



1995 Apple Variety Evaluations

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Introduction

There are more than 2,000 apple varieties and new varieties are becoming available each year. Some apple varieties perform optimally under specific climatic conditions. Therefore, varieties must be evaluated in many geographical locations to determine adaptation to local conditions. Results from one such evaluation trial are presented in this bulletin. Fifty apple varieties on the dwarfing rootstocks M.9, MARK, or M.26 were planted in 1986 or 1988 near Blacksburg, Virginia. Blacksburg is located in the Allegheny mountains at 2,200 feet above sea level. All varieties were evaluated for at least three years.

Lodi

A cross of 'Montgomery' x 'Yellow Transparent', introduced by the New York State Agricultural Experiment Station at Geneva in 1924. Fruit matures on July 1 and is yellowish green. Shape is conic. Average fruits are 3.25 inches in diameter and weigh 0.47 pounds. Eating quality is fair with subacid to tart flavor and flesh softens quickly. Preharvest fruit drop is a problem and storage life is short. Trees need to be thinned to prevent biennial bearing.

JerseyMac (NJ-38)

A cross of NJ-24 x 'July Red', released by the New Jersey Agricultural Experiment Station in 1971. Fruit matures nonuniformly July 10-25. Fruit resembles 'McIntosh' and has 40 to 80% bright pinkish-red blush over green ground color. Average fruit diameter is 2.5 inches to 2.75 inches and weight is 0.27 pounds. Shape is oblate. Flesh is greenish white to white and is moderately firm and juicy. Eating quality is fair to good with subacid to acid flavor. Skin is tough and fruit will store two to three weeks. Fruit drop can be severe and during hot seasons the flesh under the skin may break down and turn brown. Trees consistently produce heavy crops. This variety will perform best at higher elevations.

Earlycrisp (NJ-107)

A selection from the New Jersey breeding program in 1994, with a complex pedigree containing 'Red Melba', 'Twenty Ounce', and 'Grimes Golden'. Matures on July 13 and requires two spot pickings. This is a greenish yellow apple with 0 to 25% pinkish red mottled blush. Average fruit diameter is 2.75 inches and weight is 0.31 pounds. Shape is truncate to conic. Fruit is very attractive with smooth, almost translucent, skin. Flesh is white, crisp, juicy, and firmer than most summer varieties. Eating quality is good, with a subacid flavor. Fruit will store two to three weeks. Preharvest drop has been minimal. This is the best early summer apple we have evaluated.

July Red

A cross of ('Petrel' x 'Early McIntosh') x ['Melba' x ('Williams' x 'Starr')], introduced by the New Jersey Agricultural Experiment Station in 1962. Fruit matures on July 14 and has pinkish red stripes over a yellowish green background. Shape is oblate to slightly conic. Average fruit diameter is 3.0 inches and weight is 0.37 pounds. Eating quality is fair with subacid to tart flavor. The skin is tough and flesh is soft or spongy. Preharvest drop can be a problem. Fruit stores for two to three weeks.

NJ-105

A selection from the New Jersey Agricultural Experiment Station, with the same parentage as Earlycrisp. Fruits mature on July 24. This conical shaped fruit is greenish yellow. Average fruit diameter is 2.75 to 3.0 inches and weight is 0.45 pounds. Flesh is yellow-white to white, firm, crisp, and juicy. Quality is good with a mildly subacid flavor that is superior to JerseyMac. In hot seasons, there may be some flesh breakdown under the skin. Trees crop heavily and fruit drop has not been a problem. At this time Rutgers University is uncertain about applying for a patent.

Priscilla

A cross of 'Starking' x Purdue 610-2, produced by the joint breeding program for disease resistance of Purdue, Rutgers and Illinois. 'Priscilla' is immune to apple scab and resistant to fire blight, powdery mildew and cedar-apple rust. Fruits mature on August 6. Fruit is round-conical with 60 to 90% pinkish-red color over a greenish-yellow background. Fruits are medium size (2.8 inches diameter). Flavor is subacid. In cool seasons, this variety is firm and tastes fair to good, but in warm seasons the flesh softens rapidly.

