GRAPE GROWING FOR THE NOVICE

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Bluebell

Goals:
• Suggest grapes that will **overwinter** in ND
• Determine **cultural practices** that help sustain these grapes
• Obtain **ripe** grapes in our short growing season
• Have many **happy** grape growers in ND!

Site Selection:

**SLOPE:**
-1.5 TO 3 PERCENT HELPS COLD AIR TO FLOW OUT OF VINEYARD
- FROST POSSIBLY 2 WEEKS EARLIER IN VALLEYS COMPARED TO HILLSIDES

**SOUTH SLOPES**
- BUD BREAK
- MAX DAILY TEMP
- FOLIAGE DRYING
- RADIANT HEATING
- MIN WINTER TEMP
- SEASON LENGTH

**WIND:**
- CALM CONDITIONS CAN OFFER 18°F HIGHER ON LEAVES AND FRUIT COMPARED TO WINDY SITES
- SHELTERBELTS, SOUTH SIDE OF BUILDINGS, FENCE (HOME)

Site Selection:

**SOIL:**
PH (6-6.8 OPTIMUM)
- CONCORD (LABRUSCA) DOES POOR ABOVE 7.0
- I.E. BLUEBELL, E.S. 5-4-71, LOUISE SWENSON

**FERTILITY:**
- TOO MUCH USUALLY PROBLEM (EXCESS GROWTH)
- 0.5-1 LB N/100 LINEAR FT, YEARLY
- 1.0-3.0% O.M.

Site Selection:

**What type of Grapes?**
- Juice (jam, jelly)—easiest
- Table—medium
- Wine—more difficult

Valiant, Worden, Bluebell
Grape Cultivars for ND:
- Low temperature tolerance
- Marginally adaptive cultivars may survive, but not bear fruit
- Some cultivars need a lengthy growing season for fruit maturation

<table>
<thead>
<tr>
<th>Factor</th>
<th>Fargo</th>
<th>Williston</th>
</tr>
</thead>
<tbody>
<tr>
<td>Growing Degree Days F</td>
<td>2160</td>
<td>2200</td>
</tr>
<tr>
<td>Frost-Free Days</td>
<td>130</td>
<td>120-125</td>
</tr>
<tr>
<td>Hardiness Zone</td>
<td>4a</td>
<td>3b</td>
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Cultivars:
- Valiant-red, juice
- King of the North-red, juice
- Bluebell-red, juice
- Somerset Seedless-red, table
- Frontenac-red, wine
- Frontenac Gris-white, wine
- Frontenac Blanc-white, wine
- LaCrescent-white, wine
- Louise Swenson-white, wine
- Prairie Star-white, wine
- Brianna-white, wine
- Marquette-red, wine
- Alpenglow-white, wine
- Petite Pearl-red, wine
- St. Croix-red, wine

Selections (testing):
- Minnesota advance selections
  - MN1131
  - MN1200
  - MN1220
  - MN1235
  - MN1258
  - MN1285 (Itasca)
- Private breeders
  - DM 8521
  - ES 3-20-33
  - ES 4-22-60
  - ES 5-4-71
  - ES 10-18-75
  - TP 1-1-34- (Verona)
  - TP 2-1-17- (Crimson Pearl)

Cultivars with question mark hardness in ND:
- All Vinifera
- All French Hybrids (Foch?)
- All NYSAES cultivars (GR-7?)
- Edelweiss
- LaCrosse?
- St. Pepin
- Petite Amie
- Swenson Red
- Marquette?

Microclimate not taken into account!

Production:
- PLANTING:
  - DORMANT ROOTSTOCK: END OF MAY
  - GREEN MATERIAL: JUNE
- DIMENSIONS:
  - ROW SPACE: 8' OR MORE
  - PLANT SPACE: 6' OR MORE
  - ROW ORIENTATION: N TO S
  - CANOPY NOT HIGHER THAN ROW WIDTH
  - WEED CONTROL: 1.5' EACH SIDE
  - MULCHES OR HERBICIDES
- TRELLIS CONSTRUCTION: JULY OR LATER
- PRUNING: MAINLY BEGINS IN 2ND YEAR
- HARVEST: 3RD YEAR

Production:
- YEAR 1: ROOT GROWTH
- YEAR 2: VINE ARCHITECTURE, PRUNING TECHNIQUES
- YEAR 3: VINE HEALTH, FRUIT QUALITY
Trellis Materials:
- 8', 5” diameter round endposts (AC2 treated)
- 8’ steel ‘T’ line posts
- 12 gauge, hi-tensile wire
- 40”, 4” helix earth anchors
- Turnbuckles/wire strainers

