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# Wine Grape Cultivar Trial Performance in 2008

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**Abstract**
To assess the regional adaptation of wine grape cultivars in Iowa, a trial was established in 2003 through an Iowa Department of Agriculture and Land Stewardship (IDALS) specialty crops grant awarded to the Iowa Wine Growers Association (IWGA). The trial was designed to evaluate up to 20 cultivars or advanced selections at four Iowa State University (ISU) farms representing different geographic, climatic, and soil conditions: Horticulture Research Station (HRS), Ames; the Armstrong Research Farm (ARF), Lewis; the Southeast Research Farm (SERF), Crawfordsville; and the Northeast Research Farm (NERF), Nashua. The SERF and NERF plantings also included the 15 cultivars being evaluated in the 2002 grape cultivar by management system trial. This report summarizes the results for the 2008 growing season.

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## Introduction

To assess the regional adaptation of wine grape cultivars in Iowa, a trial was established in 2003 through an Iowa Department of Agriculture and Land Stewardship (IDALS) specialty crops grant awarded to the Iowa Wine Growers Association (IWGA). The trial was designed to evaluate up to 20 cultivars or advanced selections at four Iowa State University (ISU) farms representing different geographic, climatic, and soil conditions: Horticulture Research Station (HRS), Ames; the Armstrong Research Farm (ARF), Lewis; the Southeast Research Farm (SERF), Crawfordsville; and the Northeast Research Farm (NERF), Nashua. The SERF and NERF plantings also included the 15 cultivars being evaluated in the 2002 grape cultivar by management system trial. This report summarizes the results for the 2008 growing season.

## Materials and Methods

The vines were spaced 8 × 10 ft apart (545 vines/acre) with three vines/replication. Treatments were replicated four times at each site (12 vines/cultivar). Vines were trained to a bilateral cordon system on a two-wire trellis with wires at 3.5 ft and 6.0 ft above the ground. Vines with a procumbent growth habit were being trained to the top wire, and those with a semi-upright to upright growth habit were trained to the mid-level wire with vertical shoot positioning (VSP) being practiced.

In mid-March, five proximal (basal) buds on three canes per replication (15 buds) were dissected and examined for injury to determine if adjustments in pruning were needed. Vines were pruned and the 1-year-old trimmings were weighed. Bud retention was based on pruning weight, and adjusted for primary bud mortality when injury exceeded 15% for American cultivars and 20% for French-American hybrid cultivars. The length of established 2-year-old cordon was measured. Following bud break, shoots originating from primary buds were counted and excess basal shoots and double shoots were removed. Following veraison, berry samples were collected from the mid-cluster position to test for maturity based on percentage soluble solids (%SS), initial pH, and titratable acids (TA). Time of harvest was based upon these measurements and fruit condition. At harvest, the number of clusters per vine were counted and weighed.

## Results and Discussion

During the 2007–08 winter, vines were exposed to four significant freezes with NERF followed by HRS recording the lowest temperatures (Table 1). When cane buds were examined for injury prior to pruning, greater injury was found at NERF and HRS, than at ARF or SERF (Table 2). Although minimum temperatures recorded at ARF and SERF were similar, ARF experienced more freezing episodes at or below -10°F, and bud injury was greater there than at SERF. At all four sites, the injury was generally greatest on cultivars classified as being “slightly hardy” to “moderately hardy,” while those classified as being “very hardy” exhibited the least injury. The number of primary shoots per foot of cordon generally reflected the extent of primary bud injury recorded at the sites (Table 2). Because of minimal bud injury recorded at SERF, primary shoot counts were not recorded.

Based on pruning weights, vines continue to grow best at ARF followed by HRS, while vines at NERF grew the poorest (Table 3). La Crescent, De Chaunac, and Prairie Star grew well at each of the sites. Marquette continues to grow well at HRS followed by ARF, but not at NERF or SERF. Among the 15 cultivars from the cultivar by management study, Mars, and Edelweiss had highest pruning weights at SERF. At NERF, La Crosse, St. Croix, and Mars had the highest pruning weights. After five growing seasons, the amount of established cordon per vine continues to reflect the growing conditions of the site, cultivar cold tolerance, and differences in exposure to freezing events (Table 3). Generally, "moderately hardy" cultivars are performing better at ARF and SERF than at NERF or HRS.