Stark's Summer Treat (NJ-49)

A cross of 'Mollie's Delicious' from the New Jersey Agricultural Experiment Station, patented by Stark Brother's Nurseries and introduced in 1982. Fruit matures on August 7 and requires two or three spot pickings. Fruits are conical shaped, very similar to 'Delicious'. Fruits are large - 3.0 to 3.5 inches in diameter and weigh about 0.5 pounds. The fruit is attractive with 30-70% dark orange red blush over a yellowish-green background. Flesh is yellowish white, firm, crisp, juicy, and a subacid flavor. Properly harvested fruit will remain firm for seven days at room temperature. If left on the tree too long, or during hot weather, some fruits develop breakdown under the skin. This variety may perform well at higher elevations for retail sales. During cooling seasons, this variety tastes better than 'Gravenstein', which ripens at the same time.

Gravenstein

Origin is unknown, but probably from Germany or Denmark in the mid-1600's. Fruits mature Aug. 5 - Aug. 20 and trees require four or five spot pickings. Shape is roundish, irregular and ribbed with red stripes over a yellowish green background. Flesh is yellowish white and firm at harvest but softens rapidly. Flavor is tart to subacid and preharvest drop is severe. Gravenstein has long been considered the best of the summer apples, but some new varieties are superior.

Tydemans Red

A cross of 'McIntosh' x 'Worcester Pearman' originated in Maidstone, Kent, England, at the East Malling Research Station and introduced to the United States in 1946. Fruits mature on August 9. Fruits are oblong-conic in shape, with 60-80% pinkish red overcolor.

Fruits are 3 to 3.2 inches in diameter and weigh 0.33 pounds. Flesh is white with subacid flavor.

Burgundy

A cross of ('Monroe' x N.Y. 18491), ('Macoun' x 'Antonovka') introduced in 1974 by the New York Agricultural Experiment Station at Geneva. Fruits mature on August 9. Fruit diameter is 3.0 inches and weight is 0.4 pounds. Fruit is oblate to conical oblate, with 70 to 90% dark red blush. This attractive fruit has firm yellowish white flesh with a tart to subacid flavor. Preharvest drop is not a problem. Fruit is too tart for most people.

Paulared

A seedling of unknown origin discovered in Sparta, Michigan, in 1967. Fruits mature August 10. Fruit diameter is 3.0 inches and 50 to 80% of the surface is covered with a dark red blush. Shape is roundish oblate, similar to 'McIntosh'. Flesh is firm, yellowish-white with a pleasant subacid flavor. Fruit is aromatic and, if left on the tree, may develop watercore. It ripens uniformly and has little preharvest drop. This is probably the best variety in its season and performs best in cool seasons and at higher elevations. 'Paulared' is susceptible to fireblight.

Redfree

A release from the cooperative apple breeding program of Illinois, Rutgers, and Purdue, resulting from a complex pedigree with 'Raritan', 'Rome', 'Jonathan', 'Melba', and 'Wealthy' in the parentage. 'Redfree' is immune to scab and cedar apple rust and is moderately resistant to fireblight and powdery mildew. Fruits mature on August 13 and may require three spot pickings. Fruits are 2.5 to 3.0 inches in diameter and weigh 0.28 to 0.33 pounds. Shape is oblate to oblate-conical. Fruits are attractive with 70-90% dark red blush. Flesh is firm with a pleasant subacid flavor. Fruit will store for about three weeks. 'Redfree' is an excellent variety during cool harvest seasons, but during hot seasons the fruits soften rapidly.

Ginger Gold

A large yellowish-green apple found as a chance seedling in Nelson County, Virginia. Fruits mature on August 14, but flavor improves if fruits are left on the tree for another week. Fruits are conical in shape. Average fruit diameter is 3.25 to 3.50 inches and weight is 0.45 to 0.5 pounds. Flesh is yellowish white, firm, crisp, and juicy.

