



metodo  **Ganimede®**

*A Great Wine
in a Large Vat!*

**Winemaking experiences
with large-sized **Ganimede®** vats**

(up to 200 tons)



metodo **Ganimede®** *a Great Wine in a Large Vat!*

The conference « **Metodo Ganimede®: a Great Wine in a Large Vat!** », sponsored by Ganimede Srl., was held at Tenuta Quercie Grosse in Francavilla al Mare (Chieti, Abruzzo – Italy) on March 9, 2004. The event offered the chance to present the results obtained with **Ganimede®** technology over the latest years.

Several experiences were illustrated and the conference was attended by numerous experts from Italy and abroad:

CHAIRMAN :

Agronomist

■ MATTEO MARENGHI

Technical advisor for the magazine « **VigneVini** »
(Ed. Il Sole 24 Ore – Edagricole)

SPEAKERS :

■ Prof. Emilio Celotti

University of Udine – Department of Food Science
« **Management of some process variables in red grapes maceration** »
a study published in “Revue des Oenologues” , in France, on January 2004

■ Oenologist Claudio Gori

from « **VinoVigna** », a consulting firm from Vinci (Florence)
« **Experiences of Dynamic Skin Contact** in 2003 harvest at Fattoria dei Barbi with Brunello di Montalcino 2003 and at **Torre dei Gesuiti** and **Cantina Sociale Apulia** in Stornara (Foggia) with Trebbiano and Lambrusco »

■ Cantina Sociale Villamagna (Chieti)

President : Giovannino D’Onofrio
Oenologist : Romeo Taraborelli
« **Technical and economic considerations after a 4-year-long experience with the largest Ganimede® vat worldwide.** »

■ Cantine di Dolianova (Cagliari)

Oenologist : Ercole Iannone
2 **Ganimede®** used in 2003 harvest and 4 more vats ordered for the year 2004.
« **Performance and flexibility of Ganimede® vats: winemaking experiences with white and red varieties.** »

FOREIGN GUESTS

Metodo Ganimede® in Spain

■ Coop. Agr. Santa Quiteira Higuera

(Albacete – Spain)

General Manager : Martin Martínez Navalón

11 **Ganimede®** vats with a capacity of 150 tons of grapes

■ Coop. Agr. SANTA CRUZ (Alpera – Spain)

General Manager : Lorenzo Bueno Ruano

15 **Ganimede®** vats with a capacity of 180 tons of grapes

■ Pedro Sarrión Martínez

Oenologist-consultant with the two wineries above

■ Francisco Luis Granado Falcón

Oenologist-consultant

From Spain, an investment analysis :

« **Why Ganimede® is a profitable investment** »

TASTING SESSION :

1. Vermentino 2003 Cantina Sociale Dolianova **Metodo Ganimede®**
2. Trebbiano di Puglia 2003 Cant. Soc. Apulia **Metodo Ganimede®**
3. Lambrusco di Puglia 2003 Torre dei Gesuiti **Metodo Ganimede®**
4. Lambrusco di Puglia 2003 Torre dei Gesuiti Traditional
5. Brunello di Montalcino Fattoria dei Barbi **Metodo Ganimede®**
6. Montepulciano D’Abruzzo 2003 Cant. Soc. Villamagna **Metodo Ganimede®**
7. Montepulciano D’Abruzzo 2003 Cant. Soc. Villamagna Traditional
8. Garnacha Tintorera 2003 Cant. Coop. Santa Quiteria **Metodo Ganimede®**
9. Garnacha Tintorera 2003 Cant. Coop. Santa Quiteria Traditional

In particular, the speakers insisted on the performance and versatility of large-sized **Ganimede®** vats: i.e. with a capacity of **up to 2150 hectolitres !**



VIGNEVINI n5/2004 - Il Sole24Ore Edagricole, Bologna

Translation of the article issued on the specialized magazine “Vigne e Vini” written by the Agronomist Matteo Marengi

WINERY FERMENTATION

Large size and quality

Large-sized wineries – cooperative wineries on top of all – need to work large amounts of fermenting grapes in a practical, fast and effective way. There are different techniques available and several parameters need to be controlled. Also, the type of fermenter used must be flexible and adapted to different uses.