Vines at each of the sites were exposed to growth regulator herbicide drift during the growing season but symptoms of injury were not as severe as in previous years (data not shown). At each of the sites, NY76.0844.24 exhibited the greatest injury.

The 2008 growing season was characterized by a late spring—excessive rainfall in May, June, and July and cooler than normal growing conditions. Bud break at HRS ranged from 10 to 14 days later than in 2007 (Table 2). Accumulated growing degree days from May 1 to October 1 were below normal with ARF having the least departure from the average (Table 1). As a result, harvest was delayed compared with previous years with HRS having the greatest delay while ARF had the least delay of harvest (Tables 4 and 5). In addition to the late spring and cool growing season, heavy crops at HRS may have contributed to the delayed harvest (Table 4). Generally, the highest yields were recorded at HRS, and vines at NERF, which suffered the greatest bud injury, had the lowest yields (Tables 4 and 5). The ARF planting was hit by damaging winds in excess of 60 mph on May 25, June 27, and with hail on July 8 that reduced the crop. At SERF, a high incidence of diseases brought on by frequent rains from bud break into mid-July affected yields. Even with weather related reduced yields at ARF and SERF, cultivars classified as being "moderately hardy" produced similar or higher yields at those sites than at HRS.

The desired initial pH for making white table wines is from 3.2 to 3.4 and 3.3 to 3.5 for red table wines. In previous years, a high initial pH has been a problem and the primary criteria used for determining when to harvest. In 2008, at ARF, SERF and NERF, which had lighter crop loads, initial pH was the primary criteria for harvesting most wine cultivars (Table 4 and 5). At HRS, where vines had heavy crop loads, few cultivars attained the desirable initial pH range for white or red table wines. (For more information, see "Maturation of Recently Released Cold Hardy Wine Grape Cultivars in Iowa: Corot noir, Frontenac Gris, La Crescent, Marquette, and Noiret.")

## Acknowledgements

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**Table 1. Significant minimum temperatures (°F) recorded during the 2007–08 winter and accumulated growing degree days from May 1 to October 1, 2008.**

| Date | ARF | HRS | SERF | NERF |
|---|---|---|---|---|
| Minimum temperatures (°F): | | | | |
| Jan 19 | -11 | -10 | -4 | -14 |
| Jan 24 | -12 | -17 | -13 | -23 |
| Feb 13 | 1 | -9 | -7 | -14 |
| Feb 20 | -10 | -4 | -3 | -14 |
| Growing Degree Days (base 50°F, cap. 86°F): | | | | |
| May 1 to Oct 1[z] | 2,801 | 2,675 | 2,728 | 2,538 |
| Departure from Avg. | -54 | -156 | -276 | -137 |
| Days above 86°F | 14 | 9 | 14 | 8 |

[z]From the ISU Ag Climate Network.

**Table 2. Primary bud injury recorded before pruning and subsequent primary shoot development following exposure to freezes during the 2007-08 winter for 20 cultivars in the ISU 2003 wine grape cultivar trial planted at the ARF and HRS, and the 35 cultivars at the SERF and NERF.**

