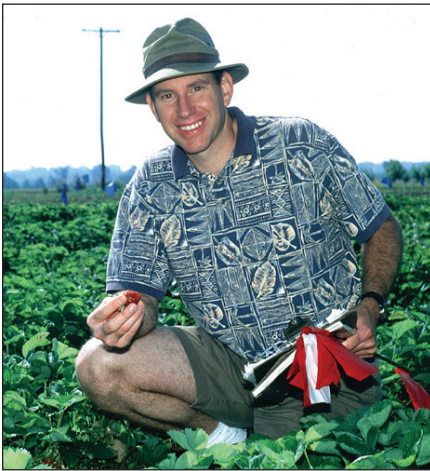


Cornell University College of Agriculture and Life Sciences

Small Fruits Breeding Program

IMPACTS 2007



SUMMARY

The Small Fruits Breeding program at Cornell University was established with the opening of the New York State Agricultural Experiment Station in Geneva, NY in 1882. The program's focus today includes strawberry, raspberry and blackberry breeding. Since 1894, the program has released 40 strawberry, 39 raspberry and 3 blackberry varieties. Notable varieties include 'Heritage', 'Titan', 'Royalty', 'Brandywine', 'Jewel', and 'Bristol' raspberry, 'Jewel', 'Holiday', and 'Honeoye' strawberry and 'Darrow' blackberry. The NY strawberry industry ranks 4th in acreage and 7th in production (6th in product value) in the U.S. with over \$8 million produced on 1,700 acres. This makes strawberries the 3rd leading fruit crop in NY. Other berries provide significant income to small, diversified growers.

The small fruits breeding program at Cornell is continuing the development of June-bearing strawberries (short day), primocane and floricaner red raspberry, black raspberry and primocane blackberry. Newer varieties such as 'Prelude' and 'Encore' raspberry and 'L'Amour' and 'Clancy' strawberry continue the strong tradition of improvement with better fruit quality and season extension. Program goals include superior eating quality, increased pest resistance, post-harvest quality and yield, and season extension. Currently there are 6 strawberry and 12 raspberry varieties and 1 blackberry variety from the Cornell Program commercially available in the US. These are described below. Varieties under current patents can be licensed for propagation through the Cornell Center for Technology Exchange and Commercialization (CCTEC) by contacting Dr. Richard Cahoon at rsc5@cornell.edu or for additional information, contact Dr. Courtney Weber at caw34@nysaes.cornell.edu or by phone at (315) 787-2395.

STRAWBERRIES



Clancy

MDUS4774 x MDUS5199 (2003, Plant Patent #16,571) is a new release from Cornell that provides a large, firm berry for the late season. It was developed through a joint venture with the USDA breeding program in Beltsville, MD, and has parents that are resistant to red stele root rot. The fruit is a round conical-shaped with darker red color and good flavor. The flesh is firm with good texture and eating quality. Specific insect and other disease resistance is unknown at this time, but no significant problems have been noted to date. This variety ripens later than Jewel and is firm enough for shipping. The upright growth habit and moderate runnering help in management for plasticulture systems where it has shown promise.



Canoga

NY1123 ('Senga Sengana' x 'Midland') x Holiday (1979) has seen a resurgence in recent years for plasticulture systems in the northeast. This variety produces large, firm, wedge-shaped fruit with dark red coloring that ripen in the late mid-season. The plants produce upright foliage and few runners, making management in the plasticulture system easier.



Honeoye

'Vibrant' x 'Holiday' (1979) has reigned as the yield king for many years and produces an abundance of large, attractive, firm, berries that are suitable for all markets. This early mid-season variety has very attractive berries, but its flavor can be a major drawback as it can be tart and can develop disagreeable aftertastes when overripe or in heavy soils. It is susceptible to red stele disease but is manageable.



Jewel

NY1221 x 'Holiday' (1985, Plant Patent #5,897) has been the most popular variety in the region for 10+ years and sets the standard for fruit quality. The high quality berries are large and attractive with good flavor. Yields are moderate. On a good site, it's hard to beat. It is susceptible to red stele and can have vigor problems in poor sites.



L'Amour

NYUS256 x 'Cavendish' (2003, Plant Patent #16,480) is a new early mid-season variety with excellent fruit quality. The berries are bright red and firm but not hard, with excellent eating quality and flavor. Fruit is long round-conical with a fancy calyx, which makes them very attractive. Specific disease and insect resistance is unknown at this stage, but no significant problems have been noted to date. Grower comments have been very positive.



Seneca

NY1261 x 'Holiday' (1991, Plant Patent #8,991) is the firmest variety adapted for the northeast region making it suitable for shipping long distances. The fruit is large, somewhat round, bright red and attractive but the flavor is only acceptable. It does not runner heavily and has been adopted for plasticulture by many growers.

RED RASPBERRY SUMMER (FLORICANE) VARIETIES



Encore

'Canby' x 'Cherokee' (1998, Plant patent #11,746) is one of the latest summer fruiting raspberry available, thus extending the summer season. It produces large, firm, slightly conical berries with very good, sweet flavor. The fruit quality is considered very good. It is susceptible to Phytophthora root rot but has good cold hardiness.



Prelude

NY817 ['Hilton' x NY600 ('Durham' x 'September')] x 'Hilton' (1998, Plant Patent #11,747) is the earliest summer fruiting cultivar available, often fruiting before strawberries are finished. The fruit is medium sized, round, and firm with good flavor. It is very resistant to Phytophthora root rot and has good cold hardiness. A moderate fall crop is large enough to warrant double cropping. It is the best early season cultivar available for the northeast.



