

APPENDIX G

NE 1020 SITES AND DATA COLLECTION PROTOCOL

Table 1. List of cold-climate cultivars planted in NE-1020 project *Multi-state Evaluation of Winegrape Cultivars and Clones* and one additional project block in New York.

State	Cultivars under Evaluation (No. vines)													
	Edel- weiss	Front- enac	Frontenac gris	La Crescent	La- crosse	Mar- quette	MN 1258	MN 1189	MN 1200	MN 1220	MN 1235	Petit Amie	Prairie Star	St. Croix
<i>NE 1020 Coordinated Variety Trials</i>														
Connecticut		50	25			50		25	50		25			50
Iowa		50		50		50	50	50	50	50	50	50	50	50
Michigan		25		25										25
Nebraska	18	36	36	36	36	36	36	36	36	36	36		36	36
NY-Geneva				25		25								25
Pennsylvania				25		25		25			25			
South Dakota		36	36	36		36	25	25	25	36	25	25	25	36
North Dakota		24	24	24		24			24	24	24	24	24	24
Vermont		24		24		24							24	24
Massachusetts		24		24		24								24
<i>Additional Cultivar Trials</i>														
NY-Champlain	12	12	12	12	12	12			12			12	12	12

NE 1020 blocks were planted in 2008; NY Champlain in 2005

Reference:

Burr, T. (Advisor), *NE 1020 Multi-State Evaluation of Winegrape Cultivars and Clones*:
<http://nimss.umd.edu/homepages/home.cfm?trackID=4034>

NE 1020/Viticulture Consortium
Coordinated variety trials
Viticultural Data Collection Protocol.

1. vine growth
 - nodes retained
 - grown pruning weight
 - live shoots per retained node
 - live shoots per vine
2. Acclimation and cold hardiness (if winter injury suspected)
 - bud injury (% dead primary buds)
 - trunk injury (comment, incidence)
 - crown gall
3. In-season crop adjustment
 - shoot thinning: post-thinning shoot counts
 - cluster thinning: -prethinning cluster counts
 - cluster thinning: -post-thinning cluster counts
4. Phenology
 - 50% budburst
 - 50% bloom
 - 50% veraison
 - harvest date
5. Meteorology
 - temperature (hourly)
 - rainfall (daily)
 - continue in winter for min/max
6. crop yield (and yield components)
 - crop weight per vine
 - clusters per vine
 - berry weight
 - berries per cluster
7. juice chemistry (harvest)
 - Brix
 - pH
 - TA
8. Pest tolerance
 - relative disease ratings (if present)
 - comments on insect issues.
 - Spray records

Specific Data Needed	Procedure	Measurement units
Dormant & Early Growing Season		
Grown Pruning weight	bundle and weigh 1st year canes from individual vines.	G/vine
Cordon Length/vine	Measure length of cordon	M
Retained nodes	Count number of buds remaining after pruning; excluding renewal spurs.	nodes per vine
Nodes with live buds	Count number of retained spur or cane buds that have produced live shoots at 4-6 in shoot growth.	No. of 'count' buds with live shoots
Shoots per vine	Count all live shoots, excluding renewals - includes 2ndaries that push.	Number/vine
Derived values:		
Bud survival	Nodes with live buds/retained nodes	Percentage
Crop/pruning weight ratio (Ravaz Index)	Divide Yield (g/vine) by Pruning weight(g)	Ratio
Shoots/meter of row	Shoots per vine / in-row vine spacing (M)	
Shoots per retained node	Total Shoots per vine/ No. retained nodes	

If you suspect significant bud injury from a damaging cold event, it may affect pruning and number of buds you hope to retain. Following assessments should be made when winter injury is suspected:

Acclimation and Cold Hardiness		
Bud injury	Collect several canes/unit; cut open 100 buds, count dead primaries	Dead buds/total number observed
<i>Note: in case of significant bud injury, investigator may want to adjust pruning severity to attain sufficient live buds to compensate for bud injury</i>		
Trunk/cordon injury	Comment on incidence of trunk and cordon injury.	Comments
Crown gall	Evaluate and record incidence in mid-summer, after crown gall has the chance to express itself	% of vines with crown gall symptoms

Midseason crop adjustment: If shoot and/or cluster thinning is used to adjust cropping levels, it may be necessary to make note of these adjustments.

