

Apple Cultivar Performance

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Introduction

Selecting cultivars that perform reliably and meet market needs is a critical step in establishing an apple orchard. Early, mid, and late season cultivars can be utilized to extend or concentrate the season to match a specific market. Although cultivar performance and fruit quality information is very useful, obtaining this information is time-consuming, due to the time required for fruit trees to start production. This is also expensive due to the large number of cultivars available.

To assist our growers with their cultivar choice, an apple cultivar trial was conducted at the University of Kentucky Research and Education Center at Princeton, KY. Grafted trees of most cultivars were planted in 1997, while additional cultivars were planted in subsequent years as they became available. Two trees of each cultivar were planted, and yield and fruit quality were evaluated over a three year period from 2004 thru 2006.

Table 1. Harvest date, yield, fruit weight, and harvest fruit quality of apple cultivars evaluated at UKREC.

Cultivars	Average Harvest Date	Average Yield lb/tree	Fruit Weight oz	Flesh Firmness	Brix %
Pristine	7/12	73	4.3	13.8	12.0
Monark	7/14	43	5.2	15.3	11.8
William's Pride	7/14	32	3.1	16.7	12.4
Redfree	7/24	81	5.8	15.8	11.0
Sansa	8/3	67	8.0	15.7	14.3
Crimson Crisp	8/19	164	8.3	22.5	14.3
Rezista Gala	8/19	13	3.9	20.4	16.6
Scarlet O'Hara	8/24	71	6.5	22.2	16.1
Pixie Crunch Dwarf	8/25	5	3.7	21.2	12.9
Big Red Gala	8/26	53	6.4	13.0	12.5
Senshu Fuji	9/1	82	5.8	15.4	11.4
Jonagold De Coster	9/9	72	7.6	16.3	15.5
Liberty	9/9	118	5.7	20.9	14.9
Rubinstar Jonagold	9/9	29	6.5	18.9	16.7
Morren's Jonagored	9/15	65	8.3	13.1	15.4
Florina	9/19	97	7.1	16.5	13.9
Shizuka	9/22	33	9.7	14.2	14.2
GoldRush	9/27	45	8.0	25.1	16.6
Enterprise	10/3	111	7.7	17.4	14.2
Sun Fuji	10/5	107	5.7	16.8	14.2
Yataka	10/9	146	6.2	15.6	14.2

Table 2. Early stages of bud development, from green tip to fruit set, collected from 2004 to 2006 of the apple cultivars evaluated at UKREC.

Apple Cultivars	Green Tip	Half-Inch Green	Tight Cluster	Pink	Bloom	Petal Fall	Fruit Set
Pristine	3/10-29	3/13-31	3/15-4/4	3/29-4/8	3/31-4/11	4/12-20	4/19-22
Monark	3/10-25	3/13-29	3/15-4/4	3/29-4/6	3/31-4/8	4/12-16	4/19-20
William's Pride	3/10-29	3/13-29	3/15-4/4	3/31-4/6	3/31-4/11	4/14-18	4/19-22
Redfree	3/15-31	3/17-31	3/29-4/6	3/31-4/11	4/7-13	4/17-20	4/19-22
Sansa	3/10-31	3/13-4/4	3/17-4/6	3/29-4/9	4/5-11	4/17-22	4/19-27
Crimson Crisp	3/13-31	3/29-31	3/31-4/6	3/31-4/11	4/7-13	4/17-22	4/19-27
Rezista Gala	3/10-29	3/13-4/4	3/17-4/4	3/31-4/6	4/5-11	4/17-22	4/19-27
Scarlet O'Hara	3/10-31	3/13-4/4	3/29-4/6	3/31-4/11	4/7-13	4/17-20	4/19-22
Pixie Crunch Dwarf	3/10-29	3/17-31	3/27-4/4	4/3-11	4/8-13	4/17-22	4/19-27
Big Red Gala	3/10-29	3/13-4/4	3/17-4/4	3/29-4/8	4/3-11	4/16-19	4/19-22
Senshu Fuji	3/11-29	3/13-4/4	3/17-4/6	3/31-4/11	4/7-13	4/17-20	4/19-22
Jonagold De Coster	3/13-29	3/17-31	3/27-4/4	3/29-4/10	4/5-12	4/17-20	4/19-24
Liberty	3/10-31	3/13-4/4	3/17-4/6	3/29-4/8	4/3-11	4/14-20	4/19-24
Rubinstar Jonagold	3/17-29	3/25-31	3/29-4/4	3/30-4/10	4/7-12	4/16-20	4/19-24
Morren's Jonagored	3/16-29	3/23-31	3/29-4/4	3/31-4/10	4/7-12	4/16-21	4/19-24
Florina	3/17-31	3/21-31	3/31-4/6	3/31-4/10	4/7-12	4/17-20	4/19-22
Shizuka	3/13-29	3/17-31	3/27-4/4	3/31-4/8	4/3-11	4/16-18	4/19-20
GoldRush	3/17-29	3/25-31	3/29-4/6	3/31-4/8	4/7-11	4/17-21	4/19-24
Enterprise	3/10-29	3/13-31	3/15-4/4	3/29-4/8	4/3-11	4/17-20	4/19-22
Sun Fuji	3/13-29	3/15-4/4	3/17-4/6	3/31-4/8	4/3-11	4/17-20	4/19-22
Yataka	3/13-29	3/23-4/4	3/29-4/6	4/2-11	4/7-13	4/17-20	4/19-22