Flavor is mildly acid. Preharvest drop is not a problem. Fruits retain good eating quality for 2 to 3 months in cold storage. Processors find it makes acceptable sauce, especially to blend with other varieties in August. Tree structure and vigor is similar to 'Golden Delicious', but trees on MM.111 rootstock have been a little slow coming into full production. This is the best apple that we have evaluated that ripens before 'Gala'.

Akane

Resulted from a cross of 'Jonathan' x 'Worcester Pearmain' from Japan and introduced in 1970. Fruits ripen uniformly on August 14. Fruits are round (similar to 'Rome') with 80-90% dark red blush and russetting at stem end. Flesh is very firm with acid to subacid flavor. If left on the tree for another week the acid declines and flavor is good. Fruits hang on the tree until overripe.

Elstar

Originated in the Netherlands from a cross between 'Golden Delicious' x 'Ingrid Marie'. Fruits ripen on August 18. Shape is round to conical and fruits are 3 inches in diameter and weigh 0.35 pounds. The surface is 50-80% orange-red with a yellow undercolor. The fruit surface is a little rough. Flesh is firm, yellowish white, aromatic, tart to subacid.

Prima

Released from the cooperative program of Illinois, Purdue and Rutgers in 1970. It is resistant to apple scab, moderately resistant to fireblight and powdery mildew, and very susceptible to cedar apple rust and quince rust. Fruit matures on August 17 and requires two or three spot pickings. Fruits are 3 to 3.5 inches in diameter and weigh 0.5 pounds. The surface is 50 to 90% dark red blush over green ground color. Shape is ovate to obovate. The flesh is firm, yellowish white, aromatic and mildly subacid. Eating quality is fair to good.

D1497

This selection from the New Jersey apple breeding program has a very complex pedigree and is the seventh generation of crosses including 'Wealthy', 'McIntosh', 'Rome', 'Melba', 'Jonathan', 'Gallia Beauty', 'Golden Delicious', and 'Raritan'. Fruits mature on August 20. Fruit diameter is 3.0 inches and weight is 0.5 pounds. Fruits are yellowish green with 50 to 70% of the surface

covered with red stripe. Shape is conical to oblong and angular. Flesh is white, and may develop slight water-core. Flesh is moderately firm and crisp and flavor is sweet. Although the flavor is good, it is not as good as 'Gala'.

NJ-109

This selection from the New Jersey Agricultural Experiment Station resulted from a complex cross involving 'Golden Delicious', 'Crown Prince Rudolf', and 'James Grieve'. Fruits mature on August 24. Average fruit diameter is 3.2 inches and weight is 0.45 pounds. Fruits are greenish yellow with smooth skin and are similar in appearance to a smooth 'Golden Delicious'. Shape is conical and slightly angular. Flesh is yellowish white, firm, very crisp and juicy. Flavor is acid to subacid. The flavor of this selection is very good for its season, but it may not be attractive enough for fresh market. This selection should be evaluated further, especially for processing qualities.

NJ-75

A cross of 'Golden Delicious' x 'Sungold' from the breeding program at Rutgers University. Fruits mature on August 25 and require two spot pickings. Fruits are 2.75 to 3.0 inches and weigh 0.3 to 0.5 pounds. Shape is conical to oblong and slightly angular. This very attractive fruit is greenish yellow with a pink blush. Flesh is white, firm, spongy, and rather dry. Flavor is sweet to subacid with a slight aromatic aftertaste. This apple is not as good as other varieties ripening in the same season.

Gala

A cross of 'Golden Delicious' x 'Cox's Orange Pippin'. Fruits mature on August 25 and require two or three spot pickings. Fruits are 2.5 to 3.0 inches in diameter and weigh 0.28 to 0.35 pounds. Shape is ovate and, depending on the strain, the fruit surface is 40 to 90% covered with orange-red color over a greenish yellow background. Some strains are striped while others are blushed. Fruits have scarf skin and may be rough or russeted at the stem end. The flesh is yellow, firm, crisp and juicy with an excellent subacid flavor. Preharvest fruit drop is not a problem. Fruits stored in polyliners remain firm for four months, but flavor declines after two months in storage. This is the best summer apple, but it has several production problems: trees are very

susceptible to fireblight and fruit size can be small, and fruits remaining on the tree too long may develop cracks at the stem end. Trees are vigorous and produce branches with wide crotch angles.