Maceration and fermentation – these were the key topics discussed at a conference held in Pescara organised by Ganimede, a leading producer of innovative fermenters.

The title was provocative enough: “Large vats, great wines”. The meeting was tailored to the specific needs of the numerous participants, i.e. managers and technical experts mostly from cooperative wineries, which work thousands of hectolitres of wine.

In these wineries, more than elsewhere, a fermenter is often the equipment setting the pace of logic and speed during the hectic operations of harvesting. Moreover, most of the quality of the end wine is owed to the fermenter.

If aggressive and not selective, a fermenting system may compromise the quality of grapes and spoil all the efforts made in the vineyard. If accurately studied but based on vats of limited capacity, fermentation may slow down and even hinder the technological process of grape masses. Product quality and process rationalisation are the key concepts here. And the cost of equipment must also be taken into account.

Professor Emilio Celotti from the University of Udine explained: “Recently, oxygen addition during maceration-fermentation has been reconsidered as an efficient contributor to yeast activation, although the possible effects of oxygen doses on colour stability must not be neglected”.

THE MANAGEMENT OF VARIABLES IN WINEMAKING

The introduction of air in the must-wine with the systems usually found in currently available fermenters (pumping over, gas injection, gas aspiration, etc.) is very empirical and difficult to measure. When air is introduced in a vat, it is difficult to get a uniform distribution over the whole mass of grapes, especially because the gas tends to escape rising in a vertical column.

The professor made this clearer: “Then, when speaking of the addition of a gas in must-wine – particularly if the vat is very large and high – both the way it is introduced in the vat and the way it will circulate inside the vat will have to be maximised. The possibility of causing the pressured gas to interact with a larger part of must-wine for a relatively long time is an important technological solution we have currently available”.

A fermenting system allowing to add external gases too (CO_2 , N_2 , ...) can guarantee an ideal protection of must during pre-fermentation. In particular, free anthocyanins are protected against a dangerous oxidation, especially in the grapes containing large amounts of hydroxylated anthocyanins.

Maceration tests of grapes harvested in 2001 were carried out on homogeneous masses of Merlot and Cabernet grapes from the Piave DOC area in the province of Treviso (Italy) processed in Ganimede vats (see fig.1). The impact of such parameters as temperature, oxygen addition and reduction was assessed. Addition of condensed exogenous tannin was also used as a technological variable. A clear conclusion drawn from these tests is that different wines can be obtained starting from similar grapes, by carefully controlling the parameters above.

The process variables tested here proved useful to understand that different responses come depending on the cultivar, but especially on the combination of different technological factors.

Interesting results have come from the management of high temperatures during the final stages of maceration. An effective protection of free anthocyanins at an early stage of maceration can be obtained with both reduction and tannin addition. Mr Celotti concluded: “It is also interesting to note that in some situations the addition of exogenous tannin produces no results, and besides it is a costly operation. The effects observed towards the end of maceration with relatively high temperatures may be considered as a pre-stabilisation of colour. For this reason, a combined use of oxygen, temperature and possibly exogenous tannin during maceration can be considered as a possible way to accelerate the time needed for wine refining”.



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VIGNEVINI n5/2004 - Il Sole24Ore Edagricole, Bologna

DYNAMIC SKIN CONTACT

Oenologist **Claudio Gori** from “Vino Vigna” (a consulting firm from Vinci, near Florence) reported about his recent experiences with dynamic skin contact of grapes harvested in 2003 carried out at some wineries in Tuscany and Puglia. Mr. Gori, who has been a pioneer of prefermentation cold maceration in Italy, found out that dynamic skin contact in Ganimede vats can be run in an efficient way thanks to some principles linked to the physical properties of gases. In fact, the special diaphragm available in these vats makes room for an ideal application of this method. Basically, pressed grapes are first cooled down (to 8-12°C) and then poured in the vat. Then, by injecting CO₂ in the vat, the mass of marc is mixed thoroughly without using a pump, which will crush the solid parts of must (skins and especially seeds) and therefore irretrievably cause dregs to form and undesired aromas to blend into the juice. Once this phase is completed (24-48 hours), filtered air is injected to create the ideal conditions to boost yeast action. Yeasts are introduced at the bottom of the vat, preferably after the product is warmed. This technique can be used to process both white and red grapes, with tangible sensory results.

