BASIC CARE FOR GRAPES GROWING IN ND

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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!

Frontenac

Site Selection:

Slope:

-1.5 TO 3 % Helps cold air to flow out of vineyard
- Frost possibly 3 weeks earlier in valleys compared to hillsides

-<u>South slopes</u>
Bud break
Max daily temp
Foliage drying
Radiant heating
Min winter temp
Season length

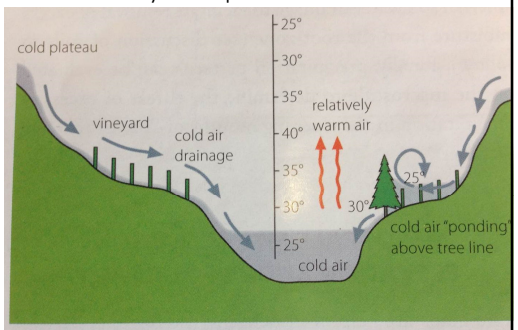


Figure 2.8 ▪ Illustration of site topography effects on air temperatures (°F) during a radiational cooling event.

Wolf et. al. 2008

Site Selection:

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., (50 lb N/A) yearly
- -1.0-3.0% O.M. (1% O.M. releases 20 lb N/A/yr)

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 cvs may survive, but no fruit

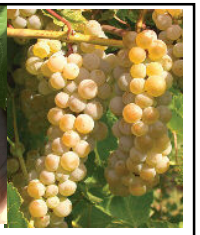
-Some cvs need a long growing season for fruit maturation

Factor	Fargo	Williston
Growing Degree Days F	2160	2200
Frost-Free Days	130	120-125
Hardiness Zone	4a	3b

Cultivars:

Dakota Primus-white, wine
Radiant-white, wine
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
Prairie Star-white, wine
Brianna-white, wine
Marquette-red, wine
Alpenglow-white, wine
Petite Pearl-red, wine

Dakota Primus



Prairie Star

Radiant

Valiant

Minnesota Advance Selections

'Grape R'
- Seedless
- Minimal diseases
- High yielding
- Dense canopy
- **Improved over Somerset Seedless**

'Grape B'
- Seedless
- Minimal diseases
- Thick skin
- Unique flavor
- **Suitable replacement for blueberry**
  - Processing (frozen & baked)
  - Mechanical harvesting
- Under provisional patent

'Grape G'
- Seedless
- Minimal diseases
- **Aromatic & tropical flavors**
- Strong market potential

- Can harvest over 3-4 weeks to meet local demands
- Stores 3-4 weeks
- Under provisional patent

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

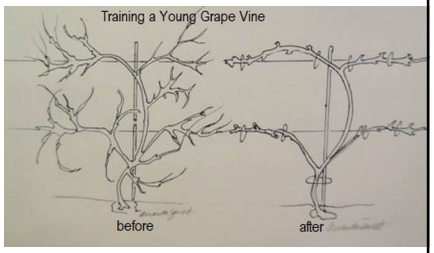
Trellis Materials:

- 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 Trellis Systems

- FACTORS TO CONSIDER
  - Growth habit
  - Physical limitations
  - Fruitfulness of base buds
  - Intended use
  - Cost-effectiveness

Pruning, Training and Canopy Management

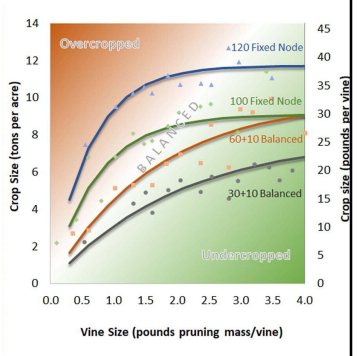


- Pruning and Training:
  - Controls crop yield
  - Maintains architecture
  - Usually completed by 3 yr
- Canopy Management:
  - Indeterminate shoot growth – need to maintain optimal form
  - Fruitfulness governed by sunlight exposure to developing buds

BALANCED PRUNING

Balance between crop size and vine size.

- Crop load: ratio of yield/cane pruning weights
- Want 10-12/1 (10 lb fruit for 1 lb pruned canes)
- Most fruitful buds: 1 yr canes from 2 yr wood.
- More erect shoot or cane: more vigorous growth.
- Bud fruitfulness varies inversely with shoot vigor
- More shade on buds: less fruitful next year.
- Vines over-cropped or water-stressed for several yrs have greatly diminished fruit capacity or ability to ripen fruit.



CHARACTERISTICS OF THE IDEAL CANOPY

Canopy characteristic	Optimal value	Justification
Shoot density	3-5 shoots/ft of canopy	Higher values promote shading and lower values cause excess shoot vigor and maybe lower yields.
Shoot length	15-20 nodes	Untrimmed shoots with less than 15 nodes have inadequate vigor, while more than 20 nodes mean excessive vigor.
Lateral shoot development	Ideally none	Excess lateral shoot growth causes shade. Some lateral shoots may provide carbohydrates to fruit and canes if leaves are exporting carbohydrates.
Growing shoot tip presence	Ideally none	Ideally shoots stop growing at veraison
Individual cane wt	1 -1.6 oz (dorm)	If <1 oz suggest inadequate vigor. If > 1.6 oz suggests "bull" wood that is less hard and less fruitfull.
Cane pruning wt	0.2-0.4 lb/ft of canopy (dorm)	If <0.2 lb suggest inadequate vigor. If > 0.4 lb suggests canopy shading.
Ratio of leaf area to fruit wt	3-6 sq ft/lb	If < 3 suggests over-cropped but cv specific.

OTHER MANAGEMENT PRACTICES

- Shoot thinning
  - Done to open the canopy
  - Shoots thinned before 18" long
  - 3-5 shoots/ft of canopy, remove 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

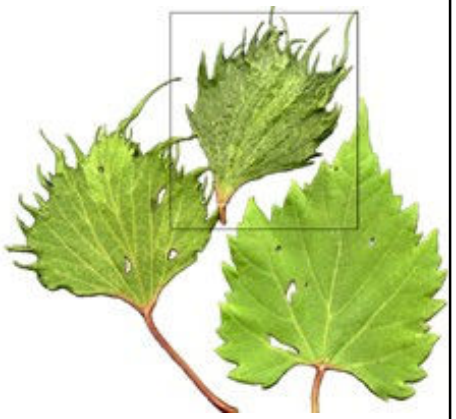
Herbicide Injury:

2,4-D

-Fan-shaped leaves

-Leaf strapping

-Constricted veins



Other Pests: **Birds**

Bird Netting

Other Pests: Deer, Raccoon, Rabbit