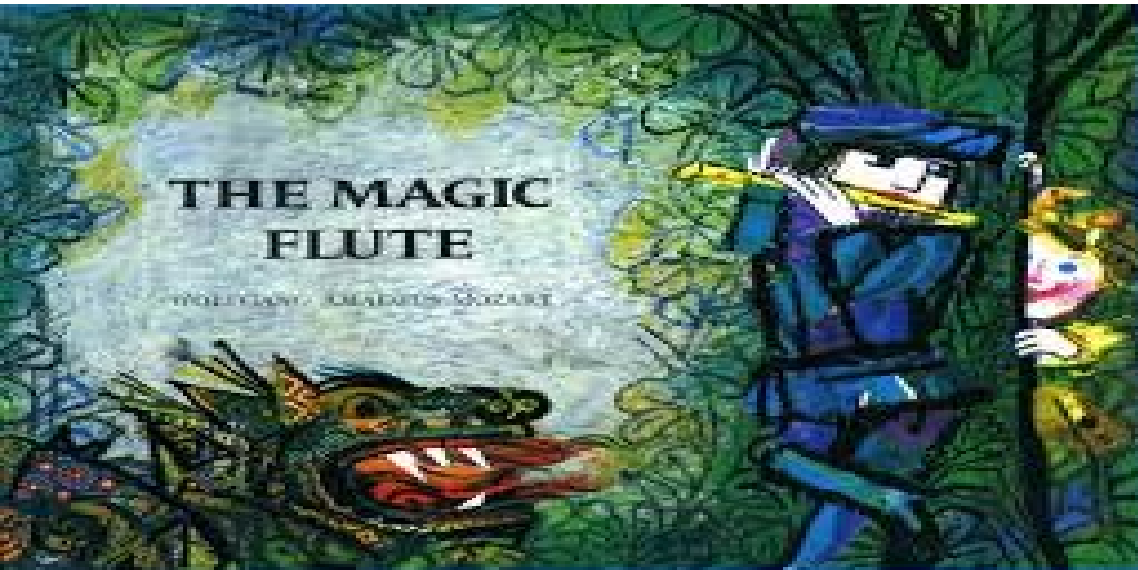




Problem fermentations from vineyard to winery

Marcia Torres Forno

Matanzas Creek Winemaker



The Casting

I Act: Pesticides effect on fermentation

II Act: Heat waves effect on grape composition

III Act: Copper and Iron effect on potential redox



Effect of pesticides

A particular pesticide can affect:

- o Yeast cell development, yeast reproduction. Sluggish or stuck fermentations.
- o Alter native yeast populations by inhibiting some, and promoting others.
- o Affect metabolism of malolactic bacteria.
- o Residues on the wine (photodegradation, absorption)
- o Alter aromatics



