Organic Apples and Berries: Variety Selection

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Apples in Nature: The Apple Forests of Central Asia
Apple Production Factors to Manage in Minnesota by Variety Selection?

- **Climate**
  - Cold Winters

- **Consumer Preference**

- **Diseases**
  - Apple Scab
  - Fireblight
  - Cedar apple rust
  - Summer superficial fungi (sooty blotch, flyspeck)
Not Recommended

• Red Delicious
• Golden Delicious
• Jonathan
• Gala
• Fuji
• Braeburn
• Granny Smith
### Relative Scab Resistance of Commonly Grown Minnesota Apple Varieties

<table>
<thead>
<tr>
<th>High Res</th>
<th>Mod Res</th>
<th>Mod Susc</th>
<th>Very Susc</th>
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<tbody>
<tr>
<td>Honeyscrisp</td>
<td>Haralson</td>
<td>SnowSweet</td>
<td>Zestar!</td>
</tr>
<tr>
<td>Keepsake</td>
<td>Sweet 16</td>
<td>State Fair</td>
<td></td>
</tr>
<tr>
<td>Frostbite</td>
<td>Honeygold</td>
<td>McIntosh</td>
<td></td>
</tr>
<tr>
<td>Chestnut</td>
<td>MN 1914</td>
<td>Cortland</td>
<td></td>
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<tr>
<td></td>
<td>Fireside/Connell Red</td>
<td>Regent</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Beacon</td>
<td>Wealthy</td>
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### Relative Fireblight and Cedar Apple Rust Resistance of Common Minnesota Apple Varieties

<table>
<thead>
<tr>
<th>Variety</th>
<th>Fireblight</th>
<th>C-A Rust</th>
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<tbody>
<tr>
<td>Beacon</td>
<td>Susc</td>
<td>Susc</td>
</tr>
<tr>
<td>Chestnut</td>
<td>Res</td>
<td>Med</td>
</tr>
<tr>
<td>Cortland</td>
<td>Med</td>
<td>Med</td>
</tr>
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<td>Susc</td>
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<td>Med</td>
</tr>
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<td>Res</td>
<td>Med</td>
</tr>
<tr>
<td>Honeycrisp</td>
<td>Res</td>
<td>Med</td>
</tr>
<tr>
<td>Honeygold</td>
<td>Susc</td>
<td>Med</td>
</tr>
<tr>
<td>Liberty</td>
<td>Res</td>
<td>Res</td>
</tr>
<tr>
<td>Freedom</td>
<td>Res</td>
<td>Mod Res</td>
</tr>
</tbody>
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<tr>
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</tr>
<tr>
<td>MN 1914</td>
<td>Med</td>
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Early Apples

Zestar!™
- Ripens ~ Sept 1.
- Zones 3-5
- **Well balanced sweet/tart flavor.**
- Excellent for fresh eating and cooking.
- Good storage for an early apple.
- Very susceptible to scab

Chestnut
- Ripens ~ Sept 8.
- Nutty flavor.
- Small and homely
- Fresh eating only.
- Hardy to zone 3-5
Early Apples

MN 1914
• Ripens ~ Sept 5.
• Zones 4 -5
• Intense sweet/tart flavor.
• Excellent for fresh eating and cooking.
• Good storage for an early apple.
• Susceptible to scab

Wealthy
• Ripens ~ Sept 10.
• Tart flavor
• Excellent for baking
• Hardy to zone 3-5
• Susc to scab and fireblight
Midseason Apples

Honeycrisp
- Ripens ~ September 25.
- Well balanced flavor.
- Good for fresh eating and cooking.
- Incredibly crisp texture.
- Outstanding storage life ... 7 months.
- Scab resistant
- Zone 3-5

Sweet Sixteen
- Ripens ~ September 20.
- Sweet, unusual flavor.
- Fresh eating mostly.
- Only fair storage life.
- Upright tree, slow to come into bearing.
- Zone 4-5
Late Midseason Apples

**Haralson**
- Ripens ~ September 30.
- Tart flavor.
- Good for fresh eating and especially cooking.
- Good storage life.
- Very prone to biennial bearing.
- Nice compact tree.
- Zone 3-5

**Honeygold**
- Ripens ~ October 5.
- Sweet, balanced flavor.
- Good for fresh eating and cooking.
- Fair storage life.
- Very susceptible to bruising and fire blight.
- Zone 4-5
Late Season Apples

Regent
- Ripens ~ October 10.
- Well balanced flavor.
- Good for fresh eating and cooking.
- Good storage life.
- Rather susceptible to scab.

