

University of Minnesota Grape Breeding Program Annual Report 1996

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Weather

The winter of '95-'96 was quite severe at the Horticultural Research Center (HRC), with a low temperature of -36° F occurring on February 2. This was followed by a cold spring and a cooler than normal summer. With the exception of some heavy thunderstorms in June, spring and summer were also much drier than usual (see page 10). The dry weather continued through September, but fortunately the cool temperatures did not, and September ended up being warmer than average. According to the National Weather Service, 1996 set a record for the most days with a low temperature below 32° F - 176 days.

Grape Crosses

The crosses made in 1996 are shown in table 1 (page 4). A total of 27 red wine crosses, 15 white wine crosses, and 8 table grape crosses were made. The number of seeds generated for red, white, and table categories was 4658, 1624, and 537, respectively. In the case of some of the larger crosses, not all the seeds were stratified and some were saved for future use.

New Selections

The following vines were designated as new selections in 1996. The substantial winter injury seen on many vines after the winter of '95-'96 enabled researchers to select genotypes with exceptionally high cold hardiness.

MN 1198 (MN 1117 [MN 1069 X Seyval] X MN 1110 [MN 1051 X Frontenac])

MN 1198 is a very promising white wine selection that seems to have excellent cold hardiness and productivity, very good disease resistance, and a desirable growth habit. Its flavor is reminiscent of pineapple. On the negative side, its relatively high acidity (1.32%) could be a potential problem.

MN 1199 (Fredonia X MN 1109 [V. riparia X Alden])

MN 1199 is an attractive seeded black table grape with large compact clusters averaging 161 grams. Its flavor is quite mild and it appears to have good productivity.

MN 1200 (MN 1057 [V. riparia X SV 18-283] X Landot 4511)

This red wine selection was a standout in terms of cold hardiness and disease resistance. It also exhibited a nice open growth habit that would simplify both picking and pruning. The vine had small to medium clusters of good quality, early ripening fruit. MN 1200 was picked on September 13 and came in at 22.6 brix, 2.83 pH, and 0.99% titratable acidity.

MN 1201 (MN 1022 X Frontenac)

Like its sisters MN 1106, MN 1183, and MN 1197, MN 1201 is a cold hardy white wine selection. Further testing will be required to determine which of these has the most promise. Of the group, MN 1201 appears to be the most disease resistant.

MN 1202 (Swenson Red X MN 1109 [V. riparia X Alden])

MN 1202 is a black table grape with outstanding crispness. Its flavor is mildly spicy and it hung on the vine for a long time without breaking down. Productivity appears questionable.

New Selections (Continued)

MN 1203 (St. Pepin X Swenson Red)

The fruit of MN 1203 resembles Swenson Red in color and flavor, although the berries and clusters are somewhat smaller. Unlike Swenson Red, MN 1203 appears to have good cold hardiness and disease resistance.

MN 1204 (V. riparia X Merlot)

Selected primarily as a parent, MN 1204 has high sugar (>25 brix) and a rich flavor with substantial tannins.

MN 1205 (V. riparia X Canadice)

MN 1205 appears to be extremely cold hardy and productive, but its very high acidity (2.27% t.a.) negates its potential for use as anything other than a parent.

MN 1206 (MN 1167 [V. riparia X Seyval] X MN 1094 [MN 1019 X MN 1016])

This vine was selected for its striking red fall color. Time will tell how consistent this coloration is in other years.

MN 1207 (MN 1125 [St. Croix X Chancellor] X Frontenac)

MN 1207 is a fairly late ripening red wine type with large clusters, clean foliage, and a nice open growth habit. While its sugar level was fairly high at 24.5 brix, its acidity was also high at 1.71%.