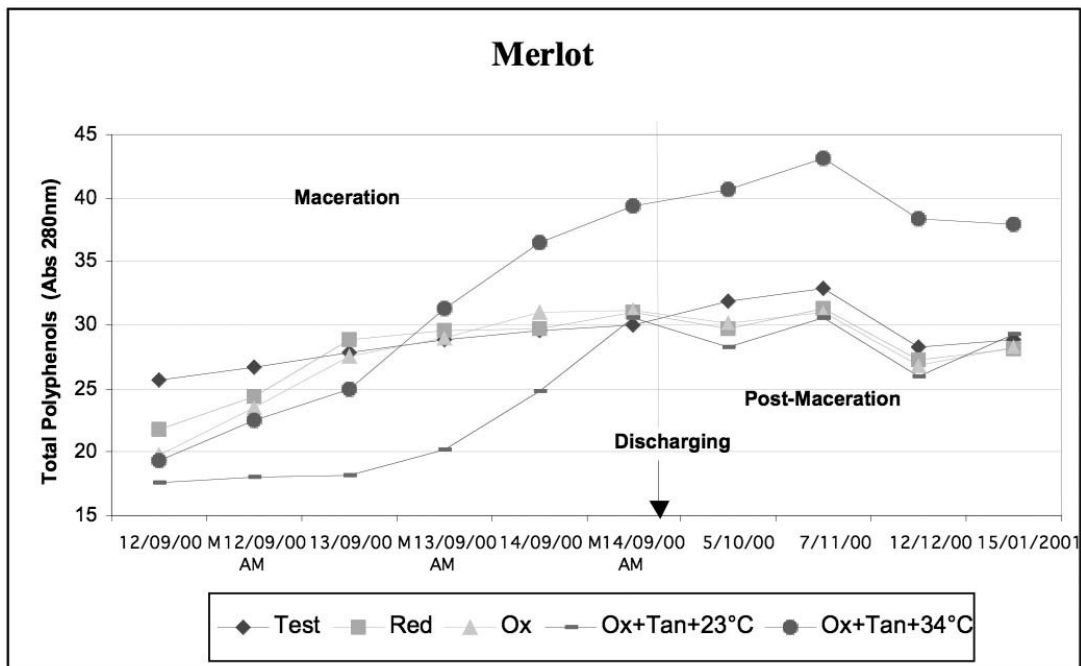
DIFFERENT NEEDS

Other practical experiences were then illustrated by **Ercole Iannone**, oenologist at Cantine di Dolianova (Cagliari), who reported about the processing of white wines (Vermentino) and red wines (Sangiovese) with this technique, and by **Giovannino D’Onofrio** from Cantina Sociale Villamagna, where also two vats of exceptional size are used (with the capacity of 190 tons of grapes).