Table 3. Description of apple cultivars evaluated at UKREC.

Cultivars / Rootstock (Nursery)	Cultivar Description
Pristine / M.9 (RM)	Earliest of the disease resistant apples, ripening just after Lodi. The apple is yellow with a smooth glossy skin with excellent eating quality for a summer apple. The tree is susceptible to fireblight.
Monark / B.9 (RM)	Large, somewhat flat in shape, 90% red crisp flesh for an early apple. Has excellent eating quality for a summer apple, very tart and crisp off tree. Ripens July 12-17 and can be kept up to 6 weeks in storage. Preharvest drop is a concern.
William's Pride / O.3 (RM)	Perhaps the best flavored of the older disease-resistant apples. Another PRI introduction. Long harvest requires 2 or 3 pickings. Attractive fruit with an 80% dark red stripe on a green-yellow background. Short shelf life.
Redfree / CG.10 (RM)	Redfree is another disease resistant apple. It is resistant to apple scab and cedar apple rust and has moderate resistance to fireblight and powdery mildew. Redfree has a long harvest window (8-12 days).
Sansa / M.9 (ACN)	A Gala x Akane cross developed in Japan, maturing one week before Gala. Excellent dessert apple with good keeping quality. Resembles Gala in fruit color and firmness, perhaps a bit higher flavored.
Crimson Crisp/CG.10 (RM)	A disease resistant variety with medium size fruit that has a very attractive crimson red color over 95% of the surface. Crimson Crisp has a very firm, crisp texture with a tart, complex flavor. The tree is very grower friendly with a spreading habit, fruiting throughout the tree on two and three year old branches. The fruit matures mid-season and will keep in cold storage for six months. Crimson Crisp is a trademark of Purdue Research Foundation.
Rezista Gala / M.26 (VN)	A beautiful dark red apple with subdued stripes developed with disease resistance to apple scab, red spider mite, bacterial canker, fireblight and mildew tolerance. Juicy and medium firm with good dessert qualities. Picks mid-season in late September. Medium sized. Hardy to Zone 5. Not a true Gala, but similar in appearance.
Scarlet O'Hara / B.9 (RM)	From the PRI breeding program. Tested as Coop 25. Ripens in mid-August with a brilliant red skin. Has mild flavor, and stores well. Not recommended due its annual problems with moldy core.
Pixie Crunch Dwarf / M.9 (HF)	U.S. Patent No. 13871. Fruit is crisp like Honeycrisp, only sweeter. Strong annual cropping beginning in its third season, even in years with late frosts. Matures late August. Fruit is bright red, tends to be small in size (2¼") and hangs well on the tree.
Big Red Gala / CG.10 (RM)	Big Red Gala is a patented variety discovered in 1992 by Tina Fackler of Rocky Meadow Orchard. As the name indicates, Big Red Gala is 30-40% larger than other strains. Fruit is very pretty, large size, conical to round fruit with more red-orange skin than yellow-gold. Firm, juicy, fine textured, yellow-white flesh. A sweet apple with a hint of tart. Tree has an erratic (unpredictable) growth habit and is difficult to maintain when grown with support. Approximately 10-20% of fruit is mal-shaped or deformed annually.
Senshu Fuji / M.9 (Stark)	Medium sized, dull red apple with a sweet, well-balanced flavor and texture. Delightful eating. Fruit ripens early September. Tends to crack.
Jonagold De Coster / M.9 (ACN)	A red strain of Jonagold selected by Belgium horticulturist Henry De Coster. Trees are vigorous, productive, and spreading in habit. Fruit has excellent dessert quality.
Liberty / M.9 (Stark)	A medium size, medium red with yellow flesh dessert apple with 90% red over yellow background. Resistant to scab, cedar apple rust, fireblight, and mildew. A good cultivar for the home gardener. It doesn't develop a good skin color in Kentucky. Consistent return bloom annually.
Rubinstar Jonagold / M.9 (Wafler)	Originated in Germany as bud mutation in 1980. Similar to Jonagold except that it matures about four to six days earlier with a more intense red color and little or no striping.