NJ-99

A cross of 'Golden Delicious' x (NJ15 x 'Red Melba') from New Jersey. Fruits mature August 18, but flavor improves if fruit is left on the tree for another 10 days. Fruits are 3.0 inches in diameter and shape is truncate to ovate, lopsided and ribbed. Fruits are yellowish green with 15% of the surface covered with a red blush. Flesh is yellowish white and flavor is subacid. This very attractive apple has good flavor, but not as good as 'Gala' or 'Ginger Gold'. Trees also exhibit severe preharvest drop some years and fruits appear quite susceptible to sooty blotch.

Summer Rambo

Originated in the 16th century in France and has been popular in America since Colonial times. Fruits ripen August 25, but many people harvest this variety early for cooking. Fruits are large, 3.5 to 4.0 inches in diameter. Fruits are green and 10 to 30% of the surface is covered with a red-orange stripe. Flesh is white, firm, crisp and juicy. Flavor is subacid.

Jonamac

A 'Jonathan' x 'McIntosh' cross from Geneva, NY. Matures on September 1 and requires two spot pickings. About 50 to 80% of the fruit surface is covered with a bright red blush over a green background. Fruits average 3.1 inches in diameter and weigh about 0.4 pounds. Fruits resemble 'McIntosh', are truncate to ovate, sometimes lopsided and angular. Flesh is white, firm, crisp and juicy. Taste is subacid. Flavor is similar to 'McIntosh', but more tart. There is little preharvest drop and trees seem prone to alternate bearing. 'Jonamac' will probably perform best at higher locations, but in Blacksburg it performs better than 'McIntosh'.

NJ-56

This is a selection from the New Jersey apple breeding program. It has a very complex pedigree, but 'Golden Delicious', 'Rome', 'Jonathan', 'Yellow Newtown', and 'Cox's Orange Pippin' are in the parentage. Fruits mature on September 7 and trees with a heavy crop will alternate bear. Fruit size is variable but fruits average about 3.0

inches in diameter and 0.5 pounds in weight. Fruits have a dark red blush over 50 to 70% of the surface and most of the remaining surface is covered with orange-red stripe over greenish-yellow background. There is some scarf skin. Shape is ovate, conic, angular and somewhat lopsided. Flesh is yellowish white, very firm, crisp and juicy. Flavor is subacid when picked on August 24, but becomes mildly subacid to sweet by September 4. When presented with a 'Gala', which was stored for 10 days, and a recently harvested NJ56, about half the people in an informal taste test preferred NJ56. This selection is worthy of trial, but Rutgers University does not plan to patent it.

NJ-100

This selection from the New Jersey apple breeding program has a complex pedigree with 'Golden Delicious', 'Yellow Newtown', 'Rome', and 'Jonathan'. Fruits mature on September 8. Fruits are yellowish green with about 10% of the surface covered with a red blush and there is some scarf skin. Fruits average 3.0 inches in diameter and 0.5 pounds in weight. Shape is conic to round-oblate, truncate and ribbed. There is some russet around the stem. Flesh is whitish yellow, firm, crisp and juicy. Flavor is mildly subacid. Trees bear annually. If named, this selection is worthy of trial.

McIntosh

Probably a 'Fameuse' x 'Detroit Red' cross from Ontario, introduced in 1870. Fruits ripen on September 7. There are many strains. Depending on the strain, fruits are covered with 20 to 90% red over a green background. Shape is round to oblate and size is about 3.0 inches in diameter and 0.4 pounds in weight. Flesh is firm and juicy, with a subacid flavor. Skin is thick and tough. Subject to preharvest drop. Eating quality is poor in warm seasons, and fairly good in cool seasons. In Blacksburg, 'Jonamac' tastes better than 'McIntosh'.

