

# Tree Fruit Varieties for Michigan

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Commercial fruit production is limited to those Michigan areas that are free from excessively cold winter temperatures or frequent spring frosts. Some types of temperate fruit may be grown in most areas of Michigan if one carefully selects site, soil and variety.

Flower buds vary in their hardiness. Apple buds may withstand mid-winter temperatures as low as -30 degrees F., while peach flower buds may be killed at -12 degrees F. The critical temperatures for other tree fruits usually range somewhere between these extremes. Pollination requirements vary with different fruit crops. Many require another variety to assure fruit production — eliminating the possibility of growing a single tree and obtaining an adequate crop of fruit. Also, insects and disease problems tend to increase in severity through the lifetime of a fruit planting.

The success in growing fruit crops in the home garden depends upon selection of locally adapted fruit crops and performance of necessary cultural practices. Tree fruit crops require considerable attention — frequently spraying for pest control, careful training or annual pruning; and some require a relatively large area for plant development. These fruit crops are therefore less suited for home gardens than are the small fruits such as strawberry and raspberry.

Varieties for each fruit are listed in this publication in their order of ripening. Unless otherwise indicated, the approximate time of harvest maturity refers to southwestern Michigan, and occurs later in more northern areas.

## Sports

Sports, strains, mutations, are synonymous terms. They refer to hereditary (genetic) changes that can occur in cells of undeveloped stem tips while still within the vegetative bud. These genetic changes give rise to branches which are different in some respect from the rest of the plant. If such

changes occur very early in the development of the bud, the whole resulting branch will be changed, and the mutation is "stable." However, if the change occurs when the rudimentary branch is partially formed in the bud, a mixture of mutant and normal cells and branches results, and the mutation is "unstable." The stable, complete branch mutations are potentially valuable because trees of the new strain grafted from them are identical to the parent mutant branch.

Mutations can be expressed in different ways. The most common genetic change of tree fruits now in commercial use were selected for improved skin color of the fruit, earlier ripening season, or for their spur-type habit of growth. Examples of other types of mutations are pest resistance, hardiness, and fruit quality. Actually, all characters may mutate.

These fruit "sports," as nurserymen term them, arise by chance in the natural process of cell division. They may also be induced artificially by exposing dormant stems to chemicals (mutagens) known to cause genetic mistakes, or by use of radiation from radioactive isotopes or X-rays. Several promising apples and sweet cherries have been developed in this manner.

Natural sports occur quite often. More than a hundred improved red sports and spur-types of the 'Delicious' apple alone have been named and introduced, mostly by fruit growers. The propagation rights for a promising new sport can be sold to nurseries and might be worth thousands of dollars to the grower whose sharp eyes detect it.

Although most of the fruit sports that have become commercially important are apples, useful sports can occur in any crop. The older or more widely used a variety is, and the more trees there are of it, the greater the chance for sports to occur.

Since sports are genetic changes, they should be treated like new varieties. Although a sport may have been selected for its superiority in a particular trait, like skin color, it may differ from the parent variety in other respects. Careful testing should be done to determine

adaptability to regional growing conditions and suitability to markets. Changes in planting distances and rootstocks for spur-types are usually necessary. And, just because a red sport may develop red color earlier than the parent variety, does not necessarily mean it matures earlier. Season of harvest maturity must therefore be carefully determined to avoid premature picking.

## Pollination Requirements

Fruits arise from flowers, and pollination and fertilization of the flower must generally precede fruit development. Thus, it is important that every fruit grower understand the processes involved and the factors that may influence fruit set — the development of a mature fruit from a flower.

## Flower Structure

The typical fruit flower consists of showy petals; a group of leaf-like structures at the base of the petals called *sepals*; many *stamens* which produce and release pollen; and one or more *pistils*, the ovary of which will give rise to the fruit.

