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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 result, 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 mistakes 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 lucky 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. This is true because, 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 are as follows:

1. *An adequate supply of bees.* If the number of wild bees near the fruit planting is insufficient, the grower must either 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.* Bee hives should be placed 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. In Michigan, temperatures below 60°F during bloom can be a problem even though they stay above killing levels. 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 apple, 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, 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, with standard sized trees in general, 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 stick to using 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.

It should be recognized that 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 at least 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.

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, there are several things that 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, 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 useful 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.

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 preharvest 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.

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.

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, but not as good in dessert quality. 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

Two 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:

Prima: (early September) Scab resistant variety (both fruit and foliage). 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. Might have merit for home garden.

Priscilla: (late September) Another scab resistant variety. 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.

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. The use of adapted varieties and careful site selection are, therefore, 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 so 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 on relatively frost-free sites in other parts of the state are increasing as a result of local demand for fresh market peaches. Early maturing varieties are recommended for northern areas, and the hardiest varieties for inland locations.

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

Redhaven: Firm, 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 color over golden ground color.

Harken: Firm, freestone of excellent quality. Matures 3 days after Redhaven. Has above average

flower bud hardiness, vigorous, bacterial spot-resistant tree which matures its fruit more uniformly than Redhaven. Bright red color over golden ground color.

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.

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, freestone of excellent quality. Matures 27 days after Redhaven, and has slightly less flower bud hardiness. Tree is less vigorous and less tolerant to bacterial spot, and requires ample nitrogen fertilization. Fruit is gold, overlaid with bright red.

Redskin: Firm, medium-sized, round, freestone. Matures 32 days after Redhaven, and has slightly less flower bud hardiness. Trees are willowy and upright, and require careful training. Rosy-red blush over yellow ground color. Both ground color brightness and quality vary from season to season in Michigan.

Suggested for Commercial Trial

Varieties in this group have a major fault or are not completely tested.

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 bright red over yellow ground color, and requires heavy, early thinning.

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.

Harbelle: Freestone, matures 7 days before Redhaven, with comparable flower bud hardiness. Fruit is large, golden, with 60% red blush. Firmer than Sunhaven.

Harbrite: A productive, freestone that matures 3 days after Redhaven, and is comparable in flower bud hardiness. Brilliant red over yellow ground color, but not as firm as Harken, nor as tolerant of bacterial spot.

Glohaven: Freestone of excellent quality and size. Matures 12 days after Redhaven. Flower buds slightly less hardy than Cresthaven, and needs an outstanding site. Ground color develops late.

Redkist: A sport of Redskin, ripens about 20 days after Redhaven. Resembles Redskin in many traits, but does not have year-to-year variation in quality and color that afflicts Redskin.

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.

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.

Biscoe: Freestone, matures 30 days after Redhaven. Comparable in flower bud hardness to Redhaven, and is bacterial spot resistant. Bright red over yellow ground color. May replace Redskin if tests prove it to be larger fruited, and if tree can be more easily trained.

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, and is more susceptible to brown rot and bacterial spot. Fruit size of recently released varieties is similar to peach, with comparable thinning.

Suggested for Commercial Planting

Nectared 4: Semifree, with melting flesh. Ripens 7 days after Redhaven. Flower buds slightly less hardy than Redhaven. Needs very heavy thinning to achieve good size.

Nectared 6: Freestone, with melting flesh. Ripens 16-18 days after Redhaven. Flower buds are comparable to Redhaven in hardness. Needs thorough thinning.

Suggested for Trial

Nectared 1: Melting flesh, but clingstone. Matures 10 days before Redhaven. Good fruit size if thinned early and well, but inconsistent cropper.

Nectared 2: Melting flesh, but semi-cling. Matures with Redhaven. Has somewhat less hardy flower buds than Redhaven. Fruit is bright red, but softens very quickly.

Nectared 3: Melting flesh, semi-freestone. Ripens 4 or 5 days after Redhaven. Flower buds somewhat less hardy than Redhaven. Fruit is dark red, and has somewhat better resistance to brown rot than other Nectareds.

Stark Sunglo: Melting flesh freestone. Ripens a little before Nectared 6 and Mericrest, and has better quality. Needs heavy thinning.

Mericrest: Melting flesh freestone. Matures with

Nectared 6. Smaller than Nectared 6, but slightly more flower bud hardy.

Stark Redgold: Melting flesh freestone with excellent quality. Matures 27 days after Redhaven. Flower buds slightly less hardy than Redhaven. Good yielding capacity. Bright color, and good size.

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, are sold on the fresh market.

All sweet cherry varieties recommended for Michigan are self-unfruitful and require pollinizers. For best yield, at least two, and preferably three varieties should be planted 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*

Suggested Sweet Cherry Varieties

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, small, 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. Compatible with most varieties.

Napoleon: (Royal Anne) Although ripening about 4 days before Schmidt, it is generally picked for brin-

ing 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: Mid-season (July 10-20 near Traverse City). 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.