Performance of Existing Selections

The -36° F temperature the vines experienced in February of 1996 was severe enough to damage a number of U of MN selections made in previous years. Among those particularly effected by winter injury were: 1009, 1104, 1112, 1114, 1125, 1159, and 1195, as well as the control varieties Swenson Red, St. Pepin, and La Crosse. These vines killed to the ground. Selections receiving the highest winter hardiness scores include: 1050, 1051, 1069, 1110, 1122, 1131, 1177, and 1197. These selections were essentially undamaged and had at least 90% of their buds surviving.

The harvest data for U of MN selections is summarized in table 2 (see page 6-9). Overall, both sugar and acid readings were quite high, with many brix readings in the upper 20's and numerous acidity measurements approaching 2.00%.

Wine Results

Wines were made from approximately two two dozen U of MN selections, as well as as several named varieties from elsewhere. Overall quality levels were fair due to the less than ideal growing season. The following is a brief summary of some of the characteristics of the 1996 wines.

Gamay Beaujolais, Clevener Mariafeld, and Pinot Noir are all very closely related and are generally considered to be different clones of the same cultivar (Pinot Noir). In 1996 there were some readily apparent differences between these three wines as made at the HRC. While all had fairly light color and a mild cherry aroma reminiscent of commercial Pinot Noir wines, the Gamay Beaujolais was clearly the lightest in color aroma, and body. (Unfortunately, Gamay Beaujolais is also the heaviest yielding wine of the three.)

Wine Results (continued)

Cabernet Sauvignon, Cabernet Franc, Merlot, and Carmine were all combined to make a Bordeaux. While light in color and body, the flavor and aroma of this wine were recognizable and intense enough to make a pleasant wine.

Riesling lacked the aromatic intensity it has produced in better years, but still made a commercially acceptable wine in 1996. Vignoles made a very nice wine (as usual) after a long cool fermentation. Muscat Ottonel was vinted for the first time at the HRC and the result was a clean muscat wine disappointingly thin on the palate. Bianca was somewhat similar in that its aroma out-shined its mouth feel. Oberlin 595 made a very inky, unacceptably dark red wine after five days on the skins. Although the vine of Oberlin 595 has been quite productive in our trials (when covered with straw), the '96 wine was of lower quality than many of our own selections.

MN 1177 was nearly as dark as the Oberlin 595 wine described above, but it had the advantage of being high in tannin, flavor, and body. The aroma of this wine was strongly cassis (black currant) and it would seem to be quite interesting for blending either as a table wine or as a port.

MN 1200 resembled MN 1177 in that it also had a cassis aroma and considerable tannins but both were at substantially lower levels. MN 1108 combined mild cassis and cherry in the aroma, but was quite acidic and appears to require malolactic fermentation. MN 1060 had a cherry nose and overall was a pleasant, somewhat simple, wine. MN 1178 wine was acidic, purple in color, and grassy. MN 1092, another riparia F1 hybrid, was a bit dark but had moderate tannin levels and was rated as good quality overall. Frontenac was fairly dark and a bit acidic with its characteristic cherry aroma. MN 1180 failed to produce a large enough crop to ferment in 1996, but the 1995 wine tasted in late '96 was rated as outstanding.

Among the white selections MN 1166, MN 1142, and an unnumbered vine from the cross of (MN 1027 X Frontenac) were the highest rated wines. MN 1166, although a bit tart, had a very nice tropical fruit nose. It's acidity could easily be balanced by some residual sugar. (These wines were all made completely dry.) MN 1142 was notable for its excellent body and more subtle aromatic profile. MN 1197 produced an unexpectedly foxy wine that was reminiscent of Catawba. It's seedling MN 1106 made a wine with more restrained fruit in the nose and less acidity on the palate.