| | Relative | % Primary bud injury | | | | Bud break[y] | | 1° shoots/ft of cordon | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Treatment | hardiness[z] | ARF | HRS | SERF | NERF | ARF | HRS | ARF | HRS | NERF |
| Vidal Blanc | 4 | 33 | 96 | 6 | 95 | 139 | 136 | 4.2 | .7 | .0 |
| Cayuga White | 4 | 27 | 95 | 32 | 85 | 131 | 133 | 3.6 | 1.1 | .4 |
| Landot 4511 | 4 | 9 | 86 | 8 | 100 | 136 | 134 | 5.6 | 1.8 | 1.5 |
| Noiret[u] | 4 | 22 | 53 | 12 | 52 | 130 | 130 | 5.1 | 2.0 | 1.1 |
| NY84.0101.04 | 4 | 13 | 53 | 2 | 87 | 134 | 132 | 5.0 | 2.6 | .5 |
| Corot noir[u] | 4 | 15 | 38 | 42 | 76 | 135 | 132 | 4.7 | 1.9 | .5 |
| NY76.0844.24[x] | 4 | 18 | 25 | 0 | 60 | 128 | 128 | 5.5 | 3.4 | 3.2 |
| De Chaunac | 4 | 8 | 46 | 5 | 73 | 128 | 128 | 10.4 | 4.1 | 2.9 |
| St. Vincent | 4 | 27 | 40 | 0 | 96 | 135 | 131 | 5.2 | 3.1 | 1.4 |
| Léon Millot | 5 | 10 | 28 | 0 | 40 | 128 | 130 | 7.5 | 5.2 | 4.3 |
| Esprit | 5 | 20 | 25 | 2 | 33 | 128 | 128 | 4.7 | 2.7 | 3.0 |
| GR-7 | 6 | 15 | 22 | 16 | 58 | 128 | 126 | 7.2 | 5.4 | 3.7 |
| Chancellor | 5 | 13 | 12 | 3 | 28 | 130 | 129 | 7.0 | 3.9 | 4.1 |
| Brianna[x] | 6 | 13 | 12 | 3 | 28 | 128 | 127 | 6.2 | 4.8 | 3.6 |
| Swenson White[v] | 6 | 8 | 9 | 4 | 51 | 128 | 128 | 4.9 | 2.7 | 2.8 |
| MN-1198[x] | 6 | 3 | 9 | 0 | 17 | 128 | 126 | 6.2 | 4.7 | 3.9 |
| Marquette[x, u] | 6 | 15 | 7 | 0 | 17 | 128 | 127 | 7.4 | 4.9 | 4.8 |
| Prairie Star | 6 | 2 | 7 | 12 | 17 | 128 | 129 | 6.2 | 4.0 | 2.6 |
| La Crescent | 6 | 8 | 2 | 3 | 17 | 128 | 126 | 8.1 | 5.1 | 5.4 |
| Frontenac Gris[w] | 6 | 5 | 2 | . | . | 128 | 127 | 5.3 | 4.9 | 4.5 |
| Chambourcin | 3 | | | 25 | 98 | | | | .1 | |
| Seyval Blanc | 4 | | | 15 | 71 | | | | 1.3 | |
| Vignole | 4 | | | 5 | 100 | | | | .6 | |
| Traminette | 4 | | | 10 | 88 | | | | .8 | |
| Cynthiana | 4 | | | 6 | 80 | | | | 2.1 | |
| Maréchal Foch | 5 | | | 7 | 46 | | | | 3.3 | |
| St. Croix | 6 | | | 0 | 27 | | | | 4.3 | |
| Edelweiss | 5 | | | 5 | 20 | | | | 3.2 | |
| La Crosse | 5 | | | 2 | 16 | | | | 3.6 | |
| Frontenac | 6 | | | 0 | 9 | | | | 5.1 | |
| Marquis | 4 | | | 20 | 100 | | | | .9 | |
| Vanessa | 4 | | | 15 | 93 | | | | .4 | |
| Reliance | 4 | | | 8 | 75 | | | | 2.4 | |
| Mars | 4 | | | 18 | 72 | | | | 3.6 | |
| Jupiter | 4 | | | 12 | 100 | | | | .6 | |
| LSD, P < .05 | | 13 | 18 | 14 | 18 | 1.0 | 1.4 | 1.1 | .9 | .9 |

[z]Relative cold hardiness (temperature range at which injury begins to occur): 3 = cold tender/slightly hardy (-5°F); 4 = moderately hardy (-10 F); 5 = hardy (-15 F); 6 = very hardy (-20 F).

[y]Julian date; 126 = May 5, 2008.

[x]Planted in 2004.

[w]Planted in 2004 at the HRS and in 2006 at the other sites.

[v]Planted in 2005.

[u]Named and released in 2006: Noiret (NY73.136.17); Corot noir (NY70.0809.10); and Marquette (MN-1211).