NJ-89

This selection from the New Jersey apple breeding program is a cross of 'Golden Delicious' x ('Crown Prince Rudolf' x 'James Grieve'). Fruits mature on September 10. Fruits are yellowish green with a slight red blush. Fruits are very large and average 3.4 inches in diameter and weigh 0.7 pounds. The stem cavity has some russet. Shape is oblong to conic. Flesh is yellowish white, firm, crisp, and juicy. Flavor is mildly sub-acid and flavor is rated only fair.

Cox's Orange Pippin

A seedling of 'Ribston Pippin' from England in 1830. Fruits mature on September 10. This greenish yellow apple has red stripes over an orange blush. The fruits have rough, scarf skin, and the fruit is not attractive. Fruits average 3.0 inches in diameter and weigh about 0.5 pounds. Shape is elliptical and oblate. Flesh is yellow, firm, and moderately juicy. Flavor is tart. The British regard this as the finest flavored dessert apple, but its poor appearance and tart flavor make this old variety unworthy of trial in Virginia.

NJ-90

A selection from New Jersey with 'Red Melba' and 'Spartan' in its pedigree. Fruits ripen on September 10. Average diameter is 3.0 inches and fruits weigh about 0.45 pounds. Fruits are 80 to 100% bright red and look very similar to 'McIntosh'. Shape is round to oblate and ribbed. Flesh is white, firm, and crisp. Flavor is subacid and somewhat astringent. Skin is thick. This selection is very attractive, but does not taste as good as McIntosh.

Jonathan

An old variety first described in 1826. Fruits mature on September 10. Fruits are 70 to 100% dark orange red over green, are 3.0 inches in diameter and weigh 0.35 pounds. Shape is conic. Flesh is white, firm, crisp, and juicy. Flavor is tart to subacid. Trees are susceptible to fireblight.

Rhode Island Greening

Originated in Rhode Island during the Colonial period. Fruits ripen around September 10. Fruits are green, 3.3 inches in diameter, and weigh 0.4 to 0.75 pounds. Fruits are unattractive with rough skin, and russet around the stem. Shape is conical to oblique and ribbed. Flesh is greenish white and firm, but not very juicy. Flavor is tart and may be astringent.

Spartan

A 'McIntosh' x 'Newtown Pippin' cross from British Columbia. Fruits ripen on September 10. Fruits have a pinkish red blush over 50 to 80% of the surface. Fruits average 3.0 inches in diameter and weigh 0.4 to 0.5 pounds. There is scarf skin at the stem end. Shape is elliptical and ribbed, and resembles 'McIntosh' with

some stem-end russet. Flesh is white, crisp and juicy. Flavor is mildly subacid but is somewhat "flat." Severe preharvest drop occurs some years.

Northwestern Greening

A 'Golden Russet' x 'Alexander' cross. Fruits ripen on September 10 and are green to yellowish green. Fruits are very large and average 4.0 inches in diameter and weigh 0.7 to 1.0 pounds. Shape is conical and slightly ribbed. Flesh is greenish yellow and firm, but not crisp and juicy. Flavor is subacid.

Jonagold

A 'Jonathan' x 'Golden Delicious' cross released from the New York apple breeding program in 1968. Fruits mature on September 10. Fruits have 30 to 70% of the surface covered with an orange red blush over a yellowish green background. Fruits are large; 3.5 inches diameter and weigh 0.55 pounds. Shape is conical, somewhat lopsided and slightly ribbed. Flesh is whitish yellow, fairly firm, crisp and juicy with a mild subacid flavor. This variety has excellent eating and cooking qualities at harvest and for about six weeks in storage, but Virginia is too warm for optimum quality. In the north this variety is smaller, firmer, better colored and stores better than in Virginia. Trees are susceptible to fireblight and there are several high coloring strains. Jonagold is recommended for retailers and at higher elevations.