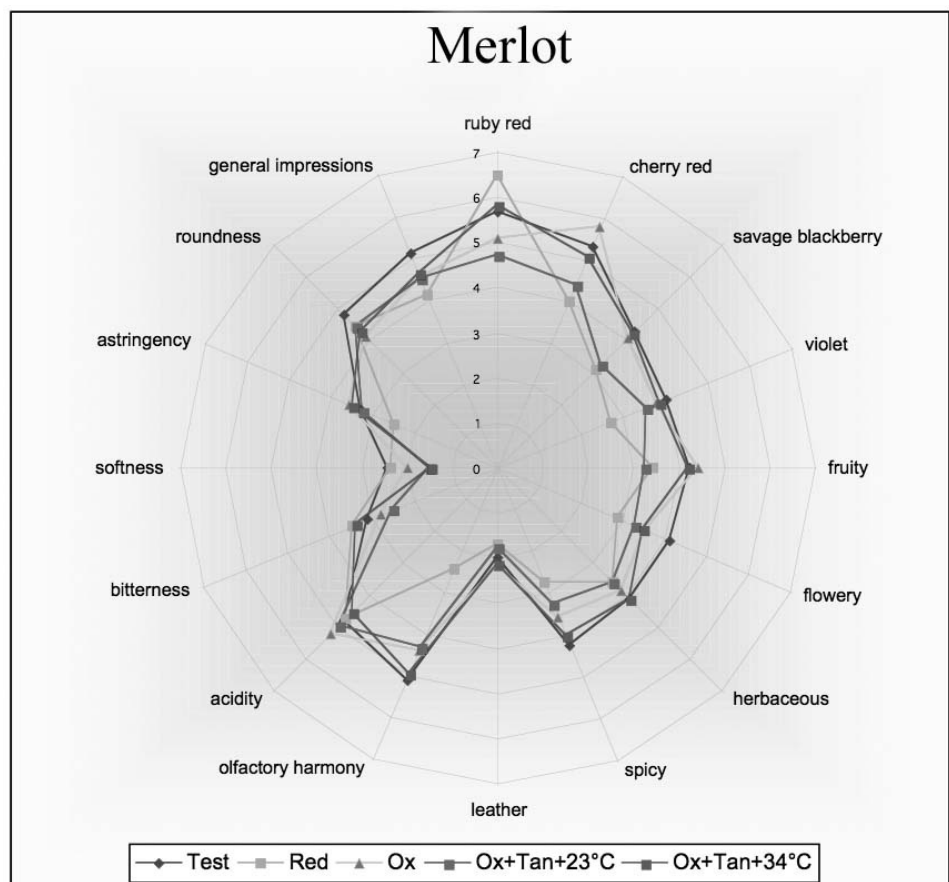
An interesting contribution came from **Martín Martínez Navalón**, the general manager at Coop. Agr. Santa Quiteria Higuera (Albacete, Spain). Mr. Martínez explained: “The main target of the Winery was to process a large amount of grapes per day while reducing manpower and especially to obtain a high quality wine. In practice, the wines should meet better the needs of the market, which now rejects any wine that is harsh, excessively tannic and poorly balanced”.

The only grape variety processed here is Garnacha Tintorera. This variety can give very interesting quality wines, but the presence of too harsh tannins due to a high acid content in the grapes (8 - 10 gr./lt) makes wines that are potentially very rich in colour but inelegant and aggressive. As a consequence, repeated, long and expensive refining operations are needed to correct them.

According to Mr. Martínez, “the option to remove grape seeds, or to isolate them, is a crucial target and the ideal management of the cap in large fermenters can guarantee optimum extraction of colour and of aromas especially”.



Pattern of total polyphenols during and after maceration



Sensory analysis in young wines (intensity of descriptors)



Prof. Emilio Celotti

University of Udine – Department of Food Science

Management of some process variables in red grapes maceration

a study published in “Revue des Oenologues”, in France, on January 2004

The opening speech by prof. Emilio Celotti from the University of Udine was a presentation of a research on Merlot and Cabernet grapes.

