

Winemaking Case History

2010 Western Iowa St. Croix

Fruit source: Doug Grave, [Victorian Vineyards](#), Glenwood, Iowa (Loess Hills).
Took delivery of 200 lbs. (9x5-gal pails) on Saturday, 8/21/2010.
Extremely ripe, healthy, delicious fruit.
Grapes were hand sorted, crushed and sulfated to 50 PPM (1.6g KMETA/5-gal must).

Stylistic goals: Looking to achieve some complexity and as much structure as possible given the potential of Midwest hybrid red grapes. Hoped to get as much color extraction as possible without the overwhelming tobacco notes often observed in St. Croix. The grapes were divided into two batches and fermented using two different yeasts in order to increase complexity. An overnight cold-soak with enzymes followed by VR Supra addition was employed to help achieve color extraction and structure.

Prefermentation numbers: BRX = < 18 TA = 8.0 g/L pH = 3.5

BATCH A [2010 Iowa St-Croix-Jolais]

Yeast selection:

Lallemand RC212 http://www.lallemandwine.us/products/yeast_chart.php
Purchased in 8g packets from <http://www.morewinemaking.com>
Selected for its ability to optimize phenolic and pigment extraction.
This yeast has high nutrient requirements.

Sat., 8/21 11PM

Approximately 12 gal must transferred to a Rubbermade "Brute" fermenter
Cellar temperature = 68-deg F (No external heat applied)
Added **4g pectic enzyme** and allowed to cold soak overnight
(Note: Don't add tannin supplement until enzymes have had a few hours to work)

Sun., 8/22 10 AM

VR Supra addition (Dosage based upon IASTATE trials ISRF09-36)
 $400 \text{ mg/L} \times 12 \text{ gal} \times 3.785 \text{ L/gal} = 18\text{g VR Supra}$

Sun., 8/22 Noon

Chapitalization
 $\text{lbs/gal sugar addition} = 0.125 \text{ (Target Brix} - \text{Current Brix)} = 0.125 \text{ (23-18)} = 0.65 \text{ lbs/gal}$
 $0.65 \text{ lbs/gal} \times 12 \text{ gal} = 5.46 \text{ lbs. of sugar (Added as syrup).}$
Final RBRIX = 22

Sun., 8/22 1PM

Yeast nutrient (Fermaid K) Calculation and Addition

Note: Add half at start of fermentation and rest when Brix level reduced by one-third
 $1 \text{ g/gal} \times 12 \text{ gal} = 12\text{g Fermaid K (total); } 6\text{g Fermaid K added now (See below for 2}^{\text{nd}} \text{ addition)}$

Sun., 8/22 2:30 PM

Pitched yeast using standard GOFERM acclimation protocol:

2 x 8g RC212 yeast

2t GOFERM

After acclimation, yeast slurry sprinkled on top of must in the fermenter

Mon., 8/23 Noon

Cap has formed; fermentation is clearly under way.

Begin 3-4x daily punch-down routine

Tues., 8/24 8PM

RBRIX = 15; Temp = 71-deg F; est. True-Brix = 10.4; est. SG = 1.042

Since one-third of sugar has been consumed, **2nd 6g Fermaid K addition made**

Uneventful punch-downs; no "off" odors

Wed., 8/25 8AM

Some "stinkiness" but not too bad.

Cap is beginning to "fall apart" in response to punching-down rather than quickly reforming.

Wed., 8/25 Noon

Cap is still "very mushy".

Diagnosis: Cold soak and enzymes may have broken-down the skins too much.

est. True-Brix = 5.5; est. SG=1.022

Rx: Since cap is falling apart, need to press a bit early

Innoculated with (2) Wyeast 4007 Liquid MLF in preparation for pressing within 24 hrs.

Wed., 8/25 10PM

Pressed must to 6gal and 3gal carboys

Super-active fine bubbling (MLF?); forced to use "blow-off assembly" rather than more typical fermentation lock. **LOTS OF SOLIDS IN PRESS WINE DUE TO CAP DISINTEGRATION**

Thurs., 8/26 7PM

Following typical procedure, racked-off the gross lees 24 hours following pressing....

Only problem....There were no gross lees:

Active MLF/alcohol co-fermentation causing such forceful bubbling that the disintegrated cap's solids have remained suspended in the wine. Have never experienced anything like this. Significant H₂S stink has begun to develop, too.

Splash racked to add some oxygen and blow-off some of the H₂S stink.

Assume the H₂S problem aggravated by all of the suspended solids.

