Over the last 30 years, researchers at the NY State Agricultural Experiment Station and Extension field staff have conducted field evaluations and pilot processing tests of hundreds of plum selections and cultivars. This effort has resulted in a list of recommended varieties. The list is categorized into four plum types including Japanese types, European blue plum types, Greengage types and Mirabelle types. Within each category varieties are listed in order of maturity. A brief characterization of general attributes of each broad category is presented. Most of the recommended varieties are available from commercial nursery sources. If you can’t find a nursery source, the Geneva Experiment Station may be able to provide a limited supply of virus-indexed budwood so that you can arrange a contract with a nursery to have trees grown specifically for your needs.

Japanese Plum Types

Japanese plums bloom earlier than any others, thus they are more frost susceptible and their trees are generally less tolerant to winter cold than most European plums. This list spans a harvest period of 7-8 weeks from mid-July to mid-September.

Ohishi Wasi – the earliest ripening plum at Geneva, and one with a long history of success in Japan and Korea. Fruit is larger than that of Early Golden. ... It has a blushed red cheek over golden ground color and good eating quality for this early season, and is self-incompatible.

Early Golden – A mid-July plum in Geneva. Well known in the Great Lakes regions as one of hardest trees that will produce regularly in cold climates and start harvesting before Methley or Shiro. It needs multiple pickings and gets very little blush and has bland flavor if over-set. Biennial fruiting pattern is common if over-cropped. Needs a pollinator and Burbank, Ozark Premier, Shiro and Vanier all pollinate it well.

Shiro – Ripens 10 to 12 days after Early Golden in Geneva. Well known as all-yellow fruited sort with hardy tree. Self-incompatible. Pollinated by Burbank, Methley, Vanier and probably by Obilinaya. It has bland quality when over-set.

Obilinaya – We have limited experience with this hybrid from the former USSR. It has outstanding fruit size, a beautiful red-purple appearance with bright red flesh under the skin and golden flesh around the pit. The tree is very hardy and an extremely heavy cropper. It will not set fruit in years if not pruned. Only valuable for orchards which accept low quality fruit. It ripens between Methley and Shiro. No pollination data available for it yet. It has a tendency to overset. In this case, fruit quality will be mediocre without thinning.

Ozark Premier – This hardy, spreading tree is often very biennial in its cropping pattern. Its fruit is very large and well colored with good flavor if it is thinned. It requires a pollinizer and Early Golden will not pollinize it. Vanier and Myroobolan rootstocks (that have been allowed to flower and fruit instead of being grafted) are both excellent pollinators. Obilinaya probably is too because of its parentage being one-half Myroobolan.

Burbank – This hardy, dependable-cropping old variety is valuable as a pollinizer in any Japanese-type plum orchard. It needs careful hand thinning in most seasons to make adequate fruit size. The red-skinned variety with yellow flesh

New York Plum Picks for 2006: Recommended Plum Cultivars

Robert Andersen, Jay Freer and Courtney Weber

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Field evaluations and pilot processing tests of hundreds of plum selections and cultivars at the NY State Agricultural Experiment Station in Geneva have resulted in a long list of recommended varieties. These include Japanese types, European blue plum types, Greengage types and Mirabelle types.
has good flavor if not too heavily cropped. The fruit ripens in late August in Geneva. It is self-fertile and has good resistance to the plumpox virus. It produces a healthy tree with an open crown (Fischer, 1995).

**Earliblue**

Danny L Barney, and Kim Hummer.

The fruit ripens in early August in Geneva. This blue plum with a nice flavor can overset and be small. This variety does not drop. It needs a pollinator and Stanley and Valor both work. Vanette pollinates Valorie but Valorie will not pollinate Vanette.

**Voyageur**

This round, oblong-shaped fruit has a sky-blue color due to heavy covering of waxy bloom which gives fruit a distinctive appearance. It ripens shortly before Early Italian and Castleton™. It crops abundantly and regularly but has a tendency to drop and it softens more quickly than Castleton™. It is a good pollinator for Early Italian. It has good eating quality and is firm enough to pack and ship to wholesale markets.

**Bluebyrd** (=869158) – The fruit is medium size, with deep purple skin with a waxy bloom. The flesh is amber, firm and clings slightly to the stone. The flesh has a good sugar/acid balance. The fruit has good hardness and is more consistently productive than many other blue plums. In some years without fruit thinning, it may break limbs with fruit weight. Bluebyrd is self-incompatible (Scotta and Fogg, 1999).

**California Blue**

– This is a round, medium large, unshapely plum. The size will well tend to drop. It ripens three days after Shiro. Flavor is satisfactory but uneven maturity and drop may make it troublesome to grow.

**Valorie** – This is a Vineland, Ontario selection. It ripens in June and is about 3 days after Shiro. It is self-incompatible and pollinized by Vanette and Fortune. This variety is firm enough to pack and ship to wholesale markets.

**Seneca** – This variety was released by Cornell in 1972. The fruit has a maroon/purple color, is round shaped, and is often one and one-half thick and 2 inches long. Its eating quality is unsurpassed! It needs pollination.

**Ruby Queen** (=B155.70) – This tree has medium large fruit with dark red to reddish-black skin, covered with waxy bloom. The flesh is also dark red with firm texture and outstanding flavor. It has high sugar and enough acid for good balance. It is probably self-fertile, but is a good pollinator for Shiro. In the 2003-04 winter in Geneva, NY our nine-year old trees died. Our younger trees survived the 2003-04 winter but then died.