**Table 3. Pruning weight and feet of established cordon following the 2007 growing season for 20 cultivars in the ISU 2003 wine grape cultivar trial planted at the ARF and the HRS, and 35 cultivars at the SERF and NERF.**

| | Pruning weight (lb) | | | | Feet of cordon per vine | | | |
|---|---|---|---|---|---|---|---|---|
| Treatment | ARF | HRS | SERF | NERF | ARF | HRS | SERF | NERF |
| GR-7 | 3.2 | 3.1 | 1.8 | .9 | 7.4 | 6.3 | 6.7 | 5.3 |
| Noiret[w] | 3.3 | 2.3 | 2.7 | .9 | 8.0 | 5.3 | 7.7 | 6.2 |
| NY76.0844.24[z] | 1.0 | 1.6 | .5 | .2 | 1.8 | 5.0 | 3.8 | 1.0 |
| NY84.0101.04 | 2.5 | 1.5 | .6 | .5 | 7.8 | 2.1 | 5.8 | 2.8 |
| Corot noir[w] | 2.4 | 1.4 | 1.1 | .7 | 7.7 | 5.0 | 5.2 | 2.7 |
| La Crescent | 3.2 | 3.3 | 2.3 | 2.9 | 7.9 | 7.7 | 7.7 | 7.3 |
| Prairie Star | 3.3 | 2.9 | 1.5 | 1.1 | 7.6 | 7.6 | 6.2 | 6.8 |
| Frontenac Gris[y] | .6 | 1.9 | .3 | .2 | .7 | 7.8 | .0 | .0 |
| Swenson White[x] | 1.9 | 1.9 | 2.2 | .7 | 4.1 | 5.9 | 4.5 | .9 |
| Brianna[z] | 3.1 | 2.7 | 2.5 | .7 | 7.0 | 7.8 | 6.3 | 4.8 |
| Marquette[z, w] | 2.2 | 3.4 | 1.5 | .4 | 7.0 | 7.8 | 4.2 | 1.3 |
| MN-1198[y] | 1.5 | 1.7 | 1.1 | .2 | 5.2 | 6.7 | 4.3 | 2.1 |
| Cayuga White | 2.4 | 2.4 | .9 | .4 | 7.6 | 3.3 | 7.6 | 3.4 |
| Chancellor | 2.8 | 1.5 | 1.4 | .6 | 7.9 | 6.2 | 6.0 | 3.4 |
| De Chaunac | 5.3 | 2.7 | 2.5 | 1.6 | 7.8 | 5.6 | 6.5 | 6.8 |
| Esprit | 2.8 | 2.3 | 1.2 | .9 | 7.8 | 7.5 | 7.2 | 4.4 |
| Landot 4511 | 2.1 | 1.7 | 1.2 | .4 | 7.9 | 5.9 | 7.1 | 3.7 |
| Léon Millot | 3.2 | 2.7 | 1.0 | .5 | 7.9 | 6.9 | 7.4 | 6.0 |
| St. Vincent | 3.5 | 2.6 | 2.1 | .9 | 6.0 | 6.7 | 7.3 | 4.3 |
| Vidal Blanc | 2.7 | 2.0 | 1.0 | .4 | 7.9 | 2.7 | 6.5 | 1.5 |
| Maréchal Foch | | | .6 | .4 | | | 5.8 | 4.4 |
| Frontenac | | | 1.4 | .6 | | | 7.7 | 6.7 |
| Cynthiana | | | 1.4 | .4 | | | 5.9 | 1.0 |
| St. Croix | | | 1.7 | 1.0 | | | 7.9 | 6.6 |
| Chambourcin | | | 1.1 | .5 | | | 5.5 | 2.9 |
| Seyval Blanc | | | 1.5 | .7 | | | 6.3 | 5.0 |
| La Crosse | | | 1.7 | 1.3 | | | 5.9 | 7.5 |
| Vignole | | | 1.4 | .5 | | | 7.5 | 3.8 |
| Traminette | | | 1.3 | .4 | | | 5.1 | .9 |
| Edelweiss | | | 2.7 | .8 | | | 6.9 | 4.9 |
| Marquis | | | .8 | .3 | | | 3.7 | .4 |
| Vanessa | | | 1.5 | .2 | | | 5.0 | 1.3 |
| Reliance | | | 1.7 | .6 | | | 7.3 | 5.3 |
| Mars | | | 3.8 | 1.0 | | | 7.9 | 4.9 |
| Jupiter | | | 1.6 | .7 | | | 5.8 | 2.1 |
| LSD, P < .05 | .7 | .7 | .7 | .4 | 1.1 | 1.8 | 1.5 | 1.8 |

[z]Planted in 2004.
[y]Planted in 2004 at the HRS and in 2006 at the other sites.
[x]Planted in 2005.
[w]Named and released in 2006: Noiret (NY73.136.17); Corot noir (NY70.0809.10); and Marquette (MN-1211).