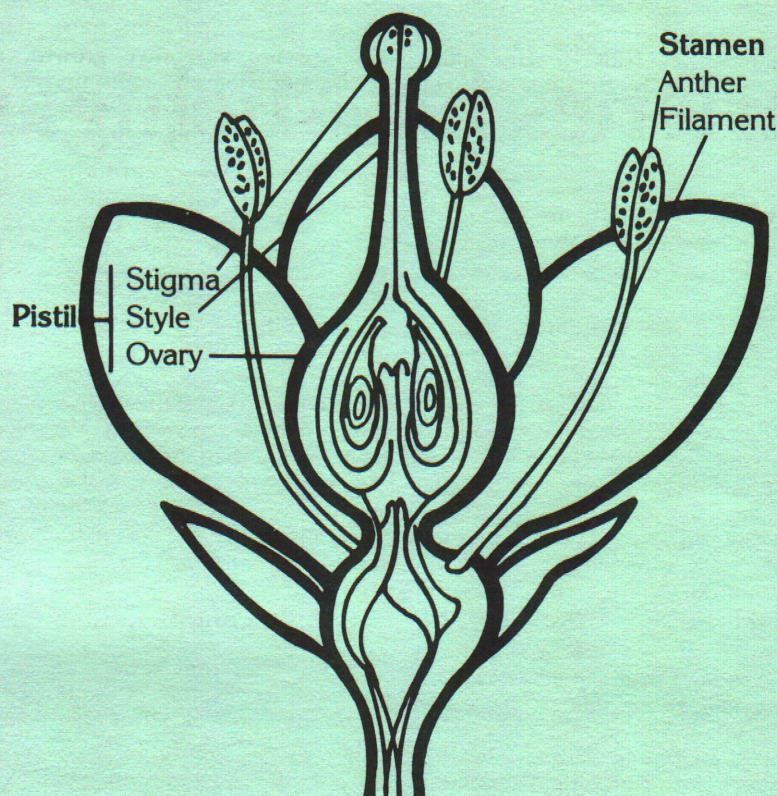
## Pollination

The Pollen grain is a tiny bit of living material which serves as the male reproductive unit of higher plants, and is equivalent to the sperm of higher animals. Pollination is the transfer of the pollen grains from the anther of the stamen to the stigma of the pistil of a flower. In our common Michigan fruits, pollination is accomplished primarily by insects, usually honey bees. When an exchange of pollen occurs among flowers of the same variety, then the process is known as *self-pollination*. When the pollen transfer involves two or more varieties, then it is *cross-pollination*.

## Conditions favoring pollination

1. *An adequate supply of bees.* If the number of wild bees near the fruit planting is insufficient, the grower must either

## Flower anatomy



buy or rent honey bees. At least one strong hive per acre of fruit is needed, and two hives in very dense plantings.

2. *Hives properly located.* Place bee hives in a sunny spot, where they will get protection from cold winds. This will insure maximum bee activity.

3. *Avoid killing bees.* Toxic chemicals should not be applied to fruit plantings in bloom, or when wild flowers or legumes are blooming in or near the orchard, unless these plants can first be mowed.

4. *Favorable weather conditions.* Optimum temperature for bee flight is about 75°F. Temperatures below or above this are likely to reduce bee activity. Temperatures below 60°F during bloom significantly reduce bee flight. Strong winds and rainfall also reduce bee activity. High humidity causes pollen clumping and decreases the effectiveness of the pollinating insects.

### Fertilization of the Flower and Fruit Set

Under favorable conditions (65°-75°F) following pollination of the flower, the pollen grains on the stigma of the pistil germinate, developing a slender tube, which grows downward through the style into the ovary to the ovule. The male cell within the pollen grain then makes its way down through the tube to the ovule, where it unites with the female

cell in a process called fertilization. Temperatures above freezing, but below 60°F, tend to interfere with the fertilization process and fruit set by preventing normal germination of pollen grains and complete development of pollen tubes.

Following fertilization, the ovule begins to develop into a seed, which in turn stimulates the tissue around it to begin forming the fruit. If fertilization is not completed, fruits will generally not develop.

In apples, there are many ovules, and if some of these are not fertilized, the resulting fruit is likely to be deformed. On the other hand, pear flowers, and to a lesser extent, certain varieties of apples, sometimes form well-shaped seedless fruits without fertilization of the ovules.

Fruit varieties capable of setting fruit with their own pollen are said to be *self-fruitful*. Those not able to set fruit with their own pollen are *self-unfruitful*. When two varieties pollinate each other, but one or the other does not set fruit, the combination is *cross-unfruitful*. If no fruit or very few fruit develop and mature on both varieties in the combination, then they are said to be cross-incompatible.

Some fruit varieties have sterile pollen, and are therefore poor pollinizers for other varieties. Rhode Island Greening apple is an example of such a variety. unfruitfulness often results from incomplete

development of the pollen tube in self-unfruitful varieties or variety combinations.

Although the degree of fruitfulness varies with the variety, most apples, pears and plums are at least partially self-unfruitful, and benefit from the presence of a pollinating variety. If a particular two-variety combination is cross-unfruitful or cross-incompatible, or if one variety has sterile pollen, then a third variety will have to be added to the planting.

When it is necessary to have two or more varieties in a planting for pollination, an effective plan is to use the less valuable pollinizing variety for every third row, with the more valuable variety in the other two rows. Reduce the number of less valuable pollinizer trees to every third tree in every third row, if the major variety is relatively self-fruitful. However, this practice makes spraying and harvest difficult.

In high density apple plantings in which the trees form solid hedgerows, bees do not move laterally from row to row very well — about 10%, according to English experts. In spite of closer planting distances, it is probably best to use a pollinating variety for every third or fourth row.

Peaches and red tart cherries, with a few exceptions, are self-fruitful, and can be planted in solid blocks of one variety. Sweet cherry varieties, with rare exceptions, are completely self-unfruitful, and many combinations are cross-unfruitful. More detailed recommendations for individual fruits are included in sections on specific fruits.

Tree nutrition is an important factor in determining fruit set, in addition to pollination and weather considerations. If trees were weakened the previous season by diseases or insects, low levels of soil nutrients, or large crops, June drop will be high, and fruit set reduced.

### Season of Bloom, Age of Bearing and Fruit Set

*Season of bloom:* Fruit set may be greatly reduced if varieties which must pollinate each other do not overlap in their periods of bloom. A very early blooming apple variety like McIntosh, and a very late bloomer like Northern Spy, may completely miss each other in a cool spring. It would be wise to have a midseason blooming variety like Golden Delicious as the third variety to avoid any problem of this sort.

*Age of bearing:* Fruit set will be lacking in a young orchard of Jonathan and Northern Spy apples during the first four or five years after the Jonathan trees

begin to bloom (the age of perhaps five or six), because they will have no pollen from the Northern Spy trees, which do not start blooming until they are 10 years of age or older on a standard rootstock (slightly earlier on dwarfing rootstocks).

