2012

# Cold Hardy Wine Grape Cultivar Trial

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**Abstract**
In conjunction with the Northeast Regional Research project NE 1020 "Multi-state Evaluation of Wine Grape Cultivars and Clones," Iowa State University established a cold hardy wine grape cultivar trial in 2008 at the ISU Horticulture Research Station (HRS), Ames, Iowa and Tabor Home Vineyards and Winery (THV), Baldwin, Iowa. The Iowa trial evaluates the performance of Corot noir, La crescent, Marquette, Petit Ami TM , NY 95.0301-01, MN-1189, MN-1200, MN-1220, MN-1235, MN-1258 with Frontenac, and St. Croix serving as controls. This report summarizes the results for the 2011 growing season.

**Keywords**
RFR A1112, Horticulture

**Disciplines**
Agriculture | Horticulture

# Cold Hardy Wine Grape Cultivar Trial

**RFR-A1112**

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## Introduction

In conjunction with the Northeast Regional Research project NE 1020 "Multi-state Evaluation of Wine Grape Cultivars and Clones," Iowa State University established a cold hardy wine grape cultivar trial in 2008 at the ISU Horticulture Research Station (HRS), Ames, Iowa and Tabor Home Vineyards and Winery (THV), Baldwin, Iowa. The Iowa trial evaluates the performance of Corot noir, La crescent, Marquette, Petit Ami™, NY 95.0301-01, MN-1189, MN-1200, MN-1220, MN-1235, MN-1258 with Frontenac, and St. Croix serving as controls. This report summarizes the results for the 2011 growing season.

## Materials and Methods

The vines were spaced 8 × 10 ft apart (545 vines/acre) with three vines/replication. Treatments were replicated six times (18 vines/cultivar) in a randomized complete block design. Vines were trained to the high-wire bilateral cordon with the trellis wire 6.0 ft above the ground.

## Results and Discussion

Vines at the two sites were exposed to low temperature events that affected vine survival and establishment (Table 1). At HRS, the May 9, 2010 freeze occurred when emerging shoots were at the 4 to 6 in. stage of development and killed most shoots to the base. During the growing season, one-year-old canes that formed the trunks exhibited injury that ranged from vertical cracks in the bark and phloem that healed, to girdling and death of the trunks before or during the 2010-2011 winter (Figure 1). The greatest injury was evident on NY95.0301.01, MN1189, and Corot noir (Table 2). Following the 2010-2011 winter, a high incidence of vine mortality occurred at THV with the greatest loss associated with NY 95.0301.01 and Corot noir (Table 2).

Based upon pruning weights and length of established cordon, vines are performing better at HRS than at THV (Table 2). Vines at HRS were allowed to carry a partial crop. Average cluster weight on MN 1200 was very low. It was observed that NY 95.0301.01 vines were very sensitive to a spring glyphosate application that contacted emerging suckers (Figure 2).

## Acknowledgements

Funding for the vines and partial funding for annual expenses has come through grants from the USDA Viticulture Consortium – East awarded to the NE 1020 regional research group. Thanks to the ISU Horticulture Research Station staff and employees of Tabor Home Vineyards for their assistance in maintaining the plantings.

**Table 1. Significant minimum temperatures (°F) recorded during the 2010 growing season, 2010-2011 winter, and accumulated growing degree days from May 1 to October 1, 2011.**

| Date | HRS | THV |
|---|---|---|
| Minimum temperatures (°F): | | |
| May 9 | 29 | 30 |
| Dec. 12-14 | -5 | -13 |
| Jan. 16-18 | -13 | -22 |
| Feb. 3-7 | -11 | -25 |
| | | |
| Growing Degree Days (base 50°F, cap. 86°F): | | |
| May 1 to Oct. 1[z] | 2,656 | 2,728[x] |
| Departure from avg. | -188 | 155 |
| Days above 86°F | 18 | 29 |

[z]From the ISU Ag Climate Network.
[x]From the Cedar Rapids station.

**Table 2. Performance of 12 wine grape cultivars in the NE-1020 cold hardy cultivar trial at two Iowa locations in 2011.**

| | Horticulture Research Station | | | | | Tabor Home Vineyards | | |
|---|---|---|---|---|---|---|---|---|
| Rootstock | Trunk injury rating[y] | Pruning wt. (lb) | Est. cordon (ft) | Yield per Vine (lb) | Cluster wt. (lb) | Vine mortality (2011) | Pruning wt (lb) | Est. cordon (ft) |
| Corot noir | 4.5 (10) | .7 | .0 | 2.2 | .26 | 4 | .1 | .0 |
| La Crescent | 2.1 (18) | 1.9 | 1.8 | 2.7 | .15 | 1 | .5 | .2 |
| Marquette | 2.1 (16) | 2.5 | 2.2 | 3.8 | .13 | 1 | .3 | .1 |
| Petit Ami | .4 (9) | .7 | .1 | 2.4 | .25 | 1 | .1 | .0 |
| MN1189 | 4.9 (16) | .8 | .2 | 2.5 | .24 | 2 | .1 | .0 |
| MN1200 | 2.0 (18) | 1.4 | 1.2 | 1.8 | .08 | | .4 | .2 |
| MN1220 | 2.2 (18) | 1.9 | 2.7 | 7.4 | .19 | | .1 | .2 |
| MN1235 | 1.4 (14) | 2.0 | 2.4 | 4.8 | .17 | | 1.0 | .4 |
| MN1258[z] | . (0) | .4 | .0 | 1.6 | .16 | 2 | .1 | .0 |
| NY95.0301-01[z] | 5.0 (2) | .2 | .0 | .2 | .10 | 5 | .1 | .0 |
| Frontenac | .9 (18) | 3.1 | 2.5 | 6.3 | .18 | | .8 | 1.1 |
| St. Croix | .5 (18) | 2.3 | 1.8 | 4.0 | .16 | | .7 | .4 |
| *LSD .05* | *.3* | *.6* | *1.1* | *1.6* | *.03* | | *.3* | *.6* |

[z]Planted in 2009. All other varieties planted in 2008.

[y]Trunk injury rating scale on vines with mature trunks (number of vines): 0 = no injury; 1 = slight injury, some callus formation; 2 = moderate injury with healed vertical cracks; 3 = severe injury with many vertical cracks and some areas of xylem exposed; 4 = very severe with many vertical cracks and large areas of xylem completely exposed; 5 = trunk girdled and portion above the girdling was dead.

**Figure 1. Trunk injury observed on grape vines in the ISU Horticulture Research Station, Ames, Iowa planting of the NE 1020 cold hardy cultivar in the spring of 2011 following exposure to freezing temperatures on May 9, 2010.**

**Figure 2. Glyphosate shoot injury on NY 95-0301.01 grape vines following a spring application that made contact with emerging suckers.**