HRC GRAPE CROSSES

Table 1

Red Wine Grapes			
Female Parent	Male Parent	# of Seeds	
9601	(Riparia X Limberger)	MN 1060	256
9602	Clevener Mariafeld	MN 1177	85
9603	Clevener Mariafeld	V. longii	90
9604	Clevener Mariafeld	MN 1050	148
9605	Clevener Mariafeld	MN 1178	76
9606	Frontenac	Triumph d' Alsace	181
9607	Frontenac	MN 1081	60
9608	Kabernet Severnyi	MN 1060	532
9609	Kabernet Severnyi	MN 1177	65
9610	Kabernet Severnyi	Frontenac	316
9611	Kabernet Severnyi	MN 1092	28
9612	Kabernet Severnyi	MN 1092	345
9613	MN 1050	Cabernet Sauvignon	94
9614	MN 1060	MN 1177	146
9615	MN 1095	MN 1177	284
9616	MN 1095	Triumph d' Alsace	385
9617	MN 1108	MN 1060	208
9618	MN 1108	MN 1072	315
9619	MN 1149	MN 1081	125
9620	MN 1178	Triumph d' Alsace	362
9621	Pinot Noir	MN 1177	51
9622	Pinot Noir	Triumph d' Alsace	136
9623	Regent	Triumph d' Alsace	103
9624	Seyval	MN 1177	69
9625	Seyval	Triumph d' Alsace	119
9626	Triumph d' Alsace	MN 1177	64
9627	Vignoles	MN 1178	15
		Total:	4658

White Wine Grapes			
Female Parent	Male Parent	# of Seeds	
9628	MN 1093	MN 1182	111
9629	MN 1163	MN 1166	97
9630	MN 1166	MN 1142	151
9631	MN 1197	MN 1142	42
9632	MN 1197	Riesling	227
9633	MN 1197	MN 1166	81
9634	Muscat Ottonel	MN 1069	34
9635	Riesling	Frontenac	142
9636	Riesling	MN 1182	188
9637	Seyval	MN 1142	86
9638	Seyval	MN 1182	280
9639	Siegerrebe	MN 1069	129
9640	Suputinskyi Bielyi	MN 1197	15
9641	Vignoles	MN 1110	37
9642	Vignoles	MN 1086	4
		Total:	1624

Table 1 (continued)

HRC GRAPE CROSSES**Table Grapes**

<u>Female Parent</u>	<u>Male Parent</u>	<u>Seed #</u>
9643 ES 4-8-33	Reliance	68
9644 MN 1086	Aurelia	216
9645 MN 1095	Alden	21
9646 NY Muscat	MN 1050	22
9647 Seneca	MN 1050	1
9648 Steuben	Bluebell	12
9649 Steuben	MN 1050	116
9650 Steuben	MN 1086	81
	Total:	537

Grand Total: 6435

HRC Juice Samples

(U of MN Selections)

