



Viticulture, enology and marketing for cold-hardy grapes



Yeast Trials for Improved Wine Quality in Cold Climate Cultivars

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Background and Rationale: The most common stakeholder request, both during SCRI planning meetings and extension interactions with regional industry, is for further evaluation of yeast strain suitability for wine production from new cold-hardy winegrape cultivars. Standardized, multi-regional yeast strain trials on these cultivars, followed by sensory analysis, have not yet been performed. Data on fermentation kinetics and sensory characteristics will allow winemakers to choose yeast strains best suited to their region and their stylistic goals.

Treatments:

Table 1: 2015 Wine grape cultivars and yeast strains.

Cultivar	Yeast 1	Yeast 2	Yeast 3
Brianna	58W3	Lalvin C	--
Chancellor	CSM	Lalvin C	Exotics SPH
Frontenac gris	58W3	Lalvin C	--
Frontenac	CSM	Lalvin C	Exotics SPH
La Crescent	58W3	Lalvin C	--
Marquette	CSM	Lalvin C	Exotics SPH
Prairie Star	58W3	Lalvin C	--

Methods: Wines were produced, in duplicate, at Cornell University's Vinification & Brewing Center (V&B) in 2015 following standard production methods. Fruit was source from collaborating vineyards at the University of Vermont (UVM), Cornell Cooperative Extension's vineyard trial in Willsboro, NY, Cornell/FLCC teaching vineyards in Penn Yan, NY, and the NE1020 and Grape Breeding Program vineyards in Geneva, NY. Yeast strains (Table 1) were selected for their potential to reduce acidity, enhance aromatic intensity in whites, or body and mouthfeel in reds. Juice samples were analyzed for soluble solids, pH, titratable acidity (TA), and malic acid, acetic acid, and yeast assimilable nitrogen via FTIR using an OenoFoss wine analyzer. Following alcoholic fermentation, all wines were analyzed for pH, TA, malic acid, lactic acid, % ethanol, and glucose/fructose (Oenofoss.)

Results: A total of 25 wines were produced. Lot production varied by cultivar based on fruit availability (Table 2). As of January 2015, all wines have successfully completed alcoholic fermentation, and Chancellor, Frontenac, and Marquette have been inoculated with lactic acid bacteria strain VP41 for malolactic conversion. White wines were placed in a cold room held at 2°C for cold stabilization, and reds will be cold-stabilized following malolactic conversion.

Table 2: 2015 Cultivar sources and wine lots produced

Cultivar	Vineyard	Wine lots
Brianna	Geneva (Breeding)	2
Chancellor	Geneva (NE 1020)	3
Frontenac gris	Geneva (Breeding), Willsboro	3
Frontenac	UVM, Willsboro	6
La Crescent	Geneva (Breeding), Willsboro	3
Marquette	VM, Willsboro, Penn Yan	8
Prairie Star	UVM	2

Future work: Following cold stabilization, wines will be racked, analyzed for pH and TA, and for tartaric, malic, lactic, acetic and citric acid via high-pressure liquid chromatography (HPLC). Adjustments for TA will be made as necessary for microbial stability and sensory optimization, and wines will be bottled in standard 750mL glass bottles topped with screwcaps. Sensory evaluation will be performed in fall 2016.