### Sports (strains) as Pollinizers

Red sports and spur types are cross-incompatible with the parent variety from which they were derived. Therefore, when considering what varieties to use as pollinizers, the red sports and spur types should be handled as if they and the parent variety were the same.

### Unfruitful Trees — Remedies

On occasion, an orchard has a varietal combination that is not providing adequate pollination and fertilization for good set. Fortunately, several things can be done to correct the situation.

A *Bouquet* of about a dozen small, flowering branches can be taken from a compatible variety, just before the blossoms open, and placed in a pail of water on the sunny side of each tree that requires cross pollination just before it blooms. Bees will pick up the compatible pollen from these bouquets and transfer it to the flowers of the adjoining trees, insuring good fruit set, other conditions being satisfactory.

*Special inserts* containing pollen of the proper variety can be purchased and placed into hives of honey bees in the problem orchard. As the bees pass in and out of the hives, they will pick up the compatible pollen and carry it to the flowers of the trees requiring it.

*Topworking* is a more permanent solution for the orchard with inadequate pollination. This involves introducing a compatible source of pollen by grafting each main limb of a young tree with a more desirable variety. This should be done to at least every third tree in every third row in the orchard. If the trees to be grafted are mature ones, then several branches high in the tree should be grafted, preferably on the south or southeast side of the tree, where bees are likely to be most active.

### Apple Varieties

(Listed in order of ripening; asterisk (\*) indicates usefulness for both fresh market and processing.)

**Lodi:** (mid-July) Fruit similar to Yellow Transparent, but larger and slightly later. Requires several pickings. Tends to fruit on end of terminal growth, which adversely affects fruit finish. Fruit has a short shelf life.

**Quinte:** (late July) Fruit is medium in size, conic in shape and has bright red blush and yellow ground color. Requires thinning to obtain fruit size. Has tendency for biennial production. Probably earliest good eating apple, but requires three to five pickings for optimum color.

**Vista Bella:** (one week after Lodi) Fruit medium large, round with 3/4 medium red blush, and requires two pickings for color. Requires thinning for fruit size. One of the best dessert apples in its season. Vigorous tree.

**Jerseymac:** (mid-August) McIntosh-type apple that is more attractive than McIntosh, and seems to color well under hot late summer conditions (3/4 red). Fruit bright red, with good size, shows bruises easily, and will store about one month. Moderately vigorous trees bear young and produce annually.

**Viking:** (mid-August) Fruit about 2 3/4" in size with glossy red color, white flesh and tart flavor. Requires two pickings for color, and appears to be light, annual producer.

**Tydemans' Red:** (late August) Large attractive fruit with dark red blush over faint stripes. Fruit firm, but tender with mild flavor. Requires two pickings. Poor quality if picked too early. Shoot growths have numerous blind nodes, giving tree a straggly appearance. Tends toward terminal fruiting. Produces annually, and may require stopdrop spray.

**Paulared:** (late August — early September) Fruit medium-sized with dark solid red color and heavy bloom. Firm flesh of good quality. Tends to be well colored a week before it should be harvested for best quality. May require two harvests. Has storage life of six to eight weeks.

**Mollie's Delicious:** (early September) Ripens a week or so before McIntosh. Fruit is medium-sized to large, conic, and resembles Delicious. Skin is two-thirds medium-red, bluish and striped. Flesh is coarse. Flavor is bland and quality is good. Trees are vigorous and not very productive. Fruit has roadside market appeal in its season but lacks firmness and shelf life for distant marketing.

**Jonamac:** (early September, one week before McIntosh) Early fall dessert apple with darker color than McIntosh, and prominent dots. Fruit only medium-sized, firm, and mild in flavor. May require thinning. For dessert only.

**McIntosh\*:** (mid-September) One of Michigan's major apple varieties. Hardy tree, producing a quality dessert apple that is firm, crisp, but easily bruised, and

tends to lack red color under warm conditions. Susceptible to scab and pre-harvest drop. Spur-type sports tend to produce less vegetative growth, more spur production and more upright tree. Red sports color better in warmer regions and in poor coloring seasons.

**Spartan:** (late September) Firm McIntosh-type apple that tends to color, store and ship better than McIntosh. Dark-red bluish skin color with firm, crisp, juicy flesh and mild flavor. Thinning necessary for size and annual production. Tends to drop. Tree is moderately vigorous.

**Rhode Island Greening:** (late September) Green-fruited processing variety that should be picked 7 to 10 days after McIntosh for size and quality. A productive tree, but susceptible to fireblight, and a poor pollinizer.

**Jonathan\*:** (late September) One of Michigan's most important commercial varieties. Fruit is medium size, tart and has high quality, but is susceptible to fruit spot and breakdown in storage. Fruit thinning is important for size. Trees are productive, come into bearing early, produce annually, but are susceptible to fireblight and powdery mildew. Several strains are available, including Anderson (larger in size), Jonnee and Blackjon which color earlier.

**Empire:** (early October) A McIntosh-type, with better color than McIntosh, milder in flavor, semi-sweet like Delicious. Fruit are medium-sized, attractive, with solid red skin color, with numerous rather conspicuous dots, and heavy waxy bloom. Stores very well. Trees are productive, bear annually, form wide-angle crotches, and are moderately vigorous. Lacks yellow flesh desirable for processing.