Titan

'Hilton' x NY598 ('Newburgh' x 'St. Walfried') (1985, Plant patent #5404) produces the largest fruit of any commercial variety. It has large canes with very few spines with suckers that emerge mostly from the crown, so it is slow to spread. It is susceptible to crown gall and Phytophthora root rot but is extremely productive. Fruits ripen mid to late season and are extremely large and dull red, with mild flavor. Berries are difficult to pick unless fully ripe. With only fair hardiness, 'Titan' is for moderate climates. It is resistant to the raspberry aphid vector of mosaic virus complex.

FALL (PRIMOCANE) VARIETIES)



Heritage

('Milton' x 'Cuthbert') x 'Durham' (1969) revolutionized the raspberry industry with its release by providing a viable second season crop. It is considered the standard for fall bearing varieties. These tall, rugged canes have prominent thorns and are very high yielding. The primocane crop ripens relatively late. Fruit is medium-sized and has good color and flavor, firmness, and good freezing quality. It is resistant to most diseases. Due to its late ripening, this cultivar is not recommended for regions with cool summers or a short growing season with frost before September 30.



Ruby

'Heritage' x 'Titan' (1988, Plant patent #7067) is a step up for size and fruit quality from its parent 'Heritage'. It is moderately vigorous with good productivity. The primocane crop ripens slightly ahead of 'Heritage'. The fruit is large with a mild flavor. The cultivar is suggested for fresh market or shipping in areas with longer growing seasons. Ruby is susceptible to Phytophthora root rot and to mosaic virus complex and resistant to late yellow rust and powdery mildew.

PURPLE VARIETIES



Brandywine

NY6731 x 'Hilton' (1976) produces canes that are very tall with prominent thorns, and suckers grow only from the crown so the plant will not spread. It is susceptible to crown gall but partially resistant to many other diseases. Fruits ripen later than most red varieties and are large, dull reddish-purple, and can be quite tart. Berries are best used for processing. This is a high yielding cultivar.



Royalty

NY253 ('Cumberland' x 'Newburgh') x NY17861 ('Newburgh' x 'Indian Summer') (1982, Plant patent #5405) is the most widely grown purple raspberry available to growers. The canes are tall and vigorous, with thorns, and are extremely productive. Royalty is immune to the large raspberry aphid, which decreases the probability of mosaic virus infection, but is susceptible to crown gall. Fruits ripen late and are large and reddish-purple to dull purple when fully ripe. Berries tend to be soft but sweet and flavorful when eaten fresh. Excellent for processing. Hardiness is acceptable for northern growing areas.

BLACK RASPBERRY VARIETIES



Allen

'Bristol' x 'Cumberland' (1963) has vigorous plants with large fruit for a black raspberry. It ripens slightly before Bristol with a concentrated season. The fruit is sweet and attractive.



Bristol

Watson No. 1 x 'Honeysweet' (1934) has been a standard in the region for decades for its consistent fruit quality and reliable production. It is vigorous and high yielding for a black raspberry, especially in a newly established planting. The fruit ripens early and is medium to large and firm, with excellent flavor. Bristol is hardy for a black raspberry but should be tested to ensure adequate hardiness. It is susceptible to anthracnose and raspberry mosaic complex but is tolerant to powdery mildew.



Huron

'Rachel' x 'Dundee' (1965) produces large, glossy berries slightly later than Bristol. The plants are vigorous and productive for a black raspberry and tolerant to cane anthracnose.



Jewel

NY29773 ('Bristol' x 'Dundee') x 'Dundee' (1973) is the most commonly grown black raspberry variety in the northeast with large, firm fruit that is sweet and flavorful. It is vigorous, erect, and productive for a black raspberry and more winter hardy than most. This cultivar is more disease resistant (including anthracnose) than others.

BLACKBERRY VARIETIES



Darrow

NY15826 ('Eldorado' x 'Brewer') x 'Hedrick' (1958) is a vigorous and thorny variety that is more cold hardy than most blackberries. Production in NY is fairly consistent. The berries are somewhat small and soft but have good eating quality. Generally grown by the enthusiast looking for blackberries in harsher climates.

Additional Information on Berry Production and Accomplishments:

- New York State is ranked 7th in the nation in strawberry production with a 2006 crop of 4.4 million pounds grown on 1,500 acres and a farm gate value of \$8.06 million.
- 1.6 million pounds of red raspberries were produced in 2006 in New York State, up 14% from 2005.
- Cornell has worldwide licensing of the newest strawberry varieties.
- Cornell is pursuing worldwide licensing of raspberry.
- A Cornell variety, Heritage, is one of the most widely planted raspberry varieties in the world.
- Cornell research provides growers with a wide range of fruit types and marketing opportunities through development of superior new varieties.
- Cornell has the oldest continuous berry breeding program in North America.
- Cornell produced the first genetic linkage map identifying molecular genetic markers linked to resistance to Phytophthora root rot in red raspberry.

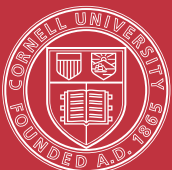
Contact:

Varieties under current patents can be licensed for propagation through the Cornell Center for Technology Exchange and Commercialization (CCTEC) by contacting Dr. Richard Cahoon at rsc5@cornell.edu

For Additional Information Contact:

Dr. Courtney Weber
Department of Horticultural Sciences
New York State Agricultural Experiment Station
Cornell University
630 West North Street
Geneva, New York 14456-0462
Phone: 315-787-2395
Fax: 315-787-2216
E-mail: caw34@nysaes.cornell.edu

NYSAES 080124



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