**Table 1. List of cold-climate cultivars planted in NE-1020 project** *Multi-state Evaluation of Winegrape Cultivars and Clones* **and two additional project blocks in Illinois and 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 |
| *NE 1020 Coordinated Variety Trials* | | | | | | | | | | | | | | |
| 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 |
| *Additional Cultivar Trials* | | | | | | | | | | | | | | |
| NY-Champlain | 12 | 12 | 12 | 12 | 12 | 12 | | | 12 | | | 12 | 12 | 12 |
| Illinois | | 24 | 24 | 24 | | 24 | | | | | | 24 | 24 | 24 |

*NE 1020 blocks were planted in 2008; NY Champlain in 2005; and Illinois in 2008*

*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 | Colllect several canes/unit; cut open 100 buds, count dead primaries | Dead buds/total number observed |
| *Note: in case of significant bud injury, investigator may want to adjust pruning severity to attain sufficient live buds to compensate for bud injury* | | |
| 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 |
|---|---|---|
| ***In-season crop adjustment*** | | |
| 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 |
|---|---|---|
| ***Phenology and Meteorology*** | | |
| 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 |
| ***Derived values*** | | |
| 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**<br>*West and East :*<br>Powdery mildew<br>Botrytis<br><br>*East only:*<br>Downy Mildew<br>Phomopsis<br>Black Rot<br>Anthracnose | **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.<br><br>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:<br><br>http://ipmguidelines.org/Grapes/content/CH03/default-1.asp<br><br>Here is a scale:<br><br>N/a - not present or rated<br><br>+ notably less incidence/severity than average cultivar;<br>++ average incidence/severity relative to other cultivars<br>+++ notably higher incidence/severity than other cultivars. | NA - not applicable<br><br>+ less than average<br>++ average<br>+++ 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:<br>-date<br>- EPA Registration number<br>-material<br>-rate<br>-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 |
| Titratable acidity | Titrator, calibrated | grams per liter tartaric acid equivalents (alternate commonly used: g/100 ml) |