Table 2

Selection	Parentage	Pick Date	Brix	pH	%T.A.
1019	(Riparia X Carmine)	11-Oct	25.8	2.95	2.55
1021	(V. riparia X Alden)	11-Oct	28.7	2.98	2.16
1027	(Mandan X L 4511)	11-Oct	28.7	3.32	0.78
1032p	(V. riparia X Alden)	10-Oct	25.6	3.31	1.01
1038	(V. riparia X SV 18-283)	11-Oct	28.6	2.71	2.01
1057	(V. riparia X SV 18-283)	11-Oct	26.1	2.85	2.39
1059	(V. riparia X Carmine)	11-Oct	27.1	2.98	1.49
1060p	(V. riparia X L 4511)	16-Sep	22.2	3.03	1.79
1064	(V. riparia X Limberger)	11-Oct	26.6	3.05	1.98
1065	(V. riparia X Limberger)	11-Oct	24.3	3.11	1.71
1066	(V. riparia X SV 18-283)	11-Oct	30.2	2.77	2.27
1069	(V. riparia X Veeblanc)	11-Oct	24.8	2.71	2.43
1070	(V. riparia X Limberger)	11-Oct	22.1	2.72	2.08
1072	(V. riparia X SV 18-307)	11-Oct	28.1	2.81	1.78
1073	(V. riparia X SV 18-307)	11-Oct	26.6	2.98	1.97
1075	(V. riparia X Limberger)	11-Oct	29.1	2.81	1.61
1076	(V. riparia X Limberger)	11-Oct	26.1	2.79	2.06
1078	(V. riparia X SV 18-283)	11-Oct	25.5	2.68	2.54
1081	(V. riparia X SV 18-307)	11-Oct	28.7	2.85	2.33
1082	(V. riparia X L 4511)	11-Oct	27.9	2.77	2.34
1083	(V. riparia X SV 18-283)	11-Oct	26.7	2.82	2.22
1084	(V. riparia X S 11701)	11-Oct	28.6	2.88	3.21
1086p	(MN 1019 X Kay Gray)	30-Sep	19.8	2.71	1.61
1090	(V. riparia X Carmine)	11-Oct	27.4	2.89	1.71
1091	(V. riparia X SV 18-283)	11-Oct	27.1	2.95	2.34
1092p	(V. riparia X Limberger)	10-Oct	27.1	3.11	1.76
1095	(V. riparia X Veeblanc)	11-Oct	28.5	2.94	1.53
1106p	(MN 1022 X Frontenac)	13-Sep	21.1	3.05	1.19
1108p	(MN 1051 X Frontenac)	18-Sep	23.9	3.01	1.91
1109	(V. riparia X Alden)	11-Oct	28.9	2.92	1.56
1117	(MN 1069 X Seyval)	11-Oct	26.1	3.15	1.73
1119	(St. Croix X Chancellor)	11-Oct	25.4	3.08	0.99
1122	(V. riparia X Early Wonder)	11-Oct	27.4	3.07	1.51
1124	(MN 1069 X Seyval)	11-Oct	24.4	2.81	1.69
1129	(V. riparia X Seyval)	11-Oct	31.1	2.84	1.91
1131p	(V. riparia X Seyval)	11-Sep	19.1	2.93	1.34
1131	(V. riparia X Seyval)	11-Oct	29.4	2.98	1.55
1142p	(MN 1027 X Frontenac)	10-Sep	21.3	2.81	0.92

HRC Juice Samples

U of MN Selections

Table 2 (continued)

Selection	Parentage	Pick Date	Brix	pH	%T.A.
1142p	(MN 1027 X Frontenac)	10-Sep	21.3	2.75	1.08
1142	(MN 1027 X Frontenac)	22-Sep	22.6	2.97	1.22
1144	(MN 1061 X Aris)	11-Oct	28.1	2.98	1.02
1147	(MN 1027 X MN 1073)	11-Oct	24.4	3.11	1.16
1149	(MN 1027 X Frontenac)	11-Oct	25.9	2.97	1.68
1150	(MN 1070 X MN 1027)	11-Oct	26.1	2.79	2.45
1151	(MN 1045 X MN 1060)	11-Oct	26.5	2.73	2.65
1157	(Zaria Siewiera X Frontenac)	11-Oct	24.6	3.18	0.83
1158	(MN 1045 X MN 1027)	11-Oct	29.7	3.45	0.86
1160	(Valiant X Himrod)	11-Oct	25.2	3.14	0.68
1162	(MN 1069 X Seyval)	11-Oct	22.2	2.89	1.68
1163	(MN 1027 X Frontenac)	11-Oct	28.2	3.41	0.98
1166p	(St. Pepin X ES 6-8-25)	16-Sep	23.8	2.63	1.57
1167	(V. riparia X Seyval)	11-Oct	29.3	2.65	2.55
1177p	(V. riparia X S 11701)	22-Sep	24.5	3.23	1.77
1178p	(MN 1059 X L4511)	27-Sep	25.6	2.75	2.17
1183p	(MN 1022 X Frontenac)	13-Sep	23.1	2.59	1.46
1194	(ES 5-14 X ES 6-5-33)	11-Oct	21.4	3.01	1.56
1197p	(MN 1022 X Frontenac)	13-Sep	21.5	2.63	1.37
1198p	(MN 1117 X MN 1110)	10-Sep	22.2	2.68	1.32
1199p	(Fredonia X MN 1109)	2-Oct	22.9	3.13	0.83
1200p	(MN 1057 X L4511)	13-Sep	22.6	2.83	0.99
1200	(MN 1057 X L4511)	12-Sep	23.8	2.91	1.16
1205p	(V. riparia X Canadice)	1-Oct	26.8	2.68	2.27
1207p	(MN 1125 X Frontenac)	30-Sep	24.5	2.82	1.71