**Table 4. Fruit yield and harvest characteristics in 2008 for 20 cultivars in the ISU 2003 wine grape cultivar trial planted at the ARF and HRS.**

| | Armstrong Research Farm | | | | | | Horticulture Research Station | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Treatment | Harvest Date | % SS | pH[y] | TA[z] | Yield /vine (lb) | Cluster wt. (lb) | Harvest date | % SS | pH | TA[z] | Yield /vine (lb) | Cluster wt. (lb) |
| GR-7 | 9/5 | 18.3 | 3.59 | 11.9 | 11.1 | .19 | 10/2 | 20.0 | 3.29 | 10.0 | 28.4 | .23 |
| Noiret[v] | 9/15 | 17.9 | 3.49 | 9.8 | 7.2 | .22 | 10/14 | 19.6 | 3.28 | 6.6 | 10.5 | .28 |
| NY76.0844.24[y] | 9/1 | 18.2 | 3.38 | 10.7 | 2.5 | .10 | 9/18 | 19.0 | 2.83 | 11.7 | 16.1 | .25 |
| NY84.0101.04 | 8/29 | 19.3 | 3.37 | 9.8 | 4.5 | .18 | 9/18 | 20.2 | 3.21 | 8.9 | 4.6 | .35 |
| Corot noir[v] | 9/15 | 17.4 | 3.46 | 8.7 | 9.7 | .24 | 10/14 | 18.4 | 3.29 | 5.8 | 14.9 | .35 |
| La Crescent | 8/29 | 18.9 | 3.40 | 12.6 | 3.7 | .10 | 10/1 | 23.3 | 3.11 | 11.8 | 26.2 | .22 |
| Prairie Star | 8/29 | 16.6 | 3.57 | 11.1 | 6.2 | .14 | 9/18[t] | 17.2 | 3.18 | 13.3 | 18.2 | .18 |
| Frontenac Gris[x] | 9/3 | 20.3 | 3.36 | 11.7 | 1.5 | .06 | 10/1 | 24.5 | 3.18 | 12.4 | 22.8 | .24 |
| Swenson White[w] | 8/29 | 18.1 | 3.44 | 9.0 | 6.5 | .22 | 9/18[t] | 19.0 | 3.15 | 7.7 | 22.6 | .38 |
| Brianna[y] | 8/28 | 18.2 | 3.55 | 9.5 | 10.8 | .20 | 9/4 | 19.0 | 3.27 | 5.5 | 29.0 | .29 |
| Marquette[y, v] | 8/29 | 21.4 | 3.37 | 13.1 | 9.4 | .13 | 10/1 | 25.7 | 3.13 | 10.1 | 20.9 | .18 |
| MN-1198[y] | 9/1 | 22.8 | 3.47 | 14.9 | 9.1 | .23 | 9/18[t] | 23.0 | 2.94 | 12.6 | 15.3 | .23 |
| Cayuga White | 9/1 | 18.9 | 3.28 | 5.4 | 6.8 | .22 | 9/4 | 18.0 | 3.01 | 10.5 | 6.7 | .37 |
| Chancellor | 9/16 | 17.8 | 3.51 | 9.9 | 14.8 | .21 | 10/2 | 20.4 | 3.18 | 7.5 | 21.3 | .24 |
| De Chaunac | 9/3 | 18.3 | 3.57 | 10.8 | 15.9 | .18 | 10/20[t] | 20.6 | 3.12 | 9.6 | 17.8 | .19 |
| Esprit | 8/31 | 16.9 | 3.44 | 10.5 | 12.7 | .37 | 9/25 | 19.2 | 3.24 | 6.8 | 25.2 | .62 |
| Landot 4511 | 8.25 | 17.0 | 3.37 | 9.8 | 9.1 | .19 | 10/2 | 21.6 | 3.16 | 7.9 | 10.8 | .17 |
| Léon Millot | 8/28 | 20.2 | 3.72 | 8.3 | 12.6 | .16 | 9/3 | 20.8 | 3.19 | 8.9 | 26.5 | .17 |
| St. Vincent | 9/30 | 18.3 | 3.41 | 11.9 | 9.2 | .29 | 10/14 | 20.0 | 3.08 | 12.0 | 16.9 | .46 |
| Vidal Blanc | 9/4 | 17.1 | 3.41 | 11.3 | 11.1 | .29 | 10/20[t] | 22.6 | 3.23 | 9.9 | 4.6 | .33 |
| LSD, P < .05 | | | | | 3.1 | .04 | | | | | 5.6 | .0 |