**Delicious:** (early October) A popular dessert variety grown throughout the apple producing areas of the country. More sensitive to cold in late winter and early spring than McIntosh. Numerous sports, both standards and spur-type are available with improved coloring characteristics. Most spur-types tend to mature five to seven days later than less highly colored standard strains. To avoid maturity and color problems at harvest, do not mix sports in orchard planting.

**Holly:** (October) A fresh market apple similar to Delicious, conic but with less prominent protuberances. Ripens 8 days after Delicious with skin that is deep solid red. Crisp flesh is juicy and sweet in flavor, but more tart and superior to Delicious. Fruit stores well. Trees bear early and are productive.

**Idared\***: (October) An attractive apple, medium to large with bright red color. Flesh is firm and somewhat acid. Fruit stores exceptionally well. Trees are medium in vigor, blossom early, bear annually and are productive. Susceptible to powdery mildew and fireblight.

**Golden Delicious\***: (October) A yellow apple with outstanding quality for both processing and fresh market. Trees bear early and are productive, but must be thinned to achieve annual production and acceptable fruit size. Fruit very susceptible to russetting so that fruit finish is frequently a problem in Michigan. Fruit tends to shrivel in storage.

**Northern Spy\***: (mid-October) An exceptional variety for processing, and in some demand for roadside markets. Tree slow to come into bearing, and light crops tend to develop bitter pit and breakdown. Fruit are large, bruise easily, and must be handled carefully. Excellent spicy flavor. A poor pollinizer.

**Mutsu**: (mid-October) Large, green fruit at harvest, develops some yellow color in storage; occasionally shows some orange blush. Less susceptible to russet and shrivel than Golden Delicious. Firm, dense flesh. Produces excellent yields for processing. Vigorous tree, requiring pollination by other varieties. Has shown some susceptibility to fireblight and bacterial spot infection in fruit lenticels.

**Rome Beauty\***: (late October) Fairly large, attractive, red fruit of fair dessert quality. Stores well, but susceptible to storage scald. Excellent for baking. Trees come into production at an early age, bloom late in the spring, tending to escape frost injury and produce annually.

### Scab Resistant

Scab resistant apple varieties have recently become available. Both fruit and foliage are resistant to apple scab infection, and fungicide applications are not necessary for controlling this disease on these varieties. However, protection against other fruit diseases and insects is necessary. These varieties are:

**Redfree**: (August) A red, glossy, medium size dessert apple with white flesh and crisp, juicy texture. Ripens 3 weeks before Prima. Fruit has 4 to 6 weeks storage life.

**Prima**: (early September). Fruit is medium in size, red stripe or blush over yellow ground color. Flesh is greenish-white, juicy with fine texture. Does not tend to drop prematurely.

**Jonafree**: (late September) A medium red, medium size apple that resembles Jonathan. Flesh is yellow, firm, crisp and

juicy. Resistant to scab and fireblight. Upright growing tree.

**Priscilla**: (early October) Fruit is medium-to-large with 60% red color on a bright yellow background and glossy finish. Flesh is yellowish, crisp, but the skin is tender. Stores for two to three months. Tree is moderately vigorous. Not a commercial variety, but might have merit for home garden.

**Liberty**: (mid-September) A dessert apple ripening just after McIntosh. It is resistant to many major apple diseases. Fruit is red striped over yellow-green ground color. The vigorous, spreading trees set heavily and require fruit thinning for annual production.

### Pear Varieties

(listed in order of ripening)

**Clapp's Favorite**: (mid-August) A large attractive lemon-yellow pear of good quality, maturing in late summer. Trees are very susceptible to fireblight, but are productive and hardy, yielding fruit of good size. Fruit breaks down rapidly at the core if picked late.

**Bartlett**: (late August-early September) The leading pear variety, and best one for Michigan. Fruit is medium-large, bell-shaped with attractive yellow color. Excellent quality, juicy, with smooth texture. Tree is vigorous, productive, but susceptible to fireblight.

**Flemish Beauty**: (early September) Suggested for northern, colder areas of Michigan. Fruit medium-to-large, roundish, with a thick neck, and yellow with a red blush. Good dessert quality with a smooth, spicy flavor. Tree is vigorous, productive and hardy, but susceptible to fireblight. Ripens 10 days after Bartlett.

**Spartlet**: (mid-September) A new Bartlett-type variety maturing about two weeks after Bartlett. Fruit on young trees have been large, with a smooth skin, greenish-yellow with reddish blush. Flesh is smooth, slightly fibrous, and flavor is somewhat bland compared to Bartlett. Fruit stores three months. Tree is more spreading than the Bartlett.

**Bosc**: (early October) Grown principally as a pollinizer for Bartlett. Fruit is medium large with a long tapering neck, and golden color overlaid with a bronze russet when ripe. Fruit has good dessert quality, juicy, with smooth texture and rich flavor, and keeps well in storage at 30 to 32 degrees. Trees are large, vigorous, productive, more spreading than Bartlett, and very susceptible to fireblight.

### Peach Varieties

(listed in order of ripening)

Wood and flower buds of peach trees are susceptible to dormant season cold injury. Planting adapted varieties and careful site selection are important factors in peach production. Market use also influences choice of varieties.

Peaches may be classified as melting flesh freestone (pit separates easily from flesh) and non-melting flesh clingstone (pit clings to flesh). The melting flesh freestone varieties are grown commercially mainly for fresh market. Most home canners and freezers also prefer freestone varieties because of ease of pit removal and their finer flesh texture. Early maturing varieties of melting flesh peaches are often not freestone. The processing industry prefers the non-melting flesh clingstone varieties because their flesh withstands handling well during harvest and processing.