Specific Data Needed	Procedure	Measurement units
<i>In-season crop adjustment</i>		
Post-thinning shoots per vine	After shoots adjusted to 4-5 primaries per foot	Primary shoots remaining per vine
Pre-thinning Cluster counts	count total number of clusters on each count vine before cluster thinning, around bloom	clusters per vine
Post-thinning cluster counts (optional -can do these with harvest)	count cluster number after thinning	retained clusters per vine

Specific Data Needed	Procedure	Measurement units
<i>Phenology and Meteorology</i>		
Air temperature and rainfall	Record air temperature (hourly) And rainfall (daily) (presumes recording weather station on site or nearby)	Degree centigrade Inches or mm. rainfall
budburst	Estimate date at which 50% of buds reached Eickhorn-Lorenz stage 5 or BBCH 09 stage	calendar date
bloom	Estimate date on which 50% of flowers have opened.	calendar date
50% veraison	Estimate date at which 50% of berries have softened/ changed color	calendar date
<i>Derived values</i>		
Maximum daily temperature	Select highest hourly temperature	Centigrade
Minimum daily temperature	Select minimum hourly temperature	Centigrade
Degree days for budburst, bloom, harvest	Calculate corresponding GDD (Base 10 C) for calendar date of 50% budburst, bloom, and veraison from onsite weather station, using daily Min/Max temperatures.	Growing degree-days (Base 10 C)

Specific Data Needed	Procedure	Measurement units
Pest and disease tolerance Diseases <i>West and East :</i> Powdery mildew Botrytis <i>East only:</i> Downy Mildew Phomopsis Black Rot Anthracnose	<p>Note: the goal is to suppress disease development through use of an appropriate spray program. As these trials don't have an 'unsprayed' check, under ideal conditions there will be little disease present.</p> <p>So we suggest a post-veraison qualitative assessment of disease incidence, modeled on Table 3.1.2 from the NY/PA pest management recommendations, listing relative susceptibility to various diseases and Sulfur/copper phytotoxicity:</p> <p>http://ipmguidelines.org/Grapes/content/CH03/default-1.asp</p> <p>Here is a scale:</p> <p>N/a - not present or rated</p> <p>+ notably less incidence/severity than average cultivar; ++ average incidence/severity relative to other cultivars +++ notably higher incidence/severity than other cultivars.</p>	NA - not applicable + less than average ++ average +++ more than average
Insect pests	Insect pests vary so much from region to region. Comment on unusual variability in insect incidence among varieties.	Comment section
Sulfur and Copper phytotoxicity	If you note any phytotoxicity from Sulfur applications (common) or Copper (less common), indicate phytotoxicity with 'Yes' or 'No'	
Spray records	Record for each application: -date - EPA Registration number -material -rate -target pests	One record for each trial.

Specific Data Needed	Procedure	Measurement units
Harvest		
Crop weight	weigh crop from individual vines	kg/vine
Cluster number	count clusters as harvested from individual vines	clusters per vine
Berry weight	Collect at least 100 berry sample per rep and weigh (g)	Average berry weight (g) = G sample weight/no berries per sample
Derived Values		
Average cluster weight	= Yield (g/vine) / ave. cluster number	G/cluster
Berries per cluster	=ave cluster weight (g) / ave. berry weight (g)	Berries per cluster
Fruitfulness (Crop per node)	= Crop weight per vine/ number of retained nodes per vine	G/node
Fruit Chemistry		
Use at least 100 berry sample/rep and measure brix, pH, TA (Larger samples will be more accurate)		
Brix	From berry sample: Press juice, settle, use temperature-adjusting refractometer. Samples should be at room temperature.	degrees brix
pH	pH meter, calibrated for 4.0	pH
Titrateable acidity	Titration, calibrated	grams per liter tartaric acid equivalents (alternate commonly used: g/100 ml)