TRAINING SYSTEMS OR TRELLISES

FACTORS TO CONSIDER
- Growth habit
- Cold hardiness
- Fruitfulness of base buds
- Mechanization
- Equipment
- Cost-effectiveness

HIGH-WIRE RENEWAL

VARIABLE RIPENING
INEXPENSIVE TO BUILD/MAINTAIN
GOOD FOR VIGOROUS VINES
ALLOWS FOR EASY HARVEST
LESS CROWDING THAN 4AK
LOW CULTURAL NEEDS/COSTS
VERTICAL SHOOT POSITIONING

FOR UPRIGHT GROWING VARIETIES
GOOD CANOPY SUPPORT
EXCELLENT SUN EXPOSURE
HIGH QUALITY FRUIT
FRUITING ZONE PERFECT FOR RACOONS

GENEVA DOUBLE CURTAIN (GDC)

LARGER YIELDS THAN SINGLE CURTAIN
ACCOMMODATES VERY VIGOROUS VARIETIES
CREATES LARGE CANOPY/CROP
WELL-ADAPTED TO TRAILING GROWTH CVS
INITIAL CAPITAL COST IS HIGHER
EASIER TO OVER-CROP
PRUNING, TRAINING AND CANOPY MANAGEMENT

- Pruning and Training: (Required for profitable grape growing)
  - Controls crop yield
  - Maintains architecture
  - Training usually completed by 3 yr
- Canopy Management: (Shoot positioning and topping)
  - Indeterminate shoot growth – need to maintain optimal form
  - Fruitfulness governed by sunlight exposure to developing buds

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Canopy Management:
- Indeterminate shoot growth – need to maintain optimal form
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CHARACTERISTICS OF THE IDEAL CANOPY

<table>
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<tr>
<th>Canopy characteristic</th>
<th>Optimal value</th>
<th>Justification</th>
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<tbody>
<tr>
<td>Shoot density</td>
<td>3-5 shoots/ft of canopy</td>
<td>Higher values promote shading and lower values cause excess shoot vigor and maybe lower yields.</td>
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<tr>
<td>Shoot length</td>
<td>15-20 nodes</td>
<td>Untrimmed shoots with less than 15 nodes have inadequate vigor, while more than 20 nodes mean excessive vigor.</td>
</tr>
<tr>
<td>Lateral shoot development</td>
<td>Ideally none</td>
<td>Excess lateral shoot growth causes shade. Some lateral shoots may provide carbohydrates to fruit and canes if leaves are exporting carbohydrates.</td>
</tr>
<tr>
<td>Growing shoot tip presence</td>
<td>Ideally none</td>
<td>Ideally shoots stop growing at veraison</td>
</tr>
<tr>
<td>Individual cane wt</td>
<td>0.06-0.1 lb (dorm)</td>
<td>If &lt;0.06 lb suggest inadequate vigor. If &gt; 0.1 lb suggest “bull” wood that is less hard and less fruitful.</td>
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<tr>
<td>Cane pruning wt</td>
<td>0.2-0.4 lb/ft of canopy (dorm)</td>
<td>If &lt;0.2 lb suggest inadequate vigor. If &gt; 0.4 lb suggests canopy shading.</td>
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<td>Ratio of leaf area to fruit wt</td>
<td>3-6 sq ft/lb</td>
<td>If &lt; 3 suggests over-cropped but cv specific.</td>
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OTHER MANAGEMENT PRACTICES

- Shoot thinning
  - Done to open the canopy
  - Shoots thinned before 18” long
  - 3-5 shoots/ft of canopy non-fruitful first
- Selective leaf and lateral shoot removal
  - Exposes fruit – do soon after fruit set (by 3 wk after set)
  - Reduces fruit rots
  - Increases flavor compounds and improves color
  - Decreases TA, pH, K, and vegetative aromas
  - Increases bud fertility and maybe bird damage
  - Need at least 15 (20) leaves to ripen the fruit
- Crop thinning
  - Timing is critical to avoid berry size compensation
    - Wait until 4 wk after fruit set for cvs that compensate
  - Eliminate late clusters and diseased clusters

Herbicide Injury:
- 2,4-D
  - Fan-shaped leaves
  - Leaf strapping
  - Constricted veins

Other Pests:
- Birds
  - Bird Netting
Other Pests: Deer, Raccoon, Rabbit

Questions?