

## Effects of Regalia on Wine Quality, 2009

### ABSTRACT

A trial was conducted in Metropolitan Region of Santiago of Chile to see the effect of Regalia in wine making process. Two applications were made in TRT plots (12 days before harvest and 1 day before harvest) and UTC was maintained without Regalia applications. The fruit was processed in Catholic University laboratories to obtain wine quality of treatments (UTC and TRT).

No statistical differences were observed between plots, so Regalia does not affect the wine making process.

### MATERIALS AND METHODS

The study was carried out in Metropolitan Region over a commercial production orchard. The variety was Cabernet Sauvignon. The trial design was randomized block for TRT and UTC with 3 replications each treatment and 16 plants per plot to harvest at minimum of 25 Kg per plot.

The details of applications are in the following table.

Treatment	Date	Water/ha	Real Water/ha	Real Dose (l/ha)	Temperature (°C)	Relative Humidity (%)	Wind Speed (km/hr)	Beginning Time	Finish Time
TRT	03-Apr-2009	1,000	1,033.3	10.3	18.5	50	1	17:08	17:18
TRT	14-Apr-2009	1,000	1,055.6	10.6	26	35	0.3	10:34	10:46

25 kg/replication was harvest on April 15, 2009 and transported to laboratory to start with wine make process.

The methodology process was a typical micro vinification. Each replication of 25 kg of fruit were treated to obtain wine broth and placed into containers to have the correct grade of anaerobic ambient. The wine broth was maintained to 25-27 °c and sulfur dioxide (3 g/100 l) with sulfur (at 5%) was added. The initial composition of wine broth at receive was the following.

Treatment	Soluble Solids (%)	Total Acidity in g/L of Sulfuric acid	pH
UTC	24.3	3.8	3.4
TRT	24.6	4.1	3.4

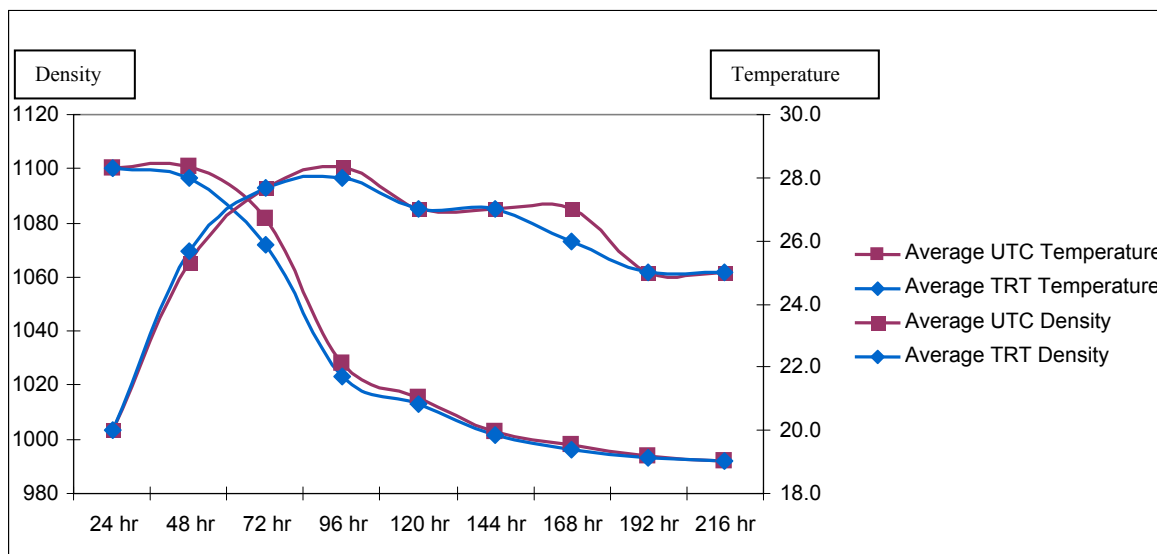
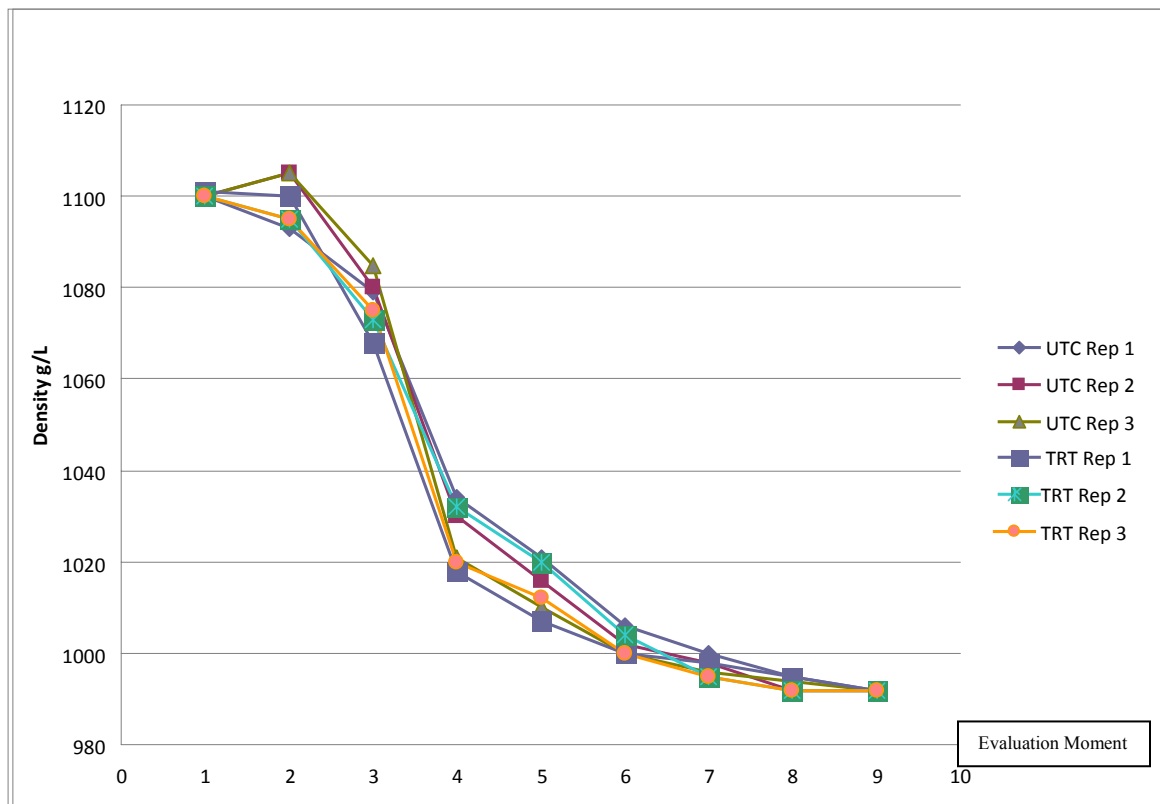
The commercial yeast was *Saccharomyces Cerevisiae* (2056 Rhone Lalvin) hydrated in water at 37 °C and were seeded in dose of 20 g/100 l. With rehydrated water Go-ferm was applied in dose of 30 g/100 l. During the alcoholic fermentation, daily temperature and density were measured. At density of 1060 Go-ferm in dose of 30 g/100 l was added. The alcoholic fermentation was end when the density was constant for 2 consecutive days.