Michigan peach production is concentrated in the southwest primarily because of the length of the growing season and the proximity to Lake Michigan and its favorable climatic influence. Plantings occur on relatively frost-free sites in other parts of the state as a result of local demand for fresh market peaches. Early maturing varieties are recommended for northern areas, and the hardest varieties for inland locations.

**Harbinger**: An extremely early, melting flesh, semi-free peach that ripens 30 days before Redhaven. Tree is vigorous, and slightly more flower-bud hardy than Redhaven. Fruit is small, soft, bright red over yellow ground color, and requires heavy early thinning. Fruit often has split pits and is suggested only for local fresh sales.

**Candor**: Early, melting flesh, semi-free peach that ripens 20 days before Redhaven, and has flesh that resists browning. Flower bud hardiness is comparable to Redhaven, and trees are resistant to bacterial spot. Sets heavy crops that require thorough, early thinning.

**Garnet Beauty**: A Redhaven sport identical in many characteristics to Redhaven, except for 10 to 12 days earlier maturity, slightly clingier pit, and a somewhat blander flavor. Tree adapted to Michigan.

**Sweethaven**: Matures 14 days before Redhaven, with excellent flavor for its season. Early, thorough thinning is necessary for fruit size. Fruit are round, medium-small, semi-cling, with 90% red-striped blush over yellow ground color. Suggested only for local fresh sales but not for home canning.

**Harbelle:** Freestone, matures 7 days before Redhaven, and is slightly less hardy. Fruit is large, golden, with 60% red blush. Firmer than Sunhaven.

**Redhaven:** Freestone of excellent quality, semi-free until fully ripe, and above average in flower bud hardiness. Vigorous tree, sets heavy crops, and requires careful thinning. Bright red over golden ground color. Most adapted variety for Michigan, but often hard to size.

**Reliance:** Very hardy, yellow-fleshed freestone. Fruit is soft, only fair in quality and dull colored. Useful mainly for the home garden in cold areas and frosty locations.

**Newhaven:** Matures 1 to 5 days after Redhaven. Trees moderately vigorous. Fruit are roundish oblong, with more prominent shoulders and suture than Redhaven; firmer and more tolerant to bacterial spot than Redhaven. Is 70% bright red over golden-yellow ground color. Very attractive, sizes well and has short fuzz. Can harvest in 3 pickings, although late-ripening fruit may be mealy if very hot harvest weather occurs.

**Jim-Dandee:** Ripens 8 days after Redhaven with fruit that is similar to Redhaven but is firmer and sizes better. Tree is naturally spreading and has hardy buds.

**Glohaven:** Freestone of excellent quality and size. Matures 8 to 10 days after Redhaven. Flower buds slightly less hardy and need an outstanding site. Ground color develops late. Easy to size with fair to good firmness.

**Jayhaven:** Matures with Glohaven 10 days after Redhaven. Trees exhibit medium vigor and very hardy flower buds. Fruit is round, medium size, firm, with 80% red blush over golden-yellow ground color. Free of buttons but sometimes difficult to size. Upright growth requires careful training.

**Canadian Harmony:** Freestone of excellent quality. Matures 15 days after Redhaven, and has comparable flower bud hardiness. Fruit is medium to large and well colored when fully mature, but ground color develops slowly. Fruit lacks firmness for long distance marketing.

**Loring:** Freestone, matures 20 days after Redhaven. Is considerably less flower bud hardy than any other varieties listed, but has good shipping characteristics. If planted on the most superior peach sites, it has excellent yield capacity.

**Redkist:** A sport of Redskin, ripens about 20 days after Redhaven. Medium size, excellent quality and very firm but difficult to size.

**Babygold 5:** A large clingstone peach for processing with exceptionally good quality. Matures 23-25 days after Redhaven. Has good flower bud hardiness. Tree is very vigorous, upright, and requires careful training. It is more susceptible to bacterial spot than Ambergem.

**Cresthaven:** Firm, nearly round, freestone of excellent quality. Matures 25 days after Redhaven, and has slightly less flower bud hardiness but long blossom periods. Tree is less vigorous and less tolerant to bacterial spot, and requires ample nitrogen fertilization. Fruit is gold, overlaid with bright red and tends to crack in rainy seasons.

**Madison:** Freestone, matures 25 days after Redhaven. It is slightly more flower bud hardy than Redhaven. Has excellent color, but requires early, heavy thinning, and softens faster than other varieties listed. Only for local marketing where sites are marginal.

**Biscoe:** Matures 30 days after Redhaven and is comparable in flower bud hardiness and is bacterial spot resistant. Bright red over yellow ground color. Prolific bearer but lacks size.

**Redskin:** Firm, medium-sized, round freestone. Matures 32 days after Redhaven, and has slightly less flower bud hardiness. Trees are upright with willowy growth habit and require careful training. Rosy-red blush over yellow ground color. Both ground color brightness and quality vary from season to season in Michigan, often not as attractive as desired.

#### ————Nectarine Varieties————

The nectarine is a mutation of the peach. The tree is identical to the peach, but the fruit is fuzzless, has different flavor, often more aroma, and is usually more susceptible to brown rot and bacterial spot. Fruit size tends to be smaller than the peach, but thinning improves size.