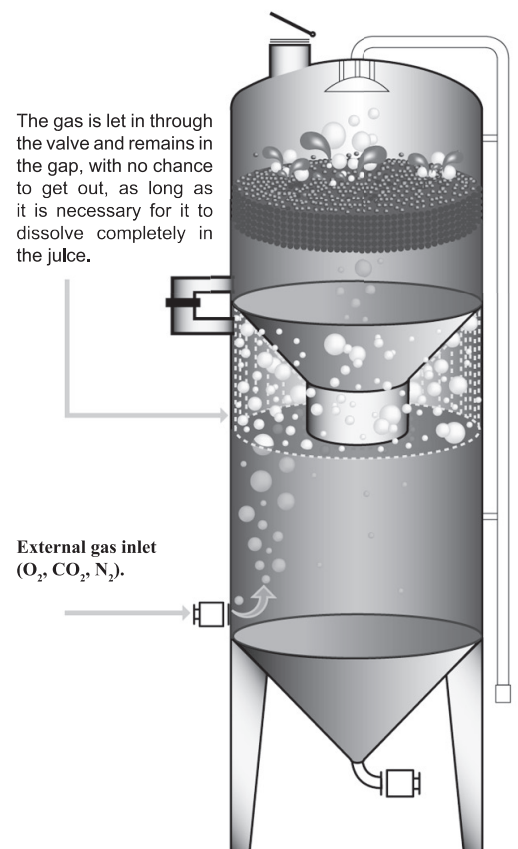
His study, published in the French magazine « **Revue des Oenologues** » on January 2004, was centred on the patterns of extraction during the delicate phase of extraction of colouring substances and tannins from grape skins, depending on the type of raw grapes and the type of wine to be processed.

For a successful addition of gas into must-wine – particularly if the vat is very large and high – both the way it is introduced in the vat and the way it will circulate inside the vat will have to be maximised.

The possibility of causing the pressured gas to interact with a larger part of must-wine for a relatively long time is an important technological solution we have currently available.

A fermenting system allowing to add external gases too (CO_2 , N_2 , ...) can guarantee an ideal protection of must during prefermentation. In particular, free anthocyanins are protected against a dangerous oxidation, especially in the grapes containing large amounts of hydroxylated anthocyanines.

These experiments have shown that end results are directly dependent on a careful management of some variables during the delicate stage of maceration (temperature, time, choice of the most appropriate time for gas injection, etc.). Moreover, it is essential to operate with an efficient and reliable fermenter to manage the process at best.



Within **Ganimede®** vats (see figure above), technical gases (O_2 , CO_2 , N_2) can be controlled carefully and efficiently, because they remain in the gap as long as they need to dissolve completely in the juice. The pressure generated by the masses pushing from above the diaphragm (principle of communicating vessels) encourages the gas to dissolve and bind intimately with the must-wine.



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Dynamic Skin Contact

Oenologist Claudio Gori

from « VinoVigna », a consulting firm from Vinci (Florence)

« Experiences of **Dynamic Skin Contact** in 2003 harvest at Fattoria dei Barbi with Brunello di Montalcino 2003 and at **Torre dei Gesuiti** and **Cantina Sociale Apulia** in Stornara (Foggia) with Trebbiano and Lambrusco »



Centre : Oenologist Claudio Gori
Left : Oenologist Ercole Iannone
Right : Agronomist Matteo Marengi

Oenologist Claudio Gori reported about his experiences with white and red grapes in 2003 harvest. A pioneer of cold prefermentation maceration in Italy, Mr. Gori insisted on the importance of this new application for the quality of wine.

« Prefermentation Cold Maceration using carbon dioxide in liquid form is a method based on the physical property of cold. Cold breaks down the fibres of celluloses and hemicelluloses and the pectins that make up the walls of the skin cells containing the anthocyanins, polyphenols and aromatic compounds. This process will not be performed with a mechanical action, so that tannins (from seeds especially) are not extracted in excess. The low temperature of liquid carbon dioxide **enables a more efficient and easy extraction of anthocyanins, tannins, flavonoids, flavans and aromatic compounds to obtain a wine more rich in colour, structure and aromatic complexity than a wine obtained with traditional maceration.** »

Mr. Gori also maintained it is important to have a reliable fermenter to master this process efficiently.

« **Ganimede®** vats can enhance the effects of this gentle and effective technique, thanks to their characteristic diaphragm, which creates the essential “dynamic” conditions allowing “skin contact” to affect the whole product and not only a part of it. Moreover, with **Metodo Ganimede®** the whole process takes place in a “controlled environment”.

