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Apple Cultivars for Indiana

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Indiana spans 300 miles from north to south and encompasses widely different climates for fruit production. This provides unique opportunities and presents some problems in suggesting cultivars for Indiana growers. Northern areas are characterized by cold winters and cool summers, with warm days and cool nights, and a shorter growing season. In southern Indiana winters are not as cold, and summers have hot days and nights with extended periods of high humidity and a longer season. This means that in northern areas attainment of adequate red fruit color is less of a problem, but can be a serious problem in southern Indiana. Some later season cultivars grow well in southern areas of the state but may lack sufficient length of season in northern areas to mature well. However, fruit finish and disease control are problems in southern Indiana due to high temperatures and humidity.

Cultivar Selection

A major consideration of cultivar selection is adaptation to the climate. Some cultivars, like McIntosh which colors poorly in high temperatures, are adapted only to northern Indiana. Others, such as Grimes Golden, are primarily grown in southern Indiana. However, most cultivars are well-adapted to the entire state.

Also important considerations are the purposes for which the fruit are grown and the kind of apples you like to eat. If the apple trees are to be grown in home gardens, the emphasis should be on high quality fruit and disease resistance. For the home fruit grower, GoldRush, Enterprise, Redfree, Prima, Jonafree, Priscilla, and Sir Prize are strongly suggested because they are immune to apple scab and moderately resistant to fire blight and powdery mildew.

Another consideration is the choice of rootstock, as it dictates the ultimate size of the tree. The soil and site upon which the tree is to be grown will also affect its performance.

Retail markets or pick-your-own marketers will also be looking for cultivars with high quality fruit. These growers can influence customer choice and foster an appreciation for high quality fruit, which should ultimately increase repeat sales. For the wholesale trade, where promotional or point-of-purchase information cannot be supplied, the standard cultivars are most useful.

The cultivars discussed here are primarily those that have generally been successful under Indiana conditions.

General Purpose Cultivars

(Listed in approximate order of ripening)

Yellow Transparent is one of the earliest cultivars grown in Indiana, is well adapted to all parts of Indiana. The tree is vigorous and spreading, and comes into bearing early. It tends toward biennial bearing if not well thinned early in the season. The tree is very susceptible to fireblight. The fruit is greenish yellow until mature when it becomes yellowish white. The fruit is very desirable for use in apple sauce and is usually harvested immature for this purpose. When mature, the fruit softens and goes out of salable condition quickly. This cultivar is recommended for limited planting only.

Lodi ripens a week after Yellow Transparent. The tree is vigorous, hardy, and tends toward annual production. The fruit is larger than Yellow Transparent. It is green but becomes pale yellow upon maturity. Fruit are ordinarily harvested when still green for use in apple sauce. However, some people consider its sauce too tart, and it is considered by some to be less desirable than Yellow Transparent. Fruit tends to "blow up" or break down internally if harvested mature and not stored immediately. This cultivar is recommended for very limited planting only.

Pristine has medium-large, yellow fruit with a red blush and slightly tart flavor. The tree has excellent resistance to scab, fireblight, and powdery mildew. The fruits are good for fresh eating and salads.

William's Pride has medium-large red fruit with nice flavor, but has a soft texture. The tree has good disease resistance to most common apple diseases. Does not perform well in high temperatures.

Redfree, is a large, scab-immune apple with 90% good, red color on a smooth, waxy, russet-free skin. The flesh is white, crisp, juicy, sub-acid, and retains quality for 2 months in cold storage. The tree is immune to apple scab and cedar rust and moderately resistant to fireblight and mildew. Fruit ripens 3 weeks before Prima and 7 weeks before Delicious.

Gala has small to medium, yellow-red fruit with excellent flavor, but the tree is highly susceptible to fireblight and moderately susceptible to the other common apple diseases. A very popular apple because of its excellent eating quality.

Honeycrisp has large yellow fruits with red mottling and excellent sweet flavor, but the tree is susceptible to most common apple diseases. It is a weak-growing tree that is prone to biennial bearing. Poor fruit quality in very hot areas, but in northern-central parts of the state it should produce fruit of exceptional eating quality.

Paulared, a promising, early-fall apple for Indiana, ripens about a month ahead of Jonathan and has good fruit quality. The tree is upright, rather willowy in growth, hardy, productive, very susceptible to fireblight, and tends to be biennial in bearing if not properly thinned. The fruit, which stores well, is uniform and medium-sized with a shape similar to McIntosh. It has good red color overlying a greenish ground color.