**Harko:** (3-4 days after Redhaven) Fruit is almost full red, good size, nearly freestone, and uniform ripening.

**Hardired:** (6-7 days after Redhaven) A very hardy variety that is fairly tolerant to brown rot and bacterial spot. Nearly full red fruit are only medium size.

**Nectared 4:** (7 days after Redhaven) Semi-freestone with 3/4 red color. Flower buds slightly less hardy than Redhaven. A consistent producer that requires heavy thinning to obtain good size.

**Mericrest:** (10 days after Redhaven) A hardy, good quality variety with medium size fruit that are nearly full red.

**Nectared 6:** (15 days after Redhaven) Productive tree with flower bud hardiness comparable to Redhaven. Fruit is freestone, nearly full red and medium size. (Size is improved with early fruit thinning.)

**Fantasia:** (30 days after Redhaven) Fruit is large, bright red, freestone and high quality. Trees are productive but susceptible to bacterial leaf spot and lack hardiness.

**Redgold:** (30 days after Redhaven) A good late variety with large, firm glossy, red blushed fruit that stores very well. Trees are fairly hardy but susceptible to bacterial spot.

#### ————Sweet Cherry Varieties————

Sweet cherries are well adapted to western lower Michigan, particularly the northwest corner where blossoming is delayed by its northern latitude as well as the cooling effects of Lake Michigan and abundant winter snowfall.

About 70% of Michigan's sweet cherry crop is sold to briners and processed as maraschino or glacé cherries. Sweet cherries utilized for brining are harvested before full ripeness, and are thus less vulnerable to fruit cracking apt to occur with rainfall when fully ripe. Most growers, therefore, prefer the brining outlet because it is less speculative. The light colored varieties are preferred for brining, but red varieties may also be brined successfully if harvested while they are still light red in skin and flesh color. About 20% of the sweet cherry crop is canned, and a small percentage, principally dark varieties, sold on the fresh market.

All sweet cherry varieties recommended for Michigan are self-unfruitful and require pollinizers. For best yield, plant at least two, and preferably three varieties together. Varieties within each of the following groups are incompatible with each other, but are compatible with those in the other groups: (Thus, the variety "Gold" is compatible with all the other varieties listed.)

1. *Windsor, Van, Venus, Emperor Francis*
2. *Napoleon, Emperor Francis, Bing, Lambert, Compact Lambert*
3. *Chinook, Hudson, Ranier*
4. *Viva, Hedelfingen, Ulster, Vista*
5. *Gold*

**Viva:** (late June, about 1 week before Schmidt) Hardy, productive, spreading tree. The moderately firm fruit is medium sized, dark red, fairly crack resistant and of good dessert quality.

**Vega:** (late June-early July) A light-

skinned cherry which is ready for brining before Napoleon. Tree is very hardy and productive. Fruit is large, firm, has a small pit, is excellent for brining, and fair for canning.

**Sam:** A black cherry with good resistance to cracking. Tree is hardy, productive with good framework and is a good pollinator. Fruit is large, and of good quality fresh and canned. Pollinate with Gold, Hedelfingen or Stella.

**Ranier:** The light colored fruit is very large, yellow with red blush, has firm flesh that holds up well after harvest, and has excellent quality for brining. Tree has poor structure but is hardy, vigorous, and productive. Will pollinate Napoleon and Emperor Francis making possible solid plantings of light cherries for brining.

**Emperor Francis:** Ripens at same time or later than Schmidt, but is picked for brining about 5 to 7 days before Schmidt. A very firm, light, Napoleon-type cherry, larger and more resistant to cracking than Napoleon. Excellent for brining. Tree is very productive and hardier than Napoleon. Becomes solid, bright red if allowed to ripen on the tree.

**Gold:** Ripens about 7 days after Schmidt for brine. Fruit is light skinned, only medium size, moderately firm, yellow-fleshed, very resistant to cracking, and is good for brining. The tree is sturdy, very hardy, and very productive. Blossom buds are very hardy. Self-unfruitful but pollinated by most sweet cherry varieties.

**Napoleon:** (Royal Anne) Although ripening about 4 days before Schmidt, it is generally picked for brining about 7 to 10 days before Schmidt. Fruit is large and firm. Skin is light yellow with a red blush when ripe. It is the standard brining variety, but is somewhat subject to fruit cracking and brown rot. Tree is productive, but not fully hardy, and tends to develop poor crotches.

**Schmidt:** (Early to mid July) Large, dark, firm cherry of high dessert quality. Best of the standard varieties for canning and fresh market. Fairly resistant to fruit cracking. Tree is not fully hardy, not always productive, tends to develop narrow crotches, and buds freeze easily. Also difficult to pollinate successfully in certain years.

**Valera:** A medium sized, black cherry with possibilities for fresh market. Tree is vigorous, and bears early and regularly.

**Nelson's Black Sweet:** (Early to mid July) A Schmidt-type cherry, popular among some growers in the Grand Traverse area of Michigan. Reported to be more productive and hardier than Schmidt.

**Ulster:** (Early to mid July) A high quality

black cherry for fresh market and canning which resembles Schmidt, but is more productive. Fruit is large, firm, fairly resistant to cracking, and ripens just after Schmidt.

**Stella:** (Mid July) Fruit is large, dark red, good quality, heart shaped, and moderately susceptible to cracking. Tree is only moderately hardy but is self-fruitful and a good pollinator for other varieties.

