

## Winemaking Case History

### 2016 Story County Iowa Marquette

**Fruit Source:** John Miranowski (Prairie Vineyards), Story County, Iowa.  
Took delivery of 500 pounds of clean fruit on Sunday, August 28, 2016.

**Stylistic goals:** Looking to achieve complexity (via yeasts) and as much structure as possible using Bentonite treatment and grape tannin additions. Plan was to extend the fermentation period for as long as possible before pressing.

### Crush

Prefermentation numbers:      BRIX = 23      TA = 12 g/L      pH = 3.22  
(No YAN measurements given good two-year history)

Crushed/destemmed fruit using Enotalia ENO-10. Crushed fruit was equally divided between three Rubbermaid 32-gal Brute fermenters (approx. 20 gal/vat).

Pre-fermentation additions to each vat included:

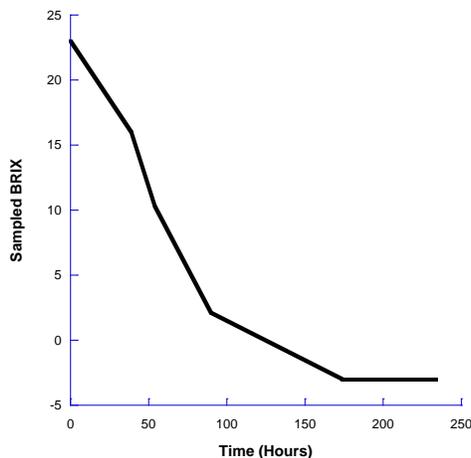
4g      K-Meta (40 PPM)  
4 oz     American oak chips  
15g     Tannin Estate (200 PPM)  
NO CHAPITALIZATION

### Fermentation

Each vat was inoculated with 24g of yeast using standard GOFERM (14g) rehydration protocol. Vats #1 and #2 were inoculated with BM 4x4 yeast (chosen for organoleptic characteristics) while vat #3 was inoculated with 71B (chosen for its malic acid reduction characteristics).

Yeast was pitched at midnight on Sunday (8/28). Fermentation progress was followed using refractometer samples (with mathematical correction for ETOH). Punch-downs performed 3X daily.

Yeast nutrient plan was to add 1g/gal Fermaid in two steps: one-third Brix reduction and at one-half Brix reduction. However, based upon good H<sub>2</sub>S odor profile of this fermentation, the winemaker chose to add only a single 10g dose of Fermaid-K (0.5g/gal must) as the Brix approached 50% reduction.



## Press

On Tuesday evening (9/6) the caps on all three vats were beginning to “disintegrate”. Hence, the decision to press the next day was finalized by the winemaker. 33.5 gallons of wine was pressed at 8PM on Wednesday (9/7) yielding a total fermentation time of 9.75 days. The press wine was allowed to settle-off the gross lees for a few days.

On Saturday morning (9/10) 30 gal of settled wine was transferred to a Flextank maturation vessel while an additional 2 gallons of wine was stored in glass (for top-off).

## Post-Press Processing

There is a working-theory among cold-climate enologists that the same protein(s) that yield winter hardiness in hybrid grapes also bind to wine polyphenolics (e.g., tannins) and removes them from the finished wine via gravity/settling. As such, it has been hypothesized that treating the grape must or early press wine with Bentonite – to reduce the levels of this binding protein – might serve to improve the structural characteristics of the finished wine.

Inspired by this hypothesis, the winemaker treated the newly pressed wine with a 0.5 g/gal dose of Bentonite (in the Flextank) on Saturday (9/10).

The wine was racked-off the Bentonite to a fresh Flextank on Thursday, September 29.

Lab analyses of the wine on Monday, September 19 revealed the following:

pH = 3.55      TA = 8.0 g/L  
residual sugar (Clinitest) = 1/10 of 1% (Fermentation is complete)  
baseline paper chromatography indicated significant levels of malic acid present (nominal)

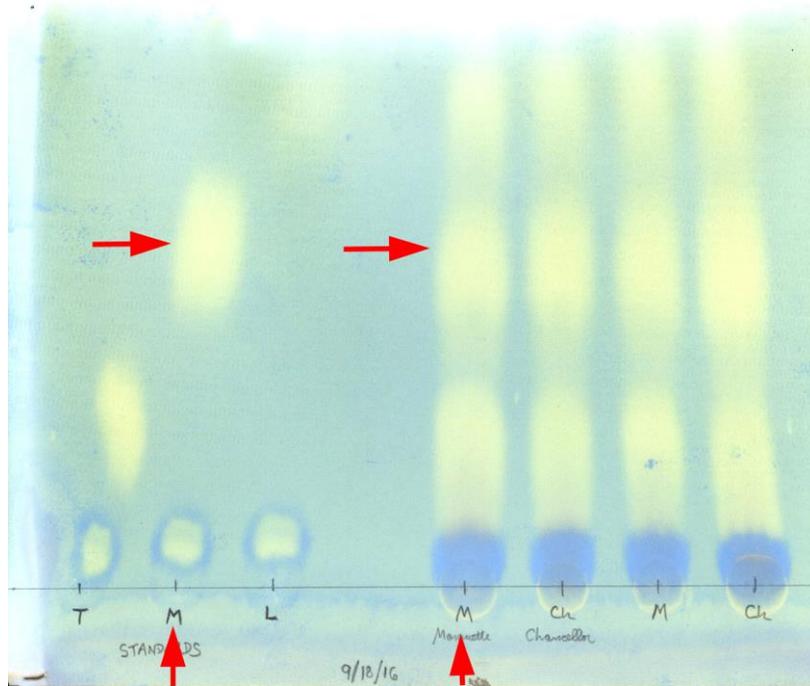
## Malolactic Fermentation

9/29/16 Added malolactic bacteria (Enoferm Beta) hydrated with 5g ML nutrient to the 30 gal Flextank