**Fortune** – This variety produces the largest fruit of the varieties that have been released. It has red/purple skin, yellow flesh and ripens around Labor Day in Geneva. The tree is vigorous and Italian. It is self-compatible, bright and similar to Ohiwha in hardness. It should not be tried in regions that do not have success with growing good peach varieties. It is self-incompatible and pollinated well by Burbank.

**European Blue Plum Types**

This group of blue and purple/blue plums formerly known as "prunes" spans an eight-week ripening period from early August to late September. Many characteristics of fruit (meaning that it is oblong to oblong-pointed and has blue skin) has very good flavor. It ripens in very late July or early August in Geneva, amongst the earliest blue plums. It crops heavily and retains its flavor very well but is not firm enough to ship.

**Earleiblu** – Similar to Earleiblue in size and shape, it has darker blue color and slightly blander flavor. It is not firm enough to ship.

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Empress – The fruit is large, oval to pointed, and oblong, with dark blue skin. It is free to partially freestone and non-shattering. The neck shrinks in dry seasons and can break down prematurely. In most seasons it is the best fresh market packing plum in Geneva’s trials. The tree is vigorous, somewhat upright and regularly productive if pollinized well. It blooms mid-late and is self-incompatible. It can be pollinized by Stanley, Victory, Moyer, French Prune and Damson. According to the first year’s results in an Empress pollination trial, Damson is the most effective pollinator. Undoubtedly many other blue plum varieties will pollinize it. In Geneva it ripens in late September. The fruit is firm and well-suited for packing and shipping.

Italian Prune – This very well-established variety is also known as Fellenberg. It is an important variety with diverse uses – fresh, canning, and drying. In New York it limits its value here. Autumn Sweet seems much better. Its fruit is firm and well-suited for packing and shipping.

Valor – This is a medium size, blue skinned variety with amber flesh of good eating quality. It ripens in the third week of September in Geneva. The tree crops regularly, is somewhat thorny, and has moderate vigor with spreading habit. It is self-incompatible and is pollinized effectively by Stanley, Italian Prune and Longjohn. This fruit is firm and well suited for packing and shipping.

Pozegaca – This is an old and famous variety from Eastern Europe with high quality and many uses. One of the more common synonyms is Hauszwetsche. In Eastern Europe it has many clones, which have been developed over centuries. Most of the types we have seen in Geneva have small to medium sized fruit with a blue skin and a waxy bloom. The flesh is firm, greenish or amber with high sugar and a good acid balance. Most types have a pleasant level of astringency, similar to Italian. The pit separates easily. It is self-fruitful with an upright tree form. In most seasons the fruit hangs quite well on the tree for several weeks after maturity. This variety is very susceptible to the plum-pox virus. In Eastern Europe it is used for many processing purposes including preserves and brandy. We made a nice preserve from it in 2003.

Autumn Sweet – This variety was recently released by Washington State University. Its fruit quality surpasses that of Italian Prune and it yields much better than Italian. It is partially self-fertile and always sets well in Geneva in the company of Stanley and NY 973. Autumn Sweet’s fruit is firm and well-suited for packing and shipping. They are medium size and have an attractive dark blue skin color.

President – This is a medium large oblong plum with skin color like Valor, reddish blue, and dark yellow firm flesh. It is both crisp and sweet with good acid balance and a slight bit of astringency. It ripens in late September and is not as large as Empress. It pollinizes Empress very well and vice versa.

Greengage Plum Types

These are also known as Reine-Claude types and date back to their introduction from Armenia into France about 1500 A.D. Usually they have small, round, generally green, yellow or blushed fruit with special flavors/aromas that are highly prized by connoisseurs. Usually they have softer flesh texture than most mineral transport, so a lack of water could also translate into a lack of nutrients. Water is particularly important during the first six weeks of crop development. Stress during these first weeks can cause early ripening, resulting in early seed development and fruit reddening with bigger fruits, and strigs that turn yellow. The result is fruit that has less potential for long-term CA storage. The optimum relative humidity for growing currants is 60-70%. Ideally the relative humidity would not drop below 40%.

Weed Control - Weed control is important to help prevent water and nutrient stress in plants. In addition, good weed control helps improve air ventilation, and reduces disease potential.

Disease Control - Botrytis is the main disease that can cause fruit spoilage. A spray program should be considered if Botrytis has been or becomes a problem. The berries are most susceptible during flowering and become more resistant after flowering. The stem and flower end of the berry are most susceptible to infection. In Holland, it is assumed that 50% of the spray protection is lost after about 25 mm of rain, and another application of fungicide is made. When plastic roofs or greenhouses are used, much less spray is used.

Climate Control - The use of greenhouses is a way to control free water, humidity, light, temperature, and to some extent disease. The value of the crop must justify its use, and this is probably only possible in some cases for an early season crop. Plastic roof structures are a less expensive alternative that can have many of the same benefits as a greenhouse except for humidity and temperature control.

Cultivar Choice - Certain cultivars such as Rovada have the genetic predisposition to long strigs of large-sized berries. Choosing a cultivar that has the genetic capability of producing the quality of fruit one wants is the first step to achieving quality. Cultural practices will help to optimize the potential available to the plant due to its genetic make-up. Other considerations such as chill requirements, pest resistance, and winter cold resistance are also factors to weigh in cultivar selection.

Impact of Weather

Chill Periods - The proper cultivar must be chosen for the time of year production is desired, and for either greenhouse or outdoor production. This is because each cultivar has somewhat different chill requirements (from about 400 to 1100 hours each depending on variety).
This plum has small fruit, similar in size to Damson. In contrast