Suncrisp

A 'Golden Delicious', ('Cortland' x 'Cox') cross from the New Jersey apple breeding program tested as NJ55 and named in 1994. The greenish yellow fruits have an orange red blush and ripen on September 20. Fruits are typically 3.0 inches in diameter and weigh 0.55 pounds. Shape is conical and slightly ribbed. Fruits resemble 'Golden Delicious', but there is stem-end russetting and the fruit surface often is rough. Flesh is whitish yellow, very firm and juicy. Flavor is tart at harvest, but becomes subacid in storage. In polyliners 'Suncrisp' stores better than 'Golden Delicious'. We have observed soft scald in storage, but this likely can be reduced by earlier harvest, CA storage, or scald inhibitors. This variety has performed well in taste tests and processors have rated it high. 'Suncrisp' has potential in retail operations and for processing, but is too unattractive for the wholesale fresh market.

NJ-89

A 'Golden Delicious' x ('Crown Prince Rudolf' x 'James Grieve') cross from the New Jersey program. Fruits ripen on September 20 and are yellowish green with a slight pink-orange blush. Fruits are very large; 3.5 to 3.75 in diameter and weigh 0.65 to 0.9 pounds. Shape is conical and ribbed with stem-end russetting. Flesh is white-yellow, firm, crisp, and juicy with a sweet mildly subacid flavor. Later harvested fruit develop water core. Sooty blotch and fly speck infection is fairly severe. This apple has a nice flavor and is worthy of further testing.

Lord Lambourne

An English variety ripening on September 21. About 50 to 80% of the mottled green and yellow surface is covered with orange-red stripes. Fruit surface is rough with stem-end russetting and scarf skin. Shape is oblique and ribbed. Flesh is whitish yellow, firm, crisp, and juicy with a subacid flavor. This unattractive fruit with only fair flavor does not perform well in Virginia.

Idared

A 'Wagener' x 'Jonathan' cross released from the Idaho Agricultural Experiment Station in 1942. Fruit ripens on September 23 and 30 to 70% of the fruit surface is covered with pale burgundy red over green background. Fruit size is variable ranging from 0.37 to 0.75 pounds. Shape is round, oblate, and ribbed, and there is slight russetting at the stem end. Flesh is white, firm, crisp, juicy, with a pleasant subacid flavor. Sooty blotch and fireblight can be severe. This unattractive, but good tasting, apple may be well-suited for retail marketing, and it has fair processing qualities, but is not recommended for the fresh wholesale market.

Winchester

A 'York Imperial' x 'Lowry' cross released by the Virginia Agricultural Experiment Station and tested as VPI 3. Fruits ripening on September 20 are covered with 60 to 90% orange red blush over green background. Fruits are 3.0 to 3.5 inches in diameter and weigh 0.55 pounds. Shape is slightly conic and round to slightly angular. Flesh is white, crisp, juicy and flavor is tart to subacid. Fruits become greasy as they mature. Trees are very vigorous, heavy annual croppers, and preharvest fruit drop is often severe.

Cortland

A 'McIntosh' x 'Ben Davis' cross introduced by the New York Agricultural Experiment Station. Fruits are large (0.4 to 0.5 pounds) and ripen on 23 September. The fruit surface is covered with 40 to 80% dark orange-red striped over green background. The flesh is white, does not oxidize, and is somewhat crisp and firm. Flavor is sweet to subacid. Although the flavor is good, 'Cortland' has much more quality when grown in the North.

Mutsu (Crispin: English commercial synonym)

A 'Golden Delicious' x 'Indo' cross developed in Japan in 1948. Fruits ripen on September 25 and are very large; 3.0 to 3.5 inches in diameter and weigh 0.7 pounds. Fruits are yellowish green with a pink blush. Shape is round oblate to round oblong and angular. Flesh is whitish yellow, firm, crisp, and juicy with a sweet/subacid flavor. This triploid variety is vigorous and very susceptible to fireblight. The fruit is susceptible to blister spot, a bacterial disease, which is difficult to control.