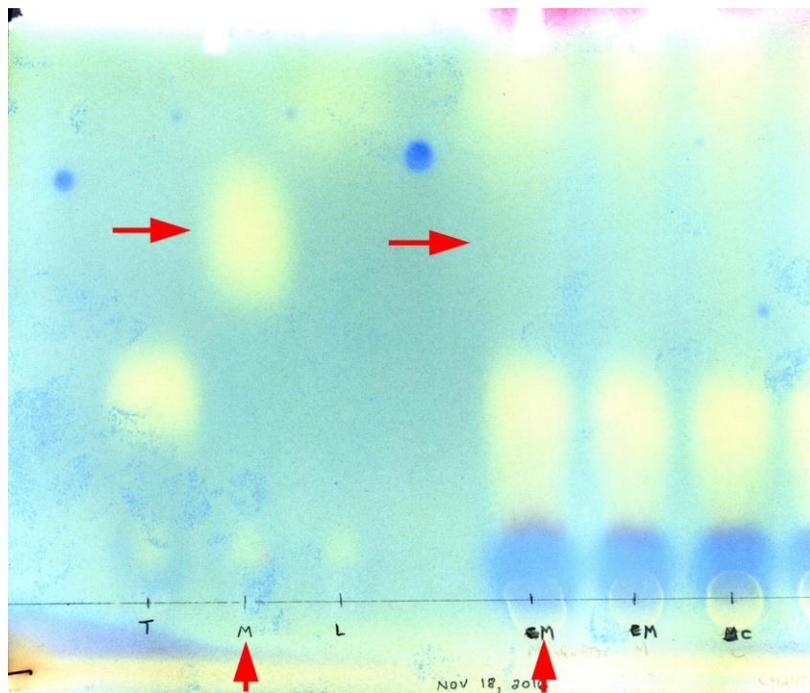
11/18/16 Paper chromatography revealed no qualitative sign of malic acid. Presumed that MLF would be finished within 2 weeks.

### Tasting notes:

Just a touch of microbial taste/aroma (better than usual for this stage of development); bright raspberry/dark fruit; good mouthfeel and balance; color is good but not as opaque as the 2014 and 2015 vintages (see below for possible explanation)



**Baseline Paper Chromatography Assessment  
(Malic acid clearly present)**



**Post-MLF Paper Chromatography Assessment  
(Nominal absence of malic acid)**

## Oak Barrel Maturation

There was a bit of a delay between end-of-MLF and transfer to the oak barrel due to some difficulty getting the new 100L Vadai Hungarian oak barrel to seal properly.

- 12/5/16 40 PPM SO<sub>2</sub> (8.6g K-META) was added to the post-MLF wine and it was transferred to the 100L oak barrel for maturation. Remainder of post-MLF wine was transferred to 375ml bottles for top-off. Very little tartrate deposits left behind in Flextank.
- 12/17/16 free SO<sub>2</sub> = 37 PPM (bumped up to 50 PPM via 2.6 K-Meta addition)  
Added 100 PPM Estate Tannin (10g)...2/3 amount added in 2015 to prevent bitterness topped-up barrel
- 1/13/17 free SO<sub>2</sub> = 40 PPM (bumped up to 50 PPM via 1.7g K-Meta);  
topped-off with 750 ml  
tasting notes: nominal development (color may have improved a bit)
- 2/19/17 free SO<sub>2</sub> = 36 PPM (bumped up to 50 PPM via 2.5g K-Meta)  
topped-off with 700ml  
tasting notes: very impressive body/balance; good mouthfeel & structure;  
acidity (tartness) has softened significantly; clear but should be more opaque in color
- 4/16/17 free SO<sub>2</sub> = 30 PPM (bumped up to 50 PPM via 3.7g K-Meta)  
topped-off  
tasting notes: wine has closed-up compared to last tasting; unoaked topoff wine was pleasantly fruity...Hypothesis: Would Marquette be better w/o oak?
- 6/12/17 free SO<sub>2</sub> = 33 PPM (bumped up to 50 PPM via 2.9g of K-Meta)  
Wine has opened-up and is ready to be bottled; a bit cloudy but not enough to risk O<sub>2</sub> exposure of filtering.  
  
special note: 1-gal jug of top-off wine has nice cherry fruit and creamy mouthfeel;  
need to evaluate unoaked vs. oaked Marquette  
  
Conducted taste tests of 2015 oaked; 2015 unoaked; 2016 oaked; 2016 unoaked vintages of Story County Marquette with family and friends; clear preference for the oaked wine emerged (Probably because it matched the traditional European profiles favored by this crowd...including the winemaker).
- 7/15/17 free SO<sub>2</sub> = 31 PPM (bumped up to 50 PPM prior to bottling)  
transferred wine from barrel to carboys;  
bottled wine (12 cases)
- 7/29/17 **%Alcohol (v/v) = 13.0%** (distillation/hydrometer method)

Final tasting notes:

slight cherry fruit with dark fruit undertones on palate and nose;  
excellent mouthfeel and balance; slight touch of sweetness due to ETOH;  
Color is good (like a Pinot Noir) but should be more opaque (ala Cabernet).  
Tiny bit cloudy but within acceptable range (Filtering not warranted).  
Overall: This is my best cold-climate red yet!

Lessons learned:

The long delay between the post-press Bentonite addition and the introduction of the Tannin Estate product seems to have resulted in some loss of color opaqueness. This needs to be managed better in 2017.

Winemaker: Frank Schieber (schieber@usd.edu)  
Moundtop Microvinification (www.moundtop.com)