Keepsake
- Sweet unusual flavor.
- Best for fresh eating.
- Somewhat small and not overly attractive.
- Excellent storage life.
- Hard to find trees:
  - Cummins Nursery, NY
  - Fedco Trees, Maine
  - St. Lawrence Nursery, NY
Late Season Apples

Fireside/Connell Red
- Ripens ~ October 12.
- Sweet, low acid flavor.
- Mostly for fresh eating.
- Good storage life.
- Weeping tree from.
- Zone 4-5

SnowSweet
- Ripens ~ Oct 10
- Rich, Sweet flavor
- Snow white firm flesh
- Flesh browns very slowly
- Good fresh or baking
- Zone 4-5
# Eating Quality of Scab Resistant Varieties

<table>
<thead>
<tr>
<th>Good</th>
<th>Fair</th>
<th>Poor</th>
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</thead>
<tbody>
<tr>
<td>Liberty (late)</td>
<td>Redfree (early)</td>
<td>Nova Easygrow (midseason)</td>
</tr>
<tr>
<td>Freedom (late)</td>
<td>Dayton (early)</td>
<td>Macfree (late)</td>
</tr>
<tr>
<td>GoldRush (very late)</td>
<td>William’s Pride (early)</td>
<td>Prima (midseason)</td>
</tr>
<tr>
<td></td>
<td>Pristine (early)</td>
<td>Priscilla (late)</td>
</tr>
<tr>
<td></td>
<td>Murray (early)</td>
<td>Jonafree (late)</td>
</tr>
<tr>
<td></td>
<td>McShay (midseason)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Scarlet O’Hara (midseason)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pixie Crunch (midseason)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Enterprise (very late)</td>
<td></td>
</tr>
</tbody>
</table>
Breeding of Disease Resistant Apples

- *Malus floribunda* and other crab species used in crossing as sources of resistance to apple scab

- Seedlings inoculated and screened for apple scab and sometimes fireblight
Scab Resistant Apples

**Liberty**
- Ripens ~ Sept 30.
- Zones 4-5
- Balanced sweet/tart flavor.
- Good for fresh eating and cooking.
- Good storage
- Also resistant to fire blight, Cedar Apple Rust

**Freedom**
- Ripens ~ Oct 8.
- Good fresh, cooked, cider
- Homely, bronze-red striped
- Hardy to zone 4-5
- Also resistant to fire blight, Cedar Apple Rust
# Apple Rootstocks

<table>
<thead>
<tr>
<th>Rootstock</th>
<th>Size</th>
<th>Age of bearing</th>
<th>Anchorage</th>
<th>Cold hardy</th>
<th>Suckering</th>
<th>Fire blight</th>
<th>Phytophthora crown rot</th>
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</thead>
<tbody>
<tr>
<td>Seedling</td>
<td>100% (var)</td>
<td>Late</td>
<td>Exc</td>
<td>VG</td>
<td>Many</td>
<td>Variable</td>
<td>Variable</td>
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<tr>
<td>MM 106</td>
<td>70</td>
<td>Med</td>
<td>VG</td>
<td>Good</td>
<td>V few</td>
<td>Mod Res</td>
<td>Susc</td>
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<tr>
<td>M 7</td>
<td>60</td>
<td>Med</td>
<td>VG</td>
<td>Fair</td>
<td>V Many</td>
<td>Mod Res</td>
<td>Mod Res</td>
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<tr>
<td>M26</td>
<td>50</td>
<td>Early</td>
<td>Fair</td>
<td>VG</td>
<td>V Few</td>
<td>V Susc</td>
<td>Mod Susc</td>
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<tr>
<td>Bud 9</td>
<td>30</td>
<td>V Early</td>
<td>Poor</td>
<td>VG</td>
<td>V Few</td>
<td>Susc</td>
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<tr>
<td>M 9</td>
<td>35</td>
<td>V Early</td>
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<td>Susc</td>
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</tr>
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Rubus crops (Rosaceae)

Raspberries
• Red raspberry – *Rubus idaeus*
  – Summerbearing or floricane fruiting
  – Fallbearing or primocane fruiting

• Black raspberry – *Rubus occidentalis*
  – Pacific Northwest, northeastern US
  – Cultivars: Jewel, Black Hawk, Bristol, MacBlack

• Purple raspberry – hybrid derivatives of red and black
  – Brandywine – hardier, late, tart, good processing
  – Royalty – less hardy, sweeter, good processing, late,
Floricane-fruiting Raspberries for MN

- **Boyne** – early, susc to anthracnose
- **Prelude** - early
- **Nova** - early midseason
- **Killarney** - early midseason, root rot resistant
- **Latham** - late midseason
Primocane-fruiting Raspberries for MN

- **Summit** - very early, small berry, high yield
- **Double Delight** - early, productive, medium size and firmness, hardy
- **Autumn Bliss** - early, medium size, good flavor, moderate yield
- **Autumn Britten** – early, good flavor, firm, early, similar season and better fruit than Aut Bliss, but less productive
- **Fallgold** – early, yellow, soft, medium size fruit
- **Polana** – early, medium size fruit, susc to Verticillium wilt and Phytophthora root rot
- **Caroline** - 7-10 days earlier than Heritage, larger fruit, excellent flavor and firmness
- **Heritage** – late, medium size fruit
- **Goldie, Kiwigold** – amber sports of Heritage, late, medium size fruit
Blueberries

- Need acid soil.