Empire

A 'McIntosh' x 'Delicious' cross released from the New York Agr. Exp. Station at Geneva in 1966. Matures around 25 Sept. Fruit is round-oblate to slightly conic and 80 to 100% of the surface is covered with dark red blush. In the North, Empire fruits are medium to small, but in Virginia fruit diameter is 2.8 to 3.0 inches and often weighs 0.35 to 0.45 pounds. Flesh is white, crisp and juicy with a subacid flavor. Trees bloom about three days before 'Delicious' and preharvest drop is minimal. Fruits remain firm in cold storage until early January. This attractive apple performs better than other 'McIntosh' types and should be grown for retail sales. Several high-coloring strains are available.

Sir Prize

The fourth "disease resistant" variety from the cooperative apple breeding program involving Purdue University, Rutgers University, and the University of Illinois (PRI). Fruits ripen on October 3 and are yellow and smooth. Shape is conic and slightly ribbed. Flesh is yellow, fairly crisp and juicy. Flavor is very tart if picked early, but becomes tart to subacid as ground color becomes yellow. Fruits are large; 3.5 inches in diameter

and weigh 0.68 pounds. This triploid variety is immune to apple scab, and resistant to mildew and cedar-apple rust, but it is very susceptible to fireblight.

Laurared

A chance seedling ripens on October 3. Fruits are covered with 50 to 75% red blush over green background, and they are 2.4 inches in diameter and weigh 0.5 pounds. Fruits have scarf skin, some russetting, and many have small cracks at the calyx end. Shape is ovate, lopsided, and angular. Flesh color is yellow, firm, crisp and juicy with tart to subacid flavor. Although flavor is fairly good, there are other varieties with better flavor that ripen at the same time.

NJ-131

A selection from the New Jersey apple breeding program ripens on October 1. Fruits average 2.6 inches in diameter and weigh 0.45 pounds. Fruits are yellowish green with 50 to 85% orange-red stripes. Shape is slightly conic, and round to slightly angular. Flesh is whitish yellow and sometimes has internal browning which resembles internal cork. Flesh is crisp and juicy with a subacid flavor. This selection is fairly good, but better varieties ripen at the same time.

Ultragold

The surface of this yellow apple is covered up to 25% with a red blush. The conic fruit ripen around 3 October and has stem-end russet. Flesh is whitish yellow, crisp and juicy with a sweet/tart flavor rated good.

Blushing Golden

This yellow apple ripens around 3 October and is yellow with up to 50% of the fruit surface covered with a dirty orange-pink blush. Skin is rough. Shape is conic and fruits weigh 0.35 to 0.4 pounds. Flesh is yellowish white with a subacid flavor and a fermented aftertaste. Flavor is rated fair.

Virginia Gold

A 'Golden Delicious' x 'Albemarle Pippin' cross made in 1944 from the Virginia Agricultural Experiment Station. This medium large apple weighs about 0.35 to 0.4 pounds, and is greenish yellow with a pink blush. Fruits ripen around 3 October. Skin is smooth with slight stem end russet. Shape is round to conic. Trees bloom about two days after 'Delicious'. Flesh is yellowish white, crisp,

juicy and mildly subacid. Fruit stores for three to four months and flavor improves in storage. Trees are prone to alternate bearing and are more susceptible to fireblight than 'Golden Delicious'. Fruits may develop soft scald in storage. Soft scald can be minimized by early harvest, controlled atmosphere storage, or by using scald inhibitors.

Liberty

A 'Macoun' x Purdue 54-12 cross released in 1978. 'Liberty' is resistant to apple scab, fire blight, mildew, and cedar-apple rust. Fruits are about 3.0 inches in diameter and weigh about 0.35 pounds and 80 to 90% of the fruit's surface is covered with dark red blush. Skin is smooth with slight stem-end russet. Shape is angular and conic. Flesh is white, firm, juicy and mildly subacid. Fruit quality is best in cool seasons, but not as good as 'Empire'. 'Liberty' will perform best at high elevations.