Wed., 9/1 3PM

H₂S still present; **Bocksin treatment** applied.

40ml added to 6gal carboy; stirred 1 min.

10ml added to each 1gal jug; stirred for 1 min.

MLF bubbling still present; no new lees formation visible.

Sun., 9/5 Noon

Racked wine to 6gal carboy and ½ gal (topoff) jug.
Did not rack remaining 1gal jug (for later comparison).
Significant amount of sediment removed.
Significant reduction in H₂S but not completely gone.

Mon., 9/28 7PM

Racked remaining Batch-A wine to 3 containers: 5gal carboy + 1gal jug + 375ml bottle.
Modest amount of sediment left behind.
Still showing signs of MLF but at very reduced rate.
Bocksin treatment seems to have been very successful; wine is showing nice nose and exceptional taste/mouth feel for such a young wine. Keep a watch for end of MLF.

Sat., 11/6

Signs of MLF have stopped; nominal MLF completion verified by paper chromatography.
pH = 3.78; large increase in pH relative to starting must level of 3.5....Mushy caps/skins appear to have dumped lots of potassium buffer into the wine.
Racked 6 gallons and sulfated wine to **60 PPM using KMETA**.

Early Tasting notes:

Some fruit up front; hint of raisin (oxidation?)
Spiciness typical of St. Croix is nice & interesting rather than overwhelming.
Bit of harsh tannin on the finish but this should soften in time (How long?)
Wine is not inky dark like earlier. Color is a pretty garnet (red + slight brown). No purple!
SO₂ addition should resolve some of the slight browning & raisin flavor in month or so.
Decided that this light-to-medium body wine probably wouldn't support oak very well.
NO OAK ADDITIONS MADE.

Sun., 2/13

free SO₂ = 39 PPM
Excellent progress; nice color, appearance, flavor, nose (no H₂S). pH = 3.77

Sat., 3/5

Racked and added 25 PPM SO₂ to 3 gal carboy and 2 x 1gal jugs
Lots of tartrate sediment left behind (Never cold stabilized because of high pH).

Sun., 3/6

Pre-Bottling Blending Trials

Bench trialed blends with wine from Batch-B (see below) and decided on 50/50 blend.
Resulting blend had much less body and structure than hoped for but resulted in a medium bodied wine that should be ready to drink very soon. Drinkable but not noteworthy wine.
Blended 2 gals from Batch-A with 2 gals from Batch-B
Sulfated up to 65 PPM (because of high pH); %Alc = 12.5 (via distillation/hydrometry)
20 x 750ml bottles labeled as "2010 Iowa St-Croix-Jolais" (named for its relatively light body).
3gal carboy placed in bulk storage; remains to be bottled.

4/24

3gal carboy: Free SO₂ = 45 PPM; Bound SO₂ = 26 PPM (to be blended with Batch-B; see below)

BATCH B [2010 Iowa St-Croix]

Yeast selection:

Lallemand D254 http://www.lallemandwine.us/products/yeast_chart.php

Purchased in 8g packets from <http://www.morewinemaking.com>

Selected for its ability to optimize body and mid-palate mouthfeel.

Produces a mild spicy finish and should complement profile of RC212 in Batch-A.

Sat., 8/21 11PM

Approximately 8 gal must transferred to a 10 gal fermenter

Cellar temperature = 68-deg F (No external heat applied)

Added **3g pectic enzyme** and allowed to cold soak overnight

(Note: Don't add tannin supplement until enzymes have had a few hours to work)

Sun., 8/22 10 AM

VR Supra addition

$400 \text{ mg/L} \times 8 \text{ gal} \times 3.785 \text{ L/gal} = 12\text{g VR Supra}$

Sun., 8/22 Noon

Chapitalization

$\text{lbs/gal sugar addition} = 0.125 \text{ (Target Brix} - \text{Current Brix)} = 0.125 \text{ (23-18)} = 0.65 \text{ lbs/gal}$

$0.65 \text{ lbs/gal} \times 8 \text{ gal} = 3.54 \text{ lbs. (7 cups) of sugar (Added as syrup).}$

Final BRIX = 21.5

Sun., 8/22 1PM

Yeast nutrient (Fermaid K) Calculation and Addition

Note: Add half at start of fermentation and rest when Brix level reduced by one-third

$1 \text{ g/gal} \times 8 \text{ gal} = 8\text{g Fermaid K (total)}$

4g Fermaid K added now (See below for 2nd addition)

Sun., 8/22 2:30 PM

Pitched yeast using standard GOFERM acclimation protocol:

8g D254 yeast

1t GOFERM

After acclimation, yeast slurry sprinkled on top of must in the fermenter

Sun., 8/22 11PM

Cap already forming; fermentation well under way.