**Vogue:** Productive, hardy tree. Fruit is dark red, large, firm, with very good dessert quality.

**Hedelfingen:** (mid July) Medium size, firm, dark red fruit of excellent dessert and canning quality. Tree is productive, moderately hardy and branches tend to droop. An easy variety to harvest mechanically because of long fruit stem and light attachment of stem to fruit. Tends to overbear, resulting in small fruit in some years. Fruit sometimes too soft for canning.

**Van:** (Mid to late July) Tree is strong, very hardy and productive. Fruit is dark, large, firm, susceptible to cracking, has very short stem and hangs in tight cluster, making fungicide coverage difficult for pre-harvest brown rot control. Has good dessert and canning quality. An excellent pollinator.

**Hudson:** (Late July) Fruit dark red, large, very firm, sweet and of good dessert quality. Tree is vigorous and spreading.

### —Red Tart Cherry Varieties—

Sour, red tart, and pie cherries are synonymous common names for the same fruit. Red tart cherry is the preferred name because of better advertising appeal. The raw product is processed in canned or frozen form and is used by bakery, juice, and jam-jelly industries.

Michigan's commercial acreage of red tart cherries is all of the amarelle (clear juice, yellow fleshed) type. Another type, morello, has red flesh and red juice. It predominates in most sour cherry producing centers outside of the U.S. Spur type cherry strains have not proved superior in Michigan.

**Montmorency:** The only variety suggested for commercial planting in Michigan. It has bright red skin, clear juice, firm yellow flesh, is productive and self-fruitful. Its habit of growth is quite upright and hence, requires careful training to obtain strong modified leader trees which will resist breakage.

**Meteor:** Flowers 3 to 5 days later and matures 7 to 10 days later than Montmorency. It is a smaller, distinctly more spreading tree. Fruit is bright red, slight-

ly oblong, has pink juice, and yellow, firm flesh. It is two percent more acid than Montmorency, and will exhibit some cracking if soaked for extended period of time. Elongated pit not adapted to mechanical pitters presently available.

**North Star:** A small tart cherry tree that is self-fertile, very hardy, productive and resistant to leaf spot. Fruit flesh is tender and is dark red at maturity. The pit is relatively small, and the skin is mahogany red at full ripeness. The frozen fruit makes good pie, jam and jelly.

### —Plum Varieties—

Plums can be grown throughout most of Michigan through proper selection of site, soil and variety. Commercial production should be restricted to the major fruit production areas of Michigan's lower peninsula. Plums are usually more hardy than peaches or sweet cherries, but more tender than apples or pears. The trees bloom early, and are therefore rather susceptible to spring frost injury.

Plum varieties grown commercially in Michigan are of two types: Japanese and European. European plums usually have a denser, firmer flesh, richer flavor, and tend to bloom later and mature later than Japanese varieties. The major European varieties grown in Michigan are largely self-fruitful, but usually benefit from cross-pollination. Planting of more than one variety is encouraged. Most Japanese plum varieties are not self-fruitful and another variety is necessary for cross pollination and fruit production.

### European Plums

**Stanley:** (early to mid-September) The only variety suggested for extensive commercial plantings in Michigan. A medium, dark blue, oval freestone plum, with yellow flesh, juicy with good quality. Trees are vigorous, productive and fairly resistant to cold injury. Trees may set a heavy crop without cross pollination, but plant a few trees of another variety to assure fruit set.

**Bluefre:** (mid September) A large, blue, freestone plum with fair flavor and yellow flesh. Is sometimes too large for processing. Fruit hangs well on the tree, but tends to produce many doubles and sometimes split pits. Trees are vigorous, bear early and are productive. Only partially self-fruitful, but is pollinated well by Stanley.

**Damson:** (mid September) An excellent processing plum for which there is limited demand, mostly for jam and jelly. Fruit is medium to small in size, with yellow flesh and purplish-black skin and a heavy bloom. The plum is juicy,

tart, clingstone and hangs well on the tree. Trees are self-fruitful, vigorous, hardy and productive.

**Valor:** A prune type plum of excellent eating quality. Tree is vigorous and productive. Fruit is semi-freestone, has greenish-yellow flesh, dark purple skin, and has excellent dessert quality.

**Imperial Epineuse:** (mid September) A medium sized reddish-purple plum that tends to russet, which detracts from its appearance; but is juicy and of very high quality. Excellent for local markets. Trees are vigorous, fairly productive and hardy.

**Empress:** (late September) Fruit is very large, deep blue, firm with yellow flesh. Tree is vigorous, upright and productive.

### Japanese Plums

**Methley:** (late July) A small, round purple plum with a red blush and fair quality. Requires several pickings. It is self-fruitful and a good pollinator for Shiro and Burbank. Has upright growth.

**Shiro:** (early August) An early maturing, medium sized yellow plum with a thin skin, juicy and good quality. Trees are vigorous, productive and hardy. Self-unfruitful, but is successfully pollinated by Reine Claude, Methley, and Ozark Premier.

**Santa Rose:** (early August) Fruit are large, round, and dark crimson, with a delicious flavor. Michigan orchardists frequently experience difficulty with pollination, resulting in low production.

**Ozark Premier:** (mid August) A large, round, bright red, firm, clingstone plum with excellent quality. Fruit ripens unevenly. The variety is self-unfruitful.