In addition to the typical stirring action and homogenization offered by **Ganimede®** fermenters, the passage of carbon dioxide from liquid to gaseous form will allow the blend of gas and liquid to perform extractive, solvent, antibacterial and antioxidant actions on the whole mass. »



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Cantine di Dolianova (Cagliari)

2 **Ganimede®** used in 2003 harvest and 4 more vats ordered for the year 2004.

Oenologist : Ercole Iannone

Performance and flexibility of **Ganimede®** vats: winemaking experiences with white and red varieties.



Centre : Oenologist Ercole Iannone
Left : Giovannino D'Onofrio,
President of Cantina Sociale Villamagna
Right : Oenologist Claudio Gori

« We have tried prefermentation cold maceration in **Ganimede®** fermenters to process Vermentino grapes harvested in 2003. The results were excellent, because we could manage the process in a simple, efficient and safe way. Moreover, the selective and delicate extraction typically offered by **Metodo Ganimede®** helped to enhance the characteristic aromas of Vermentino grapes.

This wine is so high in quality that it ranks among our top products ! »

Oenologist Iannone continued his speech by illustrating his experiences of fermentation with red grapes in Ganimede vats. He showed some pictures of the cap of marc of Cannonau grapes. « The red grapes we have processed this way were Cannonau, Syrah and Montepulciano.

If we look at this picture and speak of cap of marc, it does not match the idea we have had for several years about the behaviour of marcs during fermentation. As we can see, the action of the bubbles here keeps the berries well split and the stirring action after the bypass is opened guarantees that the product is homogeneous. Not only does this help drawing off, but it also encourages the extraction of anthocyanins and tannins from all the berries, with no violent action involved. Therefore, for red grapes too, the results are excellent. Some people tend to underestimate the importance of the fermenter, but we should remind it is the key link between the work in the vineyard and the work in the winery.

In the light of the considerations above and after the experiences and results we have obtained with **Ganimede®** last year, we have decided to use this method more often and to buy four more vats of this kind.”



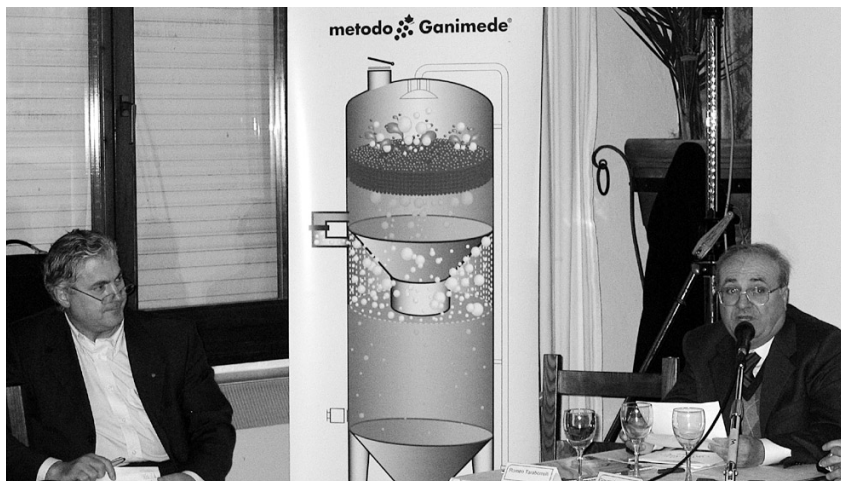
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Cantina Sociale Villamagna (Chieti)

President : Giovannino D'Onofrio

Oenologist : Romeo Taraborrelli

Technical and economic considerations after a 4-year-long experience with the largest **Ganimede® vat worldwide.**



Right : Giovannino D'Onofrio,
President of Cantina Sociale Villamagna
Left : Oenologist Romeo Taraborrelli

Giovannino D'Onofrio, President of Cantina Sociale Villamagna :

« We still hold the record for the largest **Ganimede®** fermenter worldwide, i.e. with a capacity of 2150 hectolitres. We have been making wines with this method for the last four years.