Prima is a scab-immune apple ripening 3 weeks ahead of Jonathan. The tree is vigorous, spreading, productive and moderately hardy. The fruit is medium to large in size and somewhat blocky in shape, most resembling Jonathan. The fruit has 70-80% good, bright red color over a greenish-yellow undercolor when mature. The color and quality are best on low to medium vigor trees. The flavor is tart, quality and texture are excellent, also resembling Jonathan. This apple has considerable promise for early fall market. However, it does not store well and should be marketed or used promptly. It is a good apple for home fruit gardens because of its scab resistance.

Priscilla is a scab-immune apple ripening with McIntosh and a week ahead of Jonathan. The tree is upright, vigorous and hardy. It is somewhat resistant to fireblight and immune to cedar apple rust. The fruit is medium-sized and uniform, with bright red blush over 75-90% of the surface. It has a sweet, aromatic flavor and a juicy, crisp texture. This high-quality fruit stores extremely well. Best-suited to the home garden.

McIntosh is a standard cultivar in the northeastern United States. The tree is very vigorous, hardy, annual

bearing and very susceptible to apple scab. Under central and southern Indiana conditions, the fruit matures too early with poor color and poor flesh quality. In the northern quarter of the state, it can be grown with satisfactory fruit color, quality, and texture in most years. In good years the fruit is crisp and juicy with excellent flavor. Some red strains of McIntosh available include: Rogers McIntosh, Blackmac, and Geneva. These strains develop better color but otherwise are similar to McIntosh. Spur types of McIntosh are also available, including Macspur and Spur McIntosh that often have better bearing characteristics than the standard types. McIntosh is suggested for use only in the northern tier of counties in Indiana. Fruit has a tendency to drop off the tree prior to reaching full maturity.

Spartan is a promising cultivar originating in Summerland, British Columbia, with fruit characters similar to McIntosh. Spartan ripens just after McIntosh and before Jonathan. The tree is moderately vigorous and upright-spreading. It tends toward biennial bearing unless thinned well. The fruit is firm and has an attractive, bright red color. The flesh is white. Its quality is similar to McIntosh but crisper when grown in more southern areas. Fruit size is small to medium and uniform. Spartan should replace McIntosh in warmer areas.

Grimes Golden is an old, high-quality yellow apple which ripens with Jonathan. The tree is vigorous, highly productive, and biennial bearing if not thinned properly. It is late coming into production. The tree is very susceptible to collar rot and should either be double worked or worked high on the rootstock. In areas where this cultivar is known to the public, there is a small but spirited demand for it and limited plantings appear to be justified. The fruit is susceptible to bitter pit, especially when the crop is light and fruit size is large. It is no longer suggested for most plantings.

Jonathan is an old standard cultivar in Indiana. The tree is vigorous, precocious, hardy, and productive but very susceptible to fireblight and powdery mildew. Jonathan is grown throughout Indiana, although it develops its best fruit color in the cooler nights of northern Indiana. The fruit is bright red and medium to small in size. The fruit flesh is firm with a tart flavor and excellent quality. Jonathan is excellent for both cooking and eating out of hand. It should be stored at 34-36° F to minimize storage problems and may be stored until midwinter.

Jonafree closely resembles Jonathan but with some disease resistance. The fruit is 2 1/4 to 2 3/4 inches in diameter, 95% medium red in color, and has a smooth, russet-free skin. The flesh is pale yellow, medium texture, firm, crisp, and juicy. It has good dessert quality which holds flavor well in storage. Jonafree is immune to apple scab, moderately resistant to fireblight and cedar rust, and moderately susceptible to mildew. Fruits hang well at maturity and do not develop Jonathan spot as is common with the parent cultivar.

Liberty is a MacIntosh type apple, has small to medium sized, green fruit with a red overlay and a tart flavor, coarse texture. The fruit is good for fresh eating, salads, and cooking. The tree is very productive and has excellent disease resistance.

Cortland has many of the characteristics of McIntosh. The tree is vigorous and spreading. The fruit is red striped or blushed over a greenish yellow ground color. The flesh is tart, white, and tender. It is excellent for cooking, salads, and eating out-of-hand. Cortland should be limited to the northern half of Indiana for best performance.

Delicious is the most popular and widely planted apple cultivar in the nation, including Indiana. The tree is vigorous and upright in growth, comes into bearing slowly, and tends toward annual bearing. It is moderately productive but quite susceptible to frost damage.

The fruit is conic in shape with five prominent lobes at the apex. Under Indiana conditions, the “typiness” of the apple (shape) varies from poor to good. The fruit is striped to solid red, depending upon the strain. The fruit has a sweet, mild flavor and is fair-to-good in quality. It is used as a salad or dessert apple but is not suitable for most other culinary purposes.

Over 150 strains of Delicious are now available. Most are superior in color to the old standard Delicious, however, considerable care should be taken in selecting strains that are suitable.