Table 3. Continued.	
Morren's Jonagored / B.9 (Stark)	A limb sport of Jonagold discovered in Belgium and introduced in 1985. Fruit matures to an attractive solid red at harvest.
Florina / CG.10 (RM)	Large, red striped fruit with an aromatic sweet/spicy flavor. Vigorous tree. Immune to scab and resistant to Cedar apple rust. Ripens mid September. Keeps into January.
Shizuka / B.9 (RM)	A sister to Mutsu developed in Japan. Reported to be blister spot resistant. Fruit has a milder flavor than Mutsu. Trees are highly productive with tree vigor is similar to Mutsu.
GoldRush / M.9 (Stark)	Resistant to scab and mildew, with moderate resistance to fireblight. Fruit stores well, but matures after Fuji. Very productive and will require annual and heavy thinning. Excellent eating quality even after 4-5 months in cold storage.
Enterprise / CG.10 (RM)	Developed by Purdue University. This is a late maturing, deep red apple with good keeping qualities. Fruit is uniform - medium to large. Tree is spreading with good annual bearing habits. Enterprise is immune to apple scab, highly resistant to fireblight and cedar apple rust, and moderately resistant to powdery mildew.
Sun Fuji / M.9 (ACN)	A Fuji sport selected for its outstanding color. It matures with conventional Fuji strains showing improved red color and a distinct striping. It is resistant to apple scab and fireblight.
Yataka / M.9 (Stark)	A Japanese variant of Fuji discovered in 1982 as a limb sport on a standard Fuji tree. Yataka is very similar in appearance and flavor to standard Fuji. They are medium-large, firm, juicy and very sweet, with dense cream-colored flesh. This apple is harvested in October. Fireblight susceptible.

Table 4. Description of rootstocks used in the apple cultivar trial at UKREC.

Rootstock Name	Rootstock Description
B.9	Very dwarfing rootstock, about 30% of Standard. Compared to M.9, B.9 is somewhat more winter hardy, slightly more dwarfing, more resistant to fireblight and equal in woolly aphid sensitivity and even more resistant to collar rot. Like M.9, trees on B.9 require a permanent trellis or post support. Burrknobs and suckers are rare. Graft union is smoother than that of M.9. Somewhat difficult to propagate in the stool bed. Recommended for commercial trial to replace M.9.
CG.10	Produces a tree about the size of those produced by M.9, but less susceptible to fireblight. CG.10 is no longer available.
M.26	A dwarfing rootstock that produces a tree about 45% of Standard tree size. Very susceptible to fireblight and collar rot.
M.9	M.9 was first received from East Malling in 1931. It produces a tree about 35% of Standard in size. Incredibly productive annually.
O.3	Slightly smaller than M.26, but more productive and somewhat less susceptible to fireblight. It is sensitive to extremely acidic soils but is free of suckers and burrknobs. Support has not been required in Kentucky.

Table 5. Nursery names and addresses of apple cultivars used in the trial planted at UKREC.

Nursery Abbreviation	Nursery Name and Address Information
ACN	Adams County Nursery, Inc., 26 Nursery Road, P.O. Box 108, Aspers, PA 17304
HF	Henry Field's Seed & Nursery Co., Customer Service, P.O. Box 397, Aurora, IN
RM	Formerly known as Rocky Meadow Nursery. New owner is Gardens Alive, 110 West Elm Street, Tipp City, OH 45371
Stark	Stark Brothers Nursery & Orchard Company, P.O. Box 1800, Louisiana, MO 63353.
VN	Vanguard Nursery, Division of Moser Fruit Tree Sales, Inc.; 5329 Defield Rd, Coloma, MI 49038.
Wafler	Wafler Nursery, 10662 Slaght Rd., Wolcott, NY 14590

Fruit pictures of the apple cultivars evaluated at the University of Kentucky Research and Education Center at Princeton, KY. (Picture of Pixie Crunch Dwarf not available).

July



Pristine



Monark



William's Pride



Redfree

August



Sansa



Big Red Gala



Crimson Crisp



Rezista Gala



Scarlet O'Hara

September



Senshu Fuji



Morren's Jonagored



Jonagold De Coster



Florina



Liberty



Shizuka



Rubinstar Jonagold



Goldrush

October



Enterprise



Sun Fuji



Yataka Fuji

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