I do not intend to speak here about the performance of this vat, which has already been illustrated by the speaker before me, but I would like to add something : had I not seen it, I would have never thought it possible that a cap of marcs 2,5 metres high and 5 metres wide could be stirred that easily and remain split that well. It is for these characteristics that the wines processed with **Ganimede®** are higher in quality than the wines made in traditional fermenters.

Consider what follows and you will understand better: the amount of grapes processed with **Ganimede® is 15% of our total output; well, this 15% alone has generated 30% of our total profits !**

This means that the wine processed with **Ganimede®** is worth twice the value of a wine produced in a traditional vat. No need to make any further commentaries on this direct consequence of product quality: a well structured though smooth and round wine. »

Oenologist Romeo Taraborrelli, Consultant of Cantina Sociale Villamagna.

A convinced champion of this method, he was the one to suggest the winery to buy the largest **Ganimede®** vats worldwide. In fact, after he tested the extraordinary performances of 2 **Ganimede®** of 1750 hectolitres for two years, he encouraged the winery to buy the fermenters of 2150 hectolitres (190 tons of grapes).

« With **Ganimede®**, the opening of the bypass causes a « wave » of liquid to flood the cap. This efficient and homogeneous stirring action helps me have a well-split cap. In addition to improving the quality, increasing the amount of extracted substances and making drawing off easier, this feature hinders reduction phenomena (which cause wine to smell bad), unlike what usually happens in traditional fermenters, where the cap is very compact and the resulting lumps of seeds and skins encourage reduction. »



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Metodo **Ganimede®** in Spain

Coop. Agr. Santa Quiteira Higuera

(Albaceite – Spain)

General Manager : Martin Martínez Navalón

11 **Ganimede®** vats with a capacity of 150 tons of grapes

Coop. Agr. SANTA CRUZ (Alpera – Spain)

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15 **Ganimede®** vats with a capacity of 180 tons of grapes

Pedro Sarrión Martínez

Oenologist-consultant with the two wineries above

Francisco Luis Granado Falcón

Oenologist-consultant

From Spain, an investment analysis : **Why **Ganimede®** is a profitable investment**



Right: Francisco Luis Granado Falcón
Centre: Martín Martínez Navalón
Left: Pedro Sarrión Martínez

Spanish oenologist Francisco Granado – the Treasurer of the Spanish Federation of Oenologists' Associations – thanked for the visibility granted to his organisation and insisted on the importance of choosing the right fermenter to enhance at best the value of hard work in the vineyard. Also, the impact of the fermenter on the quality of the end product should not be underestimated.

The general manager of Coop. Agr. Santa Quiteira Higuera, Mr. Martin Martínez Navalón, introduced an aspect which had not been discussed yet : the economic assessment of the investment.

« In Spain, wine output is far lower than in Italy, both because of weather conditions in the country and because of different production needs. Both large and small wineries are based on low yields per hectare and are targeted to make high quality wines.

To reach such target, then, we take care to have winemaking equipment that are able to enhance the qualities of raw grapes.

Metodo **Ganimede®** is a technology we have tried and appreciated, because it is tailored to our needs, efficient and user-friendly at the same time.

These considerations, however, are not sufficient. In fact, **Ganimede®** was much more expensive than any traditional vat. The quality of the wines we have produced is positively higher than the wines made with traditional methods, thanks to the homogeneity of the product during maceration. Nonetheless, we needed to make a cost analysis too.

We have calculated the impact of the cost of the fermenter per litre of wine produced.



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Why **Ganimede®** is a profitable investment

The ideal extraction offered by **Ganimede®** allowed to make 5 filling cycles instead of 3 cycles in traditional fermenters.

In the end, the impact of cost per litre is the same for both methods.

Then, for the same investment cost, we have a tool providing a simple, clean and safe management of the whole process and we obtain a wine higher in quality, round and smooth, needing no long refining.