There are a number of spur-type strains. Because of their growth habit and precocity, they are desirable in most commercial orchards. However, they require special care in early training. Fruit is born primarily on spurs which are produced on the main scaffold branches. When pruning, more scaffold limbs are allowed to remain and these branch less than the non-spur types. When well trained, spur-type trees tend to come into production earlier and to be more productive than the non-spur types.

Empire is a vigorous, spreading, productive tree that tends toward biennial production unless well thinned. It is a McIntosh-type apple with a slightly coarser fruit texture. The fruit is firmer, more highly colored, and develops an attractive overall oxblood color in central Indiana. The flesh is creamy white and of excellent flavor and quality. The fruit size is medium to large. It stores well into midwinter. Empire is suggested where a high quality, McIntosh-type apple is desired.

Golden Delicious is a high quality, yellow apple widely planted in Indiana and well adapted to conditions across the state. This cultivar is second only to Delicious in popularity. The tree comes into bearing early but becomes biennial in bearing unless thinned regularly and kept in adequate vigor. Under certain conditions, the fruit

tends to russet severely. The fruit is a good yellow color when mature, with prominent lenticels. The tender, light yellow, high-quality flesh is excellent for both culinary and dessert purposes. Storage is more difficult than for other cultivars because of the moisture loss through the fruit epidermis which does not have a heavy waxy coating. The use of polyethylene liners in storage containers is recommended to maximize storage life. When stored without liners, frequent wetting and careful maintenance of high humidity is necessary to minimize shrinkage. Careful maintenance of uniform 30-32° F cold storage temperatures will also help. Golden Delicious is a very desirable cultivar for Indiana farm market sales.

Melrose originated at the Ohio Agricultural Experiment Station from a cross between Jonathan and Delicious. Melrose matures just after Golden Delicious and before Stayman or Rome. The fruit is firm, large and deep red over a greenish yellow ground color. It is of outstanding cooking and dessert quality and stores well. While Melrose is not particularly attractive, its quality, flavor, and texture make it worthy of trial in home orchards or commercial plantings where point-of-purchase information can be used to help develop demand.

Idared, ripening with Golden Delicious, is a well-colored, attractive red apple developed in Idaho. The tree is vigorous and productive, similar in size to Jonathan and, like Jonathan, very susceptible to fireblight and mildew. The tree is precocious and tends to bear annually. The fruit is white-fleshed, tart, firm and of good-to-excellent quality. The storage quality is good. Idared is recommended only when fireblight can be controlled.

Sir Prize, ripening with Golden Delicious, is a yellow, russet-free apple with immunity to apple scab. The tree is vigorous and upright, tending toward annual production. The large fruit is very attractive, light greenish yellow, waxy smooth, and shaped like Golden Delicious. The fine-grained flesh texture is tender, juicy, sub-acid, rich in flavor, and excellent for eating out of hand. Tree fruit is too tender to be handled or graded like other apples and must be handled very carefully to avoid bruising. Sir Prize stores extremely well. Its high quality and excellent appearance make it worthy of limited trial for roadside market. It will also be excellent in home plantings because of its quality because of its quality and scab immunity. Since Sir Prize is a triploid, it will not pollinate other cultivars.

Rome Beauty is one of the older cultivars grown in Indiana. Rome Beauty is enjoying a new popularity. Well-grown, well-colored Red Rome apples have been very profitable for many Indiana growers. Care should be taken in selecting the best strain for your conditions. The tree is spreading, precocious, productive, and tends toward annual bearing. Rome Beauty blooms relatively late in the season and thus may escape frost damage. It is susceptible to apple scab, powdery mildew, cedar

apple rust and *Botrytisphaeria* rot. The fruit is red striped to blushed, large, firm, and of fair quality. It is best for culinary uses and stores well.

Red strains of Rome such as Gallia Beauty and several strains of Red Rome are quite similar to the parent cultivar but develop better red color. Considerable difference exists in color of the red strains. The Law strain appears to be one of the better strains for color in most of Indiana. The spur-type Rome has not been fully evaluated but appears to be a promising improvement in growth habit. Several spur-type Rome strains are available. These retain the red fruit color of the corresponding nonspur Red Rome strains. They are of improved growth habit and are suggested for trial. The new cultivar, Enterprise, is very similar to Rome but incorporates disease resistance.

Turley is a large, well-colored apple ripening 7 to 10 days ahead of Stayman Winesap. The tree is vigorous, productive and forms naturally strong scaffold branches. Although Turley is similar in many characteristics to Stayman, the fruit does not split as badly. It is good for cooking or baking with fair-to-good dessert quality. The fruit keeps well in cold storage. Since Turley is a triploid, it will not pollinate other cultivars. Planting should be limited.

