived from pig. Clearing agents ensures that particles in suspension do not fall to the bottom, but to rise to the surface and form a solid floating layer.

The addition of this agents for clarification can be:

a) continuous
b) discontinuous

An adjustable pump with a homogenizer tank is needed for continuous dosing. The gelatin is dissolved and introduced in tank continuous with a pump. The immediate effect on the environment is possible a safe process of separation.

Discontinuous introduction of agents is certainly in flotation process, for the processing of smaller quantities of must, up to 20,000 l / hour.

The recommended dose is 8-40 ml / hl. The dose depending by the type of clarification. It must be dosed by a pump.

The flotation process occurs very quickly, thanks to the immediate reaction of the fining agent and air bubbles introduced. After 60 minutes, clear must, which was subjected to flotation, it pulls on the bottom and placed in another tank. Must fleet flotation is inserted into the tank on the drain pipe or the total drag on stocks, using a pump. Pumps must be adjusted. Flow which is adjusted for installation must be adjusted with ball valves. Transported volume can be read on the meter must. Clear must is extracted only by total drain pipe. The tank can be cleaned with a hose with water and reused for flotation. Have always chosen a suitable size for flotation tank in order to ensure work about an hour. Flotation process is finished after the tanks with must unclarified were emptied. The pumps are close. Also, the air supply. This process is discontinuous.

Consistent layer of sediment dependents by the gelatin dose used and by the stationary period of must grape in the tank.

Clarified must is then pumped through a pump (pump with screens) in another tank, for fermentation.

3. CONCLUSIONS

ADVANTAGES:
• is the most economical and fastest way to clear wine
• must avoid oxidation
• is easy to apply
• no supervision
• flotation installation occupies a small area
• compared with sedimentation, turbidity is reduced by half.

DISADVANTAGES:
• it processed only fresh must
• not suitable for small amounts of must.

ACKNOWLEDGEMENTS

This work was cofinanced from the European Social Fund through Sectoral Operational Programme Human Resources Development 2007-2013, POSDRU/CPP107/DMI 1.5/S/ project number ID 76851"Harmonization of Romanian academic valences to those of European Community.

REFERENCES

[1]. **Banu C**., 1999 - *Food industry engineer manual*, Vol. I and II, Ed. Tehnica, Bucuresti
[2] . **Cotea V., N. Pomohaci Georgi M**., 1982, *Oenology*, Didactic and Pedagogic Publishing House Bucharest
[3]. **O. Tita,** 2004 - *Technologies for wine*, Ed. ULB Sibiu Publisher
[4]. **Tardea C., Gheorghe Sarbu, Evening Angela**, 2000 - *Treaty of wine*, Ed. Ion Ionescu de la Brad, Iaşi
[5]. www.vason.com.