[z]Titratable acids reported in grams/liter.
[y]Planted in 2004.
[x]Planted in 2004 at the HRS and in 2006 at the other sites.
[w]Planted in 2005.
[v]Named and released in 2006: Noiret (NY73.136.17); Corot noir (NY70.0809.10); and Marquette (MN-1211).
[t]Maturity tests were performed seven or more days before harvest.

**Table 5. Fruit yield and harvest characteristics in 2008 for 35 cultivars in the ISU 2003 wine grape cultivar trial planted at the SERF and NERF.**

| | Southeast Research Farm | | | | | | Northeast Research Farm | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Treatment | Harvest Date | % SS | pH | TA[z] | Yield /vine (lb) | Cluster wt. (lb) | Harvest date | % SS | pH | TA[z] | Yield /vine (lb) | Cluster wt (lb) |
| GR-7 | 9/11 | 20.3 | 3.52 | 9.9 | 6.3 | .14 | 9/25 | 19.8 | 3.56 | 8.1 | 6.6 | .24 |
| Noiret[v] | 9/17 | 17.3 | 3.32 | 9.0 | 7.4 | .28 | 9/25 | 16.6 | 3.45 | 9.5 | 2.1 | .22 |
| NY76.0844.24[y] | 9/11[t] | 18.3 | 3.14 | 11.3 | 1.7 | .14 | 9/23 | 22.0 | . | . | .4 | .12 |
| NY84.0101.04 | 8/27 | 18.2 | 3.34 | 9.9 | 5.8 | .36 | 9/25 | 21.0 | . | . | .7 | .20 |
| Corot noir[v] | 9/11 | 17.0 | 3.51 | 8.4 | 6.7 | .42 | 9/29 | 17.2 | 3.49 | 7.7 | 3.0 | .29 |
| La Crescent | 9/11 | 22.7 | 3.41 | 11.7 | 6.7 | .16 | 9/10 | 20.3 | 3.50 | 10.4 | 11.5 | .27 |
| Prairie Star | 8/27 | 18.2 | 3.56 | 8.9 | 10.5 | .30 | 9/22 | 20.0 | 3.46 | 6.8 | 8.1 | .29 |
| Frontenac Gris[w] | 9/17 | . | . | . | .5 | .14 | . | . | . | . | .0 | . |
| Swenson White[x] | 8/27 | 17.2 | 3.38 | 10.5 | 7.2 | .35 | 9/25 | 23.0 | 3.55 | 5.0 | 3.0 | .27 |
| Brianna[y] | 8/27 | 19.8 | 3.52 | 8.0 | 11.4 | .25 | 9/17 | 22.0 | 3.60 | 5.0 | 7.0 | .27 |
| Marquette[y, v] | 8/27 | 24.8 | 3.34 | 11.1 | 3.8 | .11 | 9/25 | 23.8 | 3.54 | 8.6 | 2.5 | .16 |
| MN-1198[y] | 8/28 | 22.8 | 3.29 | 13.7 | 7.0 | .26 | 9/30 | 24.7 | 3.34 | 11.1 | 2.1 | .19 |
| Cayuga White | 8/27 | 17.9 | 3.24 | 9.6 | 10.5 | .50 | 9/25 | 20.4 | 3.26 | 7.7 | 1.3 | .31 |
| Chancellor | 9/11 | 18.3 | 3.40 | 8.6 | 6.9 | .16 | 9/24 | 20.2 | 3.48 | 8.9 | 5.4 | .24 |
| De Chaunac | 9/11 | 20.3 | 3.44 | 8.4 | 7.6 | .17 | 9/24 | 20.0 | 3.47 | 8.9 | 7.7 | .27 |