Braeburn

A new late-season apple from New Zealand. Fruits ripen in mid-October and are green with a dirty reddish orange blush over 10 to 50% of the fruit surface. Fruit are medium to large. Flesh is whitish yellow, firm, crisp, and juicy with a pleasant subacid flavor. Fruits store for four months. Trees are nonvigorous and should not be planted on dwarf rootstocks. Fruits on young trees are very susceptible to bitterpit and preharvest drop, but these problems seem to dissipate as trees age. Trees are susceptible to fireblight.

Nittany

A 'York' type apple introduced by The Pennsylvania State University. Fruits ripen around 10 October, are 3 to 3.25 inches in diameter and weigh 0.4 to 0.5 pounds. About 50 to 90% of the surface is covered with a dull red color. Fruits have scarf skin and may become greasy as they mature. Shape is truncate to conical and is less oblique than 'York'. Flesh is yellow and firm. Flavor is tart to subacid and similar to 'York'. Fruits are relatively free of internal cork, but can develop alternaria spot. Fruits store for up to six months.

York Imperial

A chance seedling found near York, Pa. about 1830. 'York' ripens about 15 October. Depending on the strain, about 20 to 90% of the fruit surface is covered with a pinkish red blush. Shape is oblique. Flesh is yellow, firm, and tart to subacid. Flavor improves in stor-

age. Fruits have scarf skin and may become greasy as they mature. This is the premier processing variety in the mid-Atlantic region, but is gaining popularity as a fresh apple. Trees can become biennial and are susceptible to fireblight. Fruits store for six months.

Fuji

A 'Delicious' x 'Ralls Janet' cross released from Japan in 1962. Fruits are about 0.4 pounds and have dull red stripe over 50 to 70% of the surface over a green ground color. Fruits mature 25 October to 5 November. Shape is round-oblately slightly oblique. This moderately attractive apple has whitish-yellow flesh that is firm, crisp, and juicy with a sweet flavor. 'Fuji' stores for 7 to 8 months. Trees can be biennial and are susceptible to fireblight. Processors have rated 'Fuji' as good to excellent.

Granny Smith

A late-season apple from Australia. Fruits mature around 10 November, are 3 to 3.25 inches in diameter, and weigh 0.4 to 0.5 pounds. In Blacksburg this variety develops an unattractive, dirty, orange-red blush and the fruit is bumpy. Flesh is greenish-white, firm, and juicy. Flavor is very tart at harvest and becomes less tart after two months in cold storage. The trees are difficult to train (especially spur types) to a central leader form. Trees are very susceptible to fireblight and powdery mildew. Some strains are slow to come into production. Granny Smith does not develop appropriate appearance in Virginia for fresh market sales.

Days Before (-) or After (+) Red Delicious

Variety	Full Bloom	Harvest
Lodi	+4	-77
Jersey Mac	+1	-65
Earlycrisp	-2	-64
JulyRed	+6	-63
Priscilla	+3	-40
Stark's Summer Treatment	-1	-39
Gravenstein		-37
Tydemans Red	+6	-35
Burgundy		-35
Paulared	-2	-34
Redfree	+3	-31
GingerGold	-2	-31
Akane	-1	-31
Elstar		-27
Prima	-1	-27
Gala	+2	-21
Summer Rambo		-21
Jonamac	0	-14
McIntosh	+3	-8
Cox's Orange Pippin	+6	-5
Jonathan	+10	-5
Rhode Island Greening	+4	-5
Spartan	+6	-5
Northwestern Greening	+6	-5
Jonagold	-2	-5
Golden Del.	+3	-5
Red Delicious	0	0
Suncrisp	+6	+5
Lord Lambourne	+3	+6
Idared	+8	
Winchester	+6	+5
Cortland	-2	+8
Mutsu	-1	+10
Empire	-2	+10
Sir Prize	+1	+18
Laurared	-2	+18
Ultragold	+2	+18
Blushing Golden	-1	+18
Virginia Gold	+2	+18
Liberty	+8	
Braeburn	+5	+25
Nittany	+3	+25
York Imperial	+4	+30
Fuji	+6	+35
Granny Smith	+2	+45