Thanks to these characteristics, the wine produced in 2003 could be sold immediately ! »

	Ganimede®	Tradicional
Useful capacity of vat (litres)	150.000	150.000
Purchase price	€ 78.000,00	€ 47.000,00
Part of amortisation (over 5 years)	€ 15.600,00	€ 9.400,00
Number of filling cycles	5	3
Number of litres processed	750.000	450.000
IMPACT OF COST PER LITRE	€ 0,0208	€ 0,0209

The table above shows a comparison of the part of amortisation (deliberately fixed at a short period of 5 years) and the number of litres processed. This analysis allows to estimate the real costs when assessing the economic value of the investment. As a consequence, the real cost is virtually different from what is derived from a mere evaluation of the purchase price of the two types of fermenters.

These wineries are the pride of **Ganimede srl** :

After testing 3 **Ganimede®** of 1500 hl at Santa Quiteria in 2003, further 8 **Ganimede®** vats have been ordered for this winery and 15 more of 180 tons for Santa Cruz.



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Metodo Ganimede® : tasting session.

The final test : the speakers have brought their wines produced with **Metodo Ganimede®** and some master samples made with traditional methods for a tasting session :

Vermentino 2003 Cantine di Dolianova – Metodo Ganimede®

presented by

Oenologist Ercole Iannone

This wine was processed with prefermentation cold maceration (skin contact) for 7-8 hours. The resulting wine has a higher content in dry extract, far more intense and pleasant scents and aromas than the wines made from the same grapes processed with the traditional system (pressed soon after being harvested).

The quality results were noticeable and the 70,000 bottles produced were included in the TOP range.

Trebbiano di Puglia 2003 Cant. Soc. Apulia – Metodo Ganimede®

presented by

Oenologist Claudio Gori

This Trebbiano di Puglia is made with grapes coming from vineyards with a low yield per hectare.

The grapes were brought down to 5°C soon after destalking and kept at this temperature for 48 hours in **Metodo Ganimede®** vats. Here, they were kept constantly stirred in a natural way. Later, the experimental sample was processed traditionally.

The finished wine: extreme elegance of generous and abundant aromas; the potential of this grape variety, which usually remains hidden, is fully developed; perception on the palate is wider and richer, with great intensity of sweet sugars, although these are not found in the wine composition.

Brunello di Montalcino 2003 Fattoria dei Barbi – Metodo Ganimede®

presented by

Oenologist Claudio Gori

The results obtained with this wine are exceptional, considering the quality of 2003 harvest in Tuscany. The wine shows a firm body, while at the same time being smooth and complex.





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Lambrusco di Puglia 2003 Torre dei Gesuiti

Metodo Ganimede® + Master

presented by

Oenologist Claudio Gori

Montepulciano d'Abruzzo 2003 Cant. Soc. Villamagna

Metodo Ganimede® + Master

presented by

Oenologist Romeo Taraborrelli

Garnacha Tintorera 2003 Cant. Coop. Santa Quiteria

Metodo Ganimede® + Master

presented by

Oenologist Pedro Sarrión Martínez

The three wines were tasted comparatively with their matching wines produced in traditional vats.

The difference between **Ganimede®** wines and their traditional matches is evident.

Ganimede® wines are characterised by an excellent structure, complex and balanced aromas, and noble tannins.

Traditional wines, on the contrary, are apparently richer in polyphenols, but contain more aggressive and inelegant tannins (strongly unbalanced).

The analyses on wine composition, however, prove that the real situation is the reverse : the rate of polyphenols is higher **Ganimede®** wines.

To conclude, **Ganimede®** gives wines with a firmer structure, though harmonic, elegant and balanced soon after they are drawn off. Therefore, these wines need a shorter time for refining as compared to the time needed to correct the wines coming from traditional vats. This implies a sizable cut in costs.

While presenting their wines, the speakers insisted on the chance offered by **Ganimede®** vats to master and control the fermentation process in a simple and fast way, and in a safe and protected environment, guaranteeing much greater efficiency and versatility.