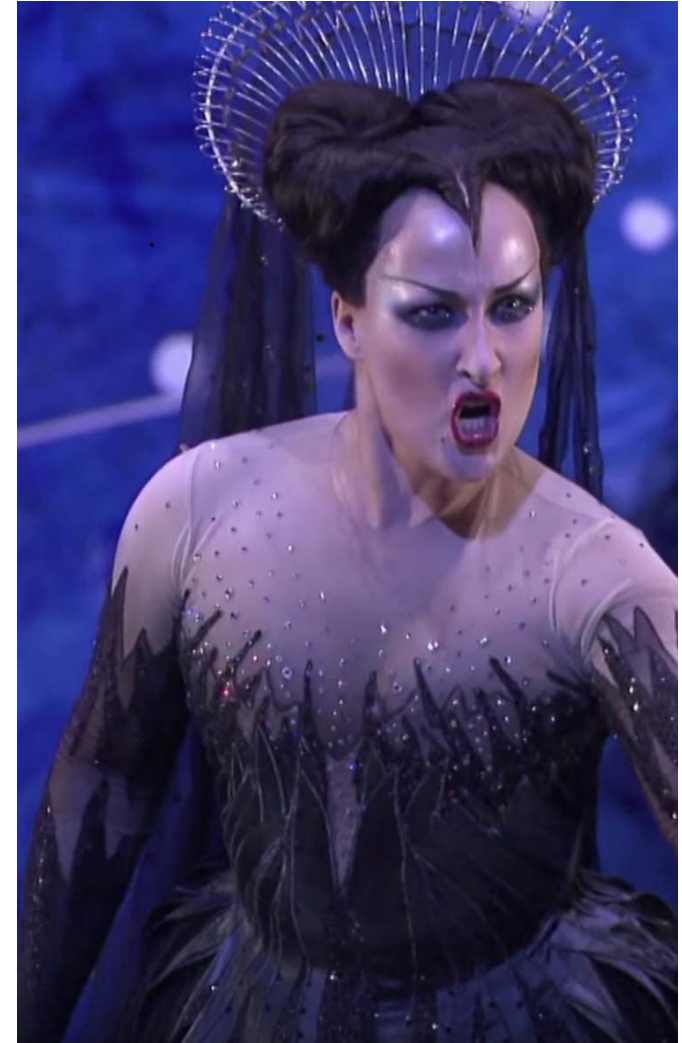
The bad pretending to be good

Reported Fungicides:

- x Folpet delay fermentation (Gaia et al, 1978)
- x Mancozeb inhibited lactic bacteria (Radler and Schoning, 1974)
- x Hexaconazole highly toxic towards yeast (Dubernet et al, 1990)
- x Myclobutanil highly toxic towards yeast (Dubernet et al, 1990)
- x Thiophthalimides including Captan inhibit fermentation (Minarik and Regala, 1975)

Reported Herbicides: Diuron slightly toxic, (Conner, 1993)

Reported Insecticides: Dicofol toxic (Conner, 1993)



Chemical Name	Active Ingredient	Action	Yeast fermentation	Malolactic fermentation
Merivon	Fluxapyroxad	Powdery Mildew		
Flint	Trifloxystrobin	Powdery Mildew	Same family no effect on <i>S. cerevisiae</i> *1	Same family no effect on <i>S. cerevisiae</i> *1
Quintec	Quinoxifen	Powdery Mildew+ Botrytis rot	No effect on <i>S. cerevisiae</i> *2,*3	No effect on <i>L. oenos</i> , <i>L. plantarum</i> *1
Rally	Myclobutanil	Powdery Mildew	Highly toxic on <i>S. cerevisiae</i> *5 *7	
JMS Stylet Oil	Paraffinic Oil	Powdery Mildew		
Nordox 75 WG	Cuprous Oxide	Powdery Mildew	Chemical oxydation. Do not apply on SB Matanzas Reductive style	
Mettle	Tetraconazole	Powdery Mildew	No effect on <i>S. cerevisiae</i> *1	
Viticure	Imidazole	Powdery Mildew		
Vangard WG	Cyprodinil	Botrytis rot	No effect on <i>S. cerevisiae</i> *1. Effect on wine aromas *6	
Sulfur	Sulfur	Powdery mildew		
Luna	Fluopyram , Tebuconazole ,	Botrytis rot		
Pristine	pyrasclostrobin, boscalid , kaolin	Powdery Mildew+ Botrytis rot	No residues in wine*4	
Scala	Pyrimethanil, 1,2-Propanediol	Botrytis rot		

*1 Cabras et al, 1999

*2 Cabras et al, 2000

*3 Lopez et al, 2004

*4 Caboni, Garau, Cabras, De Melo

*5 Guerra et al, 1999

*6 Garcia et al, 2004 Effect of fungicide residues on the aromatic composition of white wines inoculated with three *S. cerevisiae* strains

* 7 Dubernet et al, 1990

Heat waves effect on grapes and wine quality

Effect on elevated temperature in grapevine. I Berry sensory traits (Sadras et al, 2007) .

Delay on color development on Semillon.

Advance the development on skin astringency on Chardonnay.