HRC Juice Samples

Named Varieties

Table 2 (continued)

Selection	Pick Date	Brix	pH	%T.A.
Aligote	2-Oct	17.7	2.95	1.21
Aris	23-Sep	21.2	2.71	0.94
Aurora	16-Sep	22.2	3.14	0.71
Beta	9-Oct	21.1	2.82	1.71
Bianca	16-Sep	19.2	3.21	0.79
Bianca	23-Sep	21.1	2.96	0.92
Brandis Noir	16-Sep	17.6	2.58	2.55
Brother David	16-Sep	21.1	2.82	1.35
Burdin 4672	16-Sep	17.3	3.03	1.29
Cabernet Franc	16-Oct	22.1	3.09	1.21
Cabernet Sauvignon	16-Oct	19.1	3.13	1.06
Carmine	16-Oct	19.4	3.02	1.21
Cascade	16-Sep	20.8	3.32	0.78
Cayuga White	16-Sep	18.8	2.87	0.95
Chancellor	16-Sep	18.7	2.91	1.43
Chardonel	16-Sep	20.8	2.81	1.35
Chelois	16-Sep	18.1	2.96	1.62
Clevener Mariafeld	3-Oct	21.4	3.01	1.16
Clinton	19-Sep	20.7	2.71	1.39
Colobel	16-Sep	16.4	2.67	2.22
DeChaunac	16-Sep	20.8	3.18	0.88
Delaware	16-Sep	19.7	2.92	1.11
DM 8313-1	16-Sep	19.8	3.17	0.86
DM P26-50	16-Sep	19.2	3.02	0.89
DM P3-58	16-Sep	22.6	3.38	0.99
DM R2 P1	16-Sep	20.4	3.03	1.34
ES 2-1-9	16-Sep	18.1	3.04	1.52
ES 4-9-6	16-Sep	20.1	3.61	0.66
Foch	16-Sep	19.7	2.87	1.32
Foch	23-Sep	20.7	3.02	1.35
Foch	26-Sep	22.1	3.03	1.05
Gamay Beaujolais	16-Sep	19.9	3.16	0.83
Gamay Beaujolais	3-Oct	19.3	3.01	1.16
GM 322-58	16-Sep	20.5	3.08	0.81
GW5	16-Sep	18.9	3.03	0.89
Ivan	16-Sep	20.9	3.21	0.89
JS 23-416	16-Sep	17.7	3.15	0.77
JS 26-205	16-Sep	17.4	2.75	1.61
Kay Gray	16-Sep	20.1	3.33	0.84
King of the North	19-Sep	21.3	2.73	1.43
Kozma 525	16-Sep	20.2	3.34	0.89
La Crosse	16-Sep	19.2	3.01	0.97
Landot 4511	3-Oct	23.9	3.17	1.04
Lucie Kuhlman	16-Sep	21.4	2.91	1.17