Tues., 8/24 9AM

Have been punching-down 4x daily.

Noted a whiff of H₂S so added **2nd dose of 4g Fermaid K.**

Tues., 8/24 4PM

Still "stinky" upon punch-down.

Tues., 8/24 (continued)

6PM

Added another 4g Fermaid K (Total = 12g) and performed delestage (removed 2/3 seeds) with splash rack. Seems to have blown-off most of the stink.

8PM

RBRIX = 14 Temp = 72-deg F; est. True-Brix = 9.2, est. SG = 1.037

Wed., 8/25 9AM

Still stinky.

What to do? Can't treat with copper yet as it will be bound-up by the yeast.

11:30AM

SG = 1.017

Added Wyeast 4007 Liquid MLF culture in preparation for pressing within 24 hours

10PM

Pressed wine (Still lots of H₂S stink).

Thurs., 8/26 7PM

Racked off the gross lees...but like Batch-A, very little gross lees has settled yet.

Unlike Batch-A, strong signs of MLF activity not present...Yet, still not much gross lees?

Splash racked due to H₂S stink to 3gal + 1gal + half-gal jugs.

Mon., 9/28

Racked to 3gal carboy...Excess combined with jugs from Batch-A (see above)

Not as much sediment left behind as expected.

No signs of H₂S odor (Suggests that Bocksin may not have been needed for Batch-A).

Signs of MLF activity (tiny bubbles) are present.

Mon., 10/18

Paper chromatography indicates nominal completion of MLF for Batch-B.

Sat., 10/23

Rack to fresh 3gal carboy. Very little sediment left behind. Topped-off with 375ml from Batch-A.

Added 50 PPM SO₂.

Sat., 3/5/11

Racked to 3 x 1gal jugs.

pH = 3.78 TA = 6.5 g/L

Lots of red tartrates left behind.

Sun., 3/6

Two of the 1-gal jugs of Batch-B St. Croix were blended with Batch-A (see details above)

The remaining 1gal jug was treated with a tartaric acid addition until the pH dropped to 3.5 and then placed in a 20-deg F freezer for cold stabilization.

Sun., 5/1

Final St. Croix Blending Trials

3gal from Batch-A were blended with 1 gal from Batch-B (with pH reduced to 3.5) and ¾ gal of California Syrah (made earlier in the year by Moundtop Microvinification).

This resulted in an **80% Iowa St. Croix/20% California Syrah blend**.

The free SO₂ level of the blend was bumped up to 60 PPM and bottled.

21 x 750ml bottles labeled as 2010 Iowa St. Croix.

Sun., 7/31

Release Tasting Notes

Now that both blends of Iowa St. Croix have had a chance to overcome bottle shock, a side-by-side tasting was conducted.

	<u>A. 2010 Iowa St. Croix-Jolais</u>	<u>B. 2010 Iowa St. Croix (20% Syrah)</u>
Color:	Brilliant, clear garnet	Clear garnet
Nose:	Red berry; floral spice	Dark berry; floral spice (needs to breathe)
Flavor:	Raspberry; red licorice notes	Spicy; dark fruit
Body:	Light-to-medium	Medium-light
Finish:	Pleasant tartness; drying on cheeks	Spicy finish on lips/under tongue (i.e., green tannins)
pH:	3.70	3.70
TA:	6.2 g/L	6.3 g/L (0.1N NaOH Titration)
free SO₂:	33 PPM	34 PPM (Aeration-Oxidation)
%Alc:	12.5%	12.6% (Distillation/Hydrometry)
R.S.	0.2%	0.3% (Clinitest)
Yeast:	RC212	D254

Suggestions for Future Vintages

Not surprising for a cold climate red, the major shortcoming for these wines was a dearth of body and a need for a bit more structure. How might this be achieved in future vinifications of Iowa St. Croix?

A couple of ideas come to mind: (1) Perhaps bleeding off some of the juice prior to fermentation in order to improve the juice-to-skin ration would help improve the body; and (2) perhaps returning some of the seeds (if very ripe/brown) to the press wine for a few weeks might help improve the structure.

This later technique would need to be monitored carefully in order to prevent the wine from becoming too bitter. It remains to be seen how this wine might hold-up to barrel aging.

Moundtop Microvinification
July 31, 2011