Delay skin disintegration on Cabernet Franc and Shiraz.

Advance seed coloring on Semillon.

Lower malic and tartaric acid. Lower Nitrogen content.



Heat waves effect on grapes and wine quality

- Temperature
- Length
- Radiation
- Pre existing drought conditions
- Vapor pressure deficit > 4 KP

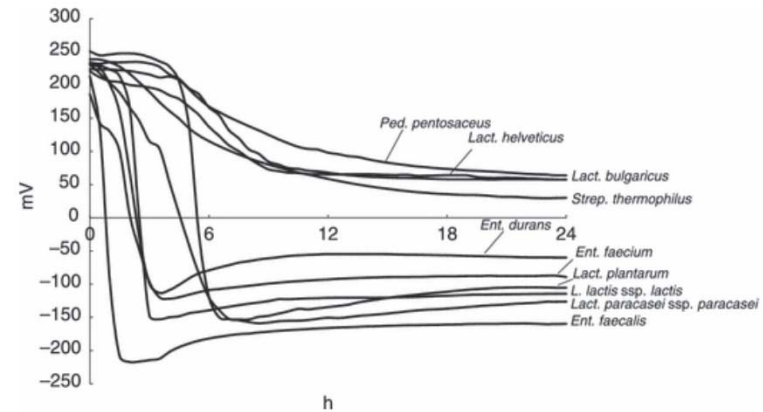
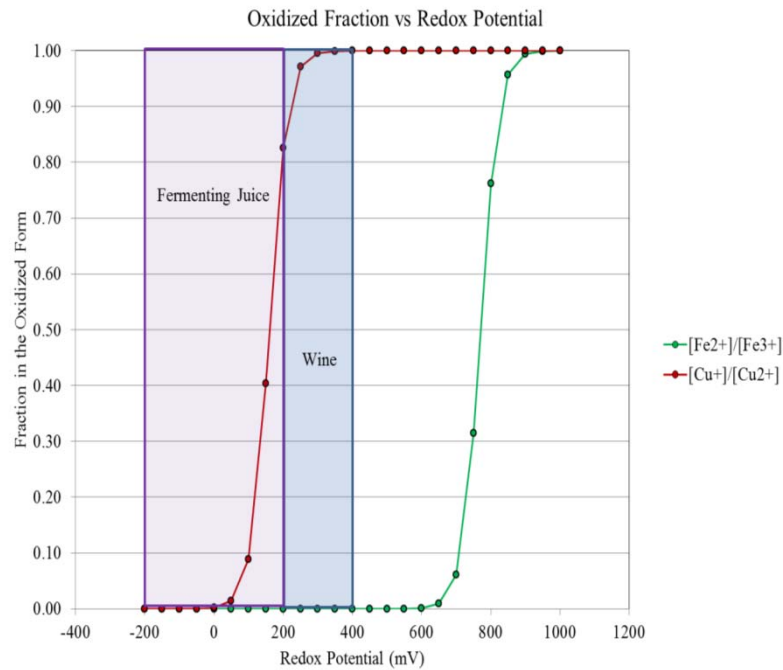


Some Mitigation Measures for White wine production

- No leafing needed on thin canopies. Partially shaded clusters finished fermentation faster. Ph.Pszczolkowski, 1985
- Chill grapes or chill musts.
- Increase SO₂ additions at juice pan 20 ppm more. Bacteria competition for vitamins and nutrients.
- Look at total polyphenols. Check Absorbance A₂₈₀ at press cycles.
- Consider adding of PVPP to remove catechins and browning at must fining stage.
- Inactivate polyphenol oxidase enzymes with gall tannins.
- Add vitamins at inoculation time, adjust YAN according to Brix levels, and increase yeast dose.



Copper and Iron



Journal of
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ORIGINAL ARTICLE

Redox potential to discriminate among species of lactic acid bacteria

M. Brasca, S. Morandi, R. Lodi, A. Tamburini

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Thank you