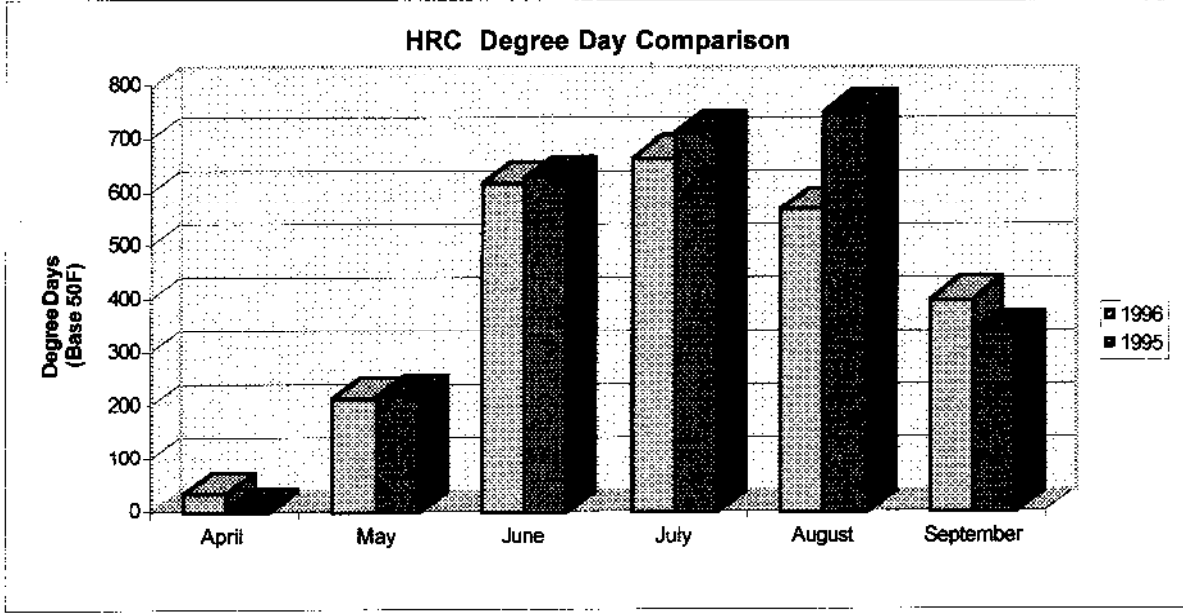
HRC Juice Samples Named Varieties

Table 2 (continued)