Stayman is a large, dark, dull red, firm, coarse-fleshed apple cultivar. The tree is easily injured by low winter temperatures and blossoms are quite susceptible to frost injury in the spring. It tends to set light crops unless optimum conditions for pollination are provided. It is a high-quality dessert and culinary apple. The fruit is subject to preharvest cracking, especially in seasons of variable moisture supply. Stayman fails to color satisfactorily. The Tuttle strain of Staymared, originating in Indiana, is considered to be less subject to cracking. Since Stayman is a triploid, it will not pollinate other cultivars. Planting should be limited. Blaxtaylor, Staymared, Scarlet Stayman and other red strains of Stayman produce better red color and are preferred, especially in southern areas of the state.

Winesap is an old cultivar but still grown in some areas. The fruit is red, small, very firm to hard, good quality, and it keeps well in storage. Winesap is suggested primarily for retail farm market where the cultivar is known, and a market already developed. Planting should be limited.

Enterprise has a large, red, juicy fruit and is good for fresh eating as well as in salads, and stores well. The tree has excellent scab and powdery mildew resistance and moderate fireblight resistance. The fruit ripens late, around mid October.

Goldrush has large, yellow, tart, juicy apples, but requires a very long growing season. The tree has excellent scab and fireblight resistance. Excellent fruit quality but can russet badly in some years. Very firm and

retains its firmness well in cold storage. Very precocious and productive.

Special Purpose Cultivars

Those cultivars listed below may not be generally suitable for commercial apple production because of poor production, late bearing, low consumer demand, etc. However, they are considered to be of high quality for the purposes listed and might be considered for home fruit production.

Northern Spy is a firm, prized processing apple for northern areas. It is very desirable for culinary use. The tree is late in coming into bearing and should be planted only on dwarfing rootstocks.

Mutsu is a Golden Delicious-type apple, maturing after Golden Delicious. The fruit is very large and stores well. The flesh is firm and of excellent quality. It is susceptible to blister spot, which is difficult to control. It is suggested for trial in commercial plantings where a large; high quality Golden-type apple is desired. Because it is a triploid, it will not act as a pollinizer for other cultivars.

Braeburn bears a large, red, firm fruit with excellent flavor good for fresh eating and stores well. However, the tree is susceptible to most common apple diseases and especially so to fireblight. The fruit ripens late, around mid October. Susceptible to frost damage due to early bloom time.

Fuji has an unusual looking fruit, light red and a bit known for poor color and russetting, but very sweet, crisp and juicy. It ripens late, around mid –late October. The tree is susceptible to most common apple diseases.

Granny Smith is a very late, tart apple. The fruit is green, large, firm and of excellent quality. Highly productive tree. Its adaptability is restricted to southern areas of the state due to its requirements for a long growing season.

Enterprise, Goldrush, Jonafree, Liberty, Pristine, Redfree, Prima, Priscilla, and Sir Prize (described above) also must be considered to be special-purpose apples because of their immunity to apple scab. These cultivars are highly recommended for homeowners because of the reduced amount of spraying necessary to obtain quality fruit.

Pollination

Most apple cultivars require cross pollination from a compatible cultivar in order to reliably set fruit. It is best to use as pollinizers those cultivars that bloom at about the same time as the main cultivars (see Figure 1).

Orchard planting plans should include 10-15 percent pollinizers. These should be planted such that no tree is further than two tree spaces away from a pollinizer. An example would be to plant pollinizers as every third tree in every third row. Where solid blocks of a cultivar are desired, sometimes pillar shaped trees of the pollinizer are planted between tree spaces. In this case the pollinizer is sometimes a crabapple, or it may be another apple cultivar from which the fruit is removed by thinning sprays. The optimum approach is to plant multiple cultivars with each cultivar in a block no more than five rows wide.

Figure 1. Apple Cultivars According to Season of Bloom

Early Season	Mid Season	Late Season
Yellow Transparent	Cortland	Rome
Lodi	Liberty	Braeburn
Pristine	Spartan	Enterprise
William's Pride	Jonathan	Fuji
Redfree	Jonafree	Granny Smith
Paulared	Grimes	Gold Rush
Gala	Priscilla	
Honeycrisp	Red Delicious	
Prima	Empire	
McIntosh	Melrose	
	Sir Prize*	
	Golden Delicious**	
	Idared	
	Northern Spy	
	Mutsu*	
	Stayman*	
	Turley*	
	Winesap*	

** Certain cultivars are not suitable as pollinizers because they are triploids and thus do not produce viable pollen. Among these are Turley, Stayman, Winesap, Mutsu and Sir Prize.*

*** Self-fruitful but fruit set will be enhanced with an additional pollinizer.*

**This publication previously authored by Professors Emeriti R.A. Hayden and F.H. Emerson.*

For more information on the subject discussed in this publication, consult your local office of the Purdue University Cooperative Extension Service.

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