The data obtained of the kinetic fermentation and chemical analysis were evaluated by LSD and Tukey-Kramer test ( $p < 0,005$ ).

## RESULTS AND DISCUSSION

### Kinetic of Alcoholic Fermentation

In the following figures the results of kinetic fermentation of micro vinification are showed.



The treatments had the same temperature sequence, so they are comparables. During the adaptation to fermentation the curves of replications and the average per treatment showed no differences. Regalia had not effect to density.

In the following table the parameters to evaluate the fermentation speed are showed.

Treatment	Adaptation Period (days) Lag Phases	Slope Density /Hr Phase Tumultuous	Days to Density 1000 (g/L)	Total days in Fermentation
UTC	1.7 a*	1.60 a	6.3 a	8.7 a
TRT	1.3a	0.93 a	6.0 a	8.3 a

\*Different letters denote significant differences

Bough treatments had a good and normal fermentative kinetic. The sugar content  $\leq 2.0$  g/l was obtained in 8-9 days. Analyzing the slope of tumultuous phase and the hours to get density of 1,000 g/l and the total fermentation days no significant differences were observed.

Also the densities on each measure date were analyzed and only at 72 hr of fermentation Regalia show faster response.

### Chemical composition of wine obtained

Treatment	Alcoholic grade (% v/v)	pH	Volatile Ac. (g/L <sup>-1</sup> of Acetic Ac.)	Total Ac. (g/L <sup>-1</sup> of sulfuric Ac.)	Residual Sugar (RS) (g/L)	Free SO <sub>2</sub> (mg/L)	Total SO <sub>2</sub> (mg/L)
UTC	13.0 a*	3.62 a	0.35 a	3.27 a	1.8 a	23.7 a	23.7 a
TRT	13.0 a	3.65 a	0.38 a	3.09 a	1.6 a	24.5 a	24.5 a

\*Different letters denote significant differences

The table presents the basic composition on wines where no significant differences were observed. The volatile acidity is under values considered normal. All wines finish the fermentation dries ( $RS \leq 2.0$  g/l) and the alcohol content was according to raw material (24-25° Brix and density of 1,100 g/l).

### Phenolic composition

Treatment	Total Phenol (D280)	Anthocyanins (mg/L)	Color** Intensity	Brightness**
UTC	46,3 a*	427 a	11,8 a	0,65 a
TRT	42,2 a	380 a	9,76 a	0,69 a

\*Different letters denote significant differences

\*\* According to international scales

### **Kinetic of Metabolic Fermentation (MF)**

<b>Treatment</b>	<b>Days of MF</b>	<b>Total Days</b>
UTC Rep 1	71	80
UTC Rep 2	71	80
UTC Rep 3	85	94
TRT Rep 1	71	80
TRT Rep 2	71	80
TRT Rep 3	85	94

No statistical differences were obtained for metabolic fermentation. However two replications take more time to start the MF (one replication of each treatment) but this delay was not consider regarding the effects. The variable that causes this situation is unknown.

### **CONCLUSION**

- Regalia applications does not affect the wine make process**
- The kinetic fermentation was considered normal according to variety. Adequate residual sugar content was obtained in 8-9- days.**
- Under enology point of view there is no differences between treatments.**
- No phytotoxicity was observed in field and laboratory.**



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