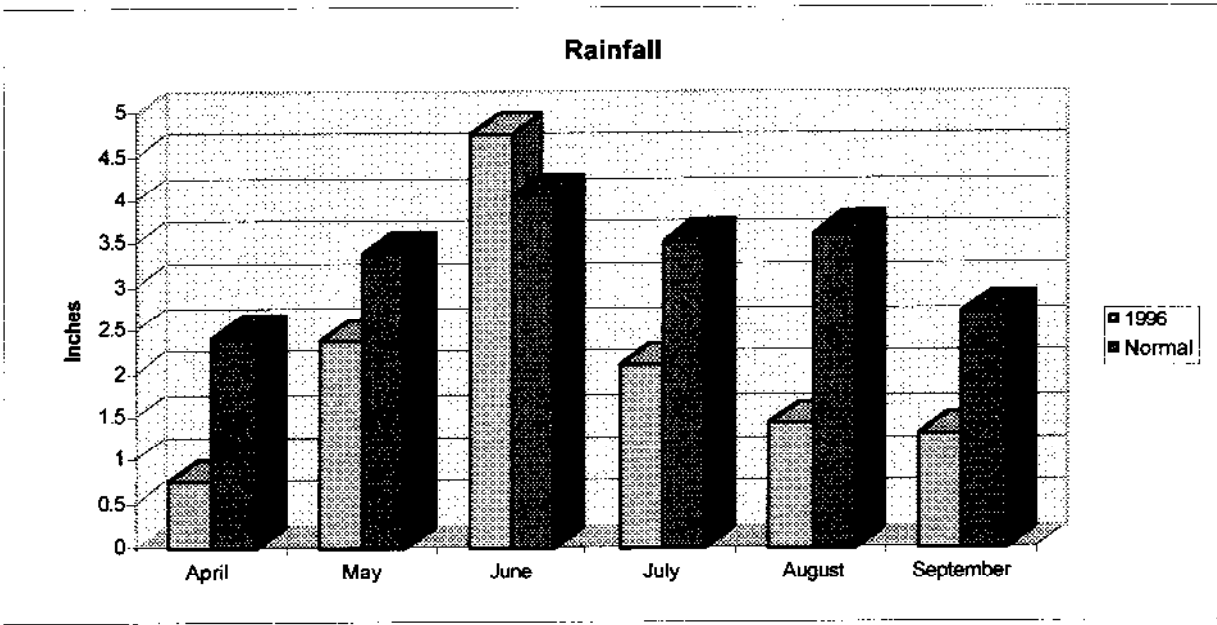
Select	Pick Date	Brix	pH	%T.A.
Meynieu 6	16-Sep	21.1	3.03	0.92
Michurinitz	16-Sep	15.4	2.55	2.43
Millot	16-Sep	24.4	3.35	0.77
Millot (J)	16-Sep	21.3	3.36	0.85
Muscat Ottonel	1-Oct	18.8	3.21	0.76
NY 65.403.1	16-Sep	19.4	2.93	0.89
NY 70.834.5	16-Sep	19.6	3.21	0.83
NY 73.146.17	16-Sep	18.8	3.14	1.11
NY 76.844.19	16-Sep	19.2	2.91	1.16
Oberlin 595	16-Sep	25.8	2.96	1.49
Oberlin 604	16-Sep	25.2	2.93	1.25
Okanagon Riesling	16-Sep	19.8	3.11	0.99
Okanagon Riesling	26-Sep	22.4	2.85	0.84
Phoenix	2-Oct	18.6	3.23	0.72
Pinot Gris	2-Oct	21.6	3.05	1.01
Pinot Noir	3-Oct	20.9	3.15	0.98
PRK 3-16	16-Sep	19.4	2.95	1.21
Ravat 262	16-Sep	19.8	2.89	1.28
Ravat 34	16-Sep	16.8	3.11	0.94
Ravat 6	16-Sep	23.5	3.28	0.78
Riesling	16-Oct	20.1	2.95	1.14
Rittich Red	16-Sep	22.6	3.06	1.23
Rougeon	16-Sep	17.8	2.96	1.17
S 13047	16-Sep	19.4	3.11	0.91
Saperavi	16-Sep	16.8	2.71	2.25
Seyval	16-Sep	20.2	3.03	0.86
Siegfried	16-Sep	20.2	2.85	1.16
St. Croix	16-Sep	21.2	3.07	1.07
St. Pepin	16-Sep	20.9	3.01	1.11
Suelter	19-Sep	18.9	2.71	1.93
Suputinski	16-Sep	20.4	2.91	1.32
Triumph d' Alsace	16-Sep	23.8	2.66	1.81
V. riparia #89	21-Oct	>30	3.06	3.01
V. riparia Bemidji #1	21-Oct	>30	2.88	4.56
V 67154	16-Sep	18.2	2.89	0.99
Veeblanc	16-Sep	12.2	2.57	2.34
Ventura	16-Sep	16.5	2.62	1.92
Verdelet	16-Sep	17.1	3.01	1.34
Vidal	16-Sep	17.1	2.85	1.28
Vignoles	5-Oct	22.9	2.92	1.53
Viognier	4-Oct	18.3	2.96	1.14
Villard Blanc	16-Sep	17.1	2.66	1.39
Vivant	16-Sep	18.2	2.91	1.13

Degree Days & Rainfall

U of MN HRC 1996



	April	May	June	July	August	September
1996	33	214	619	669	570	402.5
1995	4.5	220	630.5	716.5	752.5	339



	April	May	June	July	August	September
1996	0.76	2.37	4.76	2.1	1.43	1.3
Normal	2.42	3.39	4.05	3.53	3.62	2.72