- 2 or more varieties best for productivity and larger fruit.

- Bird problems.

- No sprays required.
Blueberries

Hardy
- Chippewa
- Northblue
- Polaris
- Northland
- St. Cloud
- Superior

Not-quite-hardy
- Patriot
- Bluetta
- Reka
- Jersey
- Bluecrop
Favorite Strawberry Varieties for Minnesota

• Early Season

Annapolis

Honeoye

Photos from Nourse Farms
Favorite Strawberry Varieties for Minnesota

• Early Midseason

![Cavendish, Nourse Farms](image)

**Cavendish**

- Hardiness
- Productivity
- Fruit size
- Appearance
- Frt Quality
- Frt Durability

**Kent**

- Hardiness
- Productivity
- Fruit size
- Appearance
- Frt Quality
- Frt Durability
Favorite Strawberry Varieties for Minnesota

- Late Midseason

**Glooscap**
- Hardiness: 3
- Productivity: 4
- Fruit size: 3
- Appearance: 2
- Frt Quality: 3
- Frt Durability: 3

**Mesabi**
- Hardiness: 4
- Productivity: 5
- Fruit size: 4
- Appearance: 4
- Frt Quality: 5
- Frt Durability: 3

_June Yellows_, high pH intolerant
Favorite Strawberry Varieties for Minnesota

- Late Season
- Winona

Jewel:
- Hardiness
- Productivity
- Fruit size
- Appearance
- Frt Quality
- Frt Durability

Sparkle:
- Hardiness
- Productivity
- Fruit size
- Appearance
- Frt Quality
- Frt Durability

Excellent plant health/vigor

Photos from Nourse Farms
New Varieties

**Itasca** (MNUS 138)

- Early season
- Productive
- Attractive berries
- Medium sized berries
- Moderately soft flesh
- Tough skin
- Tangerine flavor
- Good processing
- Good cold hardiness
- Resistant to red stele root rot
- Resistant to foliar diseases
- Susceptible to Phytophthora cactorum crown rot

![Bar graph showing various attributes of Itasca variety]

- Hardiness
- Productivity
- Fruit size
- Appearance
- Frt Quality
- Frt Durability
New Varieties

• **Wendy** (KRS-02 or K98-6)
  - Ag Canada - Nova Scotia
  - Early Season
  - Med-Large fruit
  - Very Good flavor
  - Productivity ???
  - Winter hardiness ???
New Varieties

L’Amour

- Early midseason
- Productive?
- Winter hardiness?
- Bright Red Attractive berries
- Large calyx
- Large sized berries
- Firm flesh
- Excellent balanced flavor
- Good processing
- Moderately Resistant to foliar diseases
Grapes

• For Juice and Jelly
  – Bluebell (pink juice)
  – Worden (blue juice)
  – Beta (blue juice)
  – Valiant (blue juice, susc tp downy mildew)

• For Fresh Eating
  – Bluebell (blue)
  – Edelweiss (white)
  – Louise Swenson (white)
  – Swenson Red (red)

• Seedless Grapes (winter protection required)
  – Mars (blue seedless)
  – Petite Jewel (red seedless)
  – Somerset Seedless (red)
Grapes

Wine grapes

• Red wine (blue grapes)
  – Frontenac
  – St. Croix
  – Marquette

• White wine
  – Frontenac gris
  – St. Pepin
  – La Crescent
  – Louise Swenson
Pears

- Must have two varieties.
- Often slow to come into bearing.
- No sprays required usually!
Pear Varieties

Good Quality
Fireblight Resistant
- Summerrcrisp
- Gourmet
- Luscious
- Ure

Larger Fruit
Fireblight Susc
- Parker
- Patten
Plums

• Need two varieties.

• One variety must be a pollenizer like Toka.

• Short lived (~10-15 yrs).

• Only a few pests.
Plum Varieties

- Toka (pollenizer)
- Alderman
- Superior
- Underwood
- La Crescent
- Mount Royal (euro type)
Apricots

- Must have two varieties.
- Flower buds often killed by spring frost.
- Short lived (~15 years).
- Few pests.
- Best for jam.
Apricot Varieties

- Sungold
- Moongold
- Scout
- Westcot
Tart Cherries

Varieties
- Meteor
- North Star
- Mesabi
- Bali

- Only need one variety.
- Short lived (~15 years).
- Bird problems.
- Few sprays needed.
Currants and Gooseberries

- Red and white currants (*Ribes sativum* and other species)
  - Red
    - Red Lake
    - Rovada
  - White
    - White Imperial
    - Primus
    - Blanka
- Blackcurrant (*Ribes nigrum*)
  - Consort
  - Titania
  - Crusader
  - Ben Sarek
- Gooseberry
  - Hinomakki Red
  - Pixwell
Other Fruits

- Juneberry (*Amelanchier* sp.)
- Elderberry (*Sambucus* sp.)
- Bush cherries (*Prunus* sp.)
- *Actinidia kolomikta*