Windsor: Matures 7 days after Schmidt, but is picked for brining when Schmidt is harvest mature. A dark red cherry, firm, of fair dessert and canning quality. Tree is hardy, productive, and has been widely planted as a pollinizer in Michigan orchards. Fruit is small, especially if picked for brining, and is susceptible to fruit cracking if allowed to ripen. Although a very consistent producer, it is declining in popularity in new plantings.

Hedelfingen: Ripens 8 to 10 days after Schmidt. Medium size, firm, dark red fruit of excellent dessert and canning quality, but somewhat susceptible to cracking at maturity. Tree is more productive than Schmidt, but only moderately hardy. 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. A possible replacement for Schmidt for fresh market and canning.

Varieties for Trial or Limited Planting (*not fully evaluated under Michigan conditions*)

Vega: Mature for brining 10 to 14 days before Schmidt is mature. Very hardy and productive. Fruit is light colored, large, fairly resistant to cracking, excellent for brining, but only fair for canning.

Ranier: Mature for brining 10-14 days before Schmidt. Very hardy and productive, but has poor tree structure. Fruit is light, large, medium firm, resistant to cracking. Has medium canning and brining quality. Will pollinate Napoleon and Emperor Francis, making possible solid plantings of light cherries for brining.

Vista: Ripens 7 to 10 days before Schmidt. Tree is very hardy, productive, and resistant to bacterial canker. Fruit is dark red, large, beautiful, firm, excellent for dessert or canning, but very susceptible to cracking and brown rot. Suggested for its high dessert quality and its earliness.

Viva: Ripens 6 to 7 days before Schmidt. Productive, hardy tree. Fruit is large, dark red, fairly firm, crack resistant, and has good dessert quality.

Sam: Ripens 4 days before Schmidt. Tree is moderately hardy, productive and develops a good

framework. Fruit is dark, large, firm, fairly resistant to cracking, and of good quality for dessert and canning.

Venus: Ripens 4 days before Schmidt. Fairly hardy and productive. Fruit is dark red, medium in size, firmness and resistance to cracking. Has good dessert and canning quality.

Valera: Ripens 2 days before Schmidt. Moderately hardy, productive, with good tree structure. Fruit is dark, large, moderately firm, susceptible to cracking, and very good in dessert quality.

Ulster: Ripens 2 days after Schmidt. Very hardy, fairly productive. Fruit is dark, large, firm, fairly resistant to cracking, and has good dessert and canning quality.

Vogue: Ripens 2 days after Schmidt. Productive, hardy tree. Fruit is dark red, large, firm, with very good dessert quality.

Van: Ripens 10 to 14 days after Schmidt. Very hardy, productive. Fruit is dark, large, firm, susceptible to cracking, has very short stem and hangs in tight clusters, making fungicide coverage difficult for preharvest brown rot control. Has good dessert and canning quality.

Hudson: Ripens 2 weeks after Schmidt. Fruit dark red, large, very firm, and of good dessert quality.

RED TART CHERRY VARIETIES

Red tart, pie, sour, and acid cherries are synonymous common names for the same fruit. Red tart cherry is now widely accepted as 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 other red tart cherry producing centers outside of the U.S. Variety testing of morello types in Michigan is underway but incomplete.

Montmorency: An amarelle type, is 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. Continued research has proven that many orchard mutations, sports, have occurred in Montmorency, and strains differing in vigor and production exist. Selection research to choose improved strains is presently underway but incomplete.

Meteor: An amarelle type, is suggested only for limited commercial trial by producers who desire a cherry which matures 7 to 10 days later than Montmorency. This variety is more likely to escape spring frost damage because it flowers 3 to 5 days

later than Montmorency. It is a smaller, distinctly more spreading tree, and should be spaced about 4 feet closer in the row. Fruit is bright red, slightly 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 periods of time.

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, so that 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: (late August-early 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. Ripens in southern Michigan in mid-September. Trees may set a heavy crop without cross pollination, but a few trees of another variety should be planted to assure fruit set.

Bluefre: (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: (September) An excellent processing plum for which there is limited demand. Only medium sized, with yellow flesh and purplish-black skin and a heavy bloom. Fruit is juicy, tart, clingstone and hangs well to the tree. Trees are self-fruitful, vigorous, hardy and productive.

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.

Reine Claude: (Green Gage) (late September) A medium-sized, roundish-oval, yellowish-green fruit that is juicy, firm, sweet, and of excellent quality for home use or local market. Trees tend to overbear and require thinning. Fruit is susceptible to brown rot. A self-fruitful variety and a satisfactory pollinator for Shiro and Burbank.

Japanese Plums

Methley: (late July-early August) 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.

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

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 early spring blooming habit of apricots 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.

Goldcot: The only 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 (babyfood puree). It achieves 1½ inch size readily when properly thinned. Fruit is nearly round, with yellow-orange skin and flesh. Fruit ripens mid-July. Tree is spreading.

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