**Burbank:** (mid August) A medium sized, round, dark red, juicy clingstone plum with good flavor. Tends to ripen unevenly. Trees are vigorous, spreading, and tend to bear biennially. Self-unfruitful, but sets well with pollen of Ozark Premier and Methley.

**Formosa:** (mid August) A large, oval, greenish-yellow plum overlaid with red. Flesh is firm, juicy, sweet, pale yellow. Slightly clingstone. Trees are vigorous, productive, biennial, and are very susceptible to bacterial leaf spot.

### —————Apricot Varieties—————

The wood and flower buds of apricots are sufficiently hardy to withstand cold in Michigan's fruit growing areas. However, the apricot's early spring blooming habit often results in losses due to frost. Bacterial spot also is a serious problem on many varieties. Regularity of cropping

has been best in areas north of Muskegon, close to Lake Michigan, where it is more likely to escape spring frosts. Apricots should only be grafted on apricot rootstocks since peach roots show incompatibility after a few years of growth.

**Harcot:** (5 to 7 days before Goldcot) A very early ripening, high quality, sweet apricot for fresh market. Tree is hardy, vigorous and productive. Fruit is of medium size and ovate shape, firm, orange in color with a slight red blush.

**Goldcot:** A variety that has proven itself in Michigan. It is regular in cropping, and tolerant enough to bacterial spot to produce commercially acceptable quality fruit for fresh market and processing (baby food puree). It achieves 1½ inch size readily when properly thinned. Fruit is nearly round, with yellow-orange skin and flesh. Fruit ripens mid July in northwestern Michigan. Tree is spreading.

**Hargrand:** (1 week after Goldcot) A promising new variety of good quality for fresh market and canning. Tree is hardy and productive, tolerant to bacterial spot and brown rot. Fruit is very large, freestone, an attractive orange with speckled blush and has good texture and flavor.

**Harlayne:** (10 to 12 days after Goldcot) Tree is hardy, productive, fairly resistant to canker and brown rot, and moderately resistant to bacterial canker. Fruit is attractive orange with red blush, firm, freestone, and medium sized.

### Other Considerations

Selection of varieties: A key to successful fruit production is choosing varieties adapted to your climate, market, and management skills. Do not interplant strains of apple varieties in the same row. Differences in finish and color at harvest make it difficult to pack mixed strains harvested into the same bulk bin.

Establishment costs: Farm management records indicate costs of at least \$3,000 to \$5,000 per acre to prepare, plant, and care for a young fruit planting up to the season of its first substantial crop. Costs will vary with crop, tree density, orchard system and management skill, but represent a substantial commitment to a fruit enterprise.

Crab Apple Pollinizers: There is interest in establishing solid planting of a single apple variety and using crab apple varieties as pollinizers. Many crab apple varieties have prolific bloom and provide an abundance of viable pollen. A New York study of numerous crab apple varieties indicated three varieties which might have merit as pollinizers for commercial apple varieties. These were Rosedale, Manchurian, and Pioneer Scarlet.

Rosedale generally bloomed 3 days before Delicious, Manchurian 1 day before, and Pioneer Scarlet at the same time as Delicious.

Experience is too limited to suggest extensive planting of crab apples as the only pollen source in an apple orchard. When used on a trial basis, plant at least two varieties. Such pollinizer trees probably should not be more than 50 feet apart if used in Delicious plantings.

The following resource materials are directed toward the commercial orchardist. They are helpful to beginning and advanced growers.

### Books

#### **Modern Fruit Science**

Dr. Norman Childers  
Horticultural Publications  
3906 NW 31 Pl.  
Gainesville, FL 32606

#### **Temperate Zone Pomology**

Dr. Mel Westwood  
W. H. Freeman & Co.  
660 Market Street  
San Francisco, CA 94104

### Magazines

#### **Great Lakes Fruit Growers News**

P.O. Box 128  
Sparta, MI 49345

#### **American Fruit Grower**

34841 Euclid Avenue  
Willoughby, OH 44094

#### **The Goodfruit Grower**

1005 Tieton Drive  
Yakima, WA 98902

### Organizations

Some Organizations that sponsor annual fruit grower meetings and publish annual proceedings with information on fruit culture:

#### **Michigan State Horticultural Society**

302 Horticulture Building  
Michigan State University  
East Lansing, MI 48824-1112

#### **International Dwarf Fruit Tree Association**

Department of Horticulture  
Michigan State University  
East Lansing, MI 48824-1112

#### **New York State Horticultural Society**

4343 Dewey Avenue  
Rochester, NY 14616

#### **Washington State Horticulture Assoc.**

P.O. Box 136  
Wenatchee, WA 98801

Extension Publications

The following helpful extension publications are available from your county Cooperative Extension Service Office or the MSU Bulletin Office, P.O. Box 231, Michigan State University, East Lansing, MI 48823-0231.

E-154 *Fruit Pesticide Handbook* \$1.00

E-850 *Pruning Young Fruit Trees*, free

E-851 *Rootstocks for Fruit Trees*, free

E-852 *Fertilizers for Fruit Crops*, free

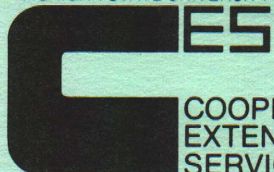
North Central Regional Publication No. 45

*Diseases of Tree Fruits*, 85¢

North Central Regional Publication No. 63

*Tree Fruit Insects* \$3.50

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