| Esprit | 9/11 | 17.3 | 3.42 | 9.2 | 15.5 | .59 | 9/24 | 19.0 | 3.40 | 7.2 | 12.3 | .57 |
| Landot 4511 | 9/3 | 19.2 | 3.41 | 6.9 | 6.0 | .16 | 9/25 | 20.2 | 3.46 | 7.8 | 1.1 | .12 |
| Léon Millot | 8/22 | 19.0 | 3.47 | 8.9 | 11.0 | .19 | 9/17 | 20.0 | 3.47 | 8.0 | 5.9 | .16 |
| St. Vincent | 10/6[t] | 17.8 | 3.17 | 10.7 | 7.6 | .36 | 10/1 | 19.0 | 3.36 | 6.6 | 2.4 | .31 |
| Vidal Blanc | 9/11 | 17.4 | 3.39 | 8.7 | 12.7 | .49 | 10/2 | 22.0 | 3.46 | 9.2 | .3 | .33 |
| Maréchal Foch | 8/27[t] | 19.2 | 3.33 | 11.4 | 6.6 | .16 | 9/17 | 20.8 | 3.50 | 7.4 | 5.2 | .15 |
| Frontenac | 9/17 | 22.4 | 3.31 | 13.2 | 10.1 | .23 | 9/29 | 22.0 | 3.58 | 11.6 | 7.0 | .20 |
| Cynthiana | 10/6[t] | 20.2 | 3.18 | 15.3 | 5.6 | .15 | 10/6 | 20.0 | 3.17 | 19.7 | .6 | .10 |
| St. Croix | 8/27 | 18.2 | 3.38 | 9.6 | 8.7 | .19 | 9/8 | 18.0 | 3.29 | 9.3 | 8.8 | .27 |
| Chambourcin | 10/6[t] | 20.9 | 3.28 | 9.3 | 5.6 | .42 | 10.6 | 21.8 | 3.46 | 10.4 | .1 | .37 |
| Seyval Blanc | 8/27 | 20.7 | 3.37 | 8.1 | 9.4 | .48 | 10/1 | 23.0 | 3.77 | 4.0 | 4.3 | .37 |
| La Crosse | 9/3[t] | 17.0 | 3.21 | 10.7 | 10.7 | .25 | 9/8 | 17.0 | 3.10 | 10.4 | 9.4 | .27 |
| Vignole | 9/17 | 20.9 | 3.19 | 10.1 | 6.5 | .25 | 10/2 | 23.3 | 3.50 | 9.8 | .4 | .14 |
| Traminette | 9/17 | 19.1 | 3.16 | 8.1 | 5.7 | .26 | 9/26 | 20.6 | . | . | .1 | .18 |
| Edelweiss | 8/27 | 16.0 | 3.44 | 9.2 | 7.5 | .31 | 8/25 | 15.0 | 3.07 | 11.7 | 5.9 | .33 |
| Marquis | 8/19 | 17.0 min. | . | . | 4.7 | .45 | 9/25 | 18.0 | . | . | .3 | .27 |
| Vanessa | 8/19 | 17.0 min. | . | . | 3.9 | .23 | 9/8 | 20.0 | . | . | .1 | .07 |
| Reliance | 8/19 | 17.0 min. | . | . | 8.6 | .50 | 8/25 | 19.8 | 3.03 | 11.2 | 5.7 | .41 |
| Mars | 9/3 | 17.0 min. | . | . | 12.3 | .41 | 9/2 | 16.0 | 3.09 | 7.2 | 14.3 | .50 |
| Jupiter | 8/19 | 17.0 min. | . | . | 8.2 | .31 | 9/9 | 17.9 | 3.12 | 7.2 | .7 | .28 |
| LSD, P < .05 | | | | | 3.6 | .06 | | | | | 2.3 | .08 |

[z]Titratable acids reported in grams/liter.
[y]Planted in 2004.
[x]Planted in 2005.
[w]Planted in 2006.
[v]Named and released in 2006: Noiret (NY73.136.17); Corot noir (NY70.0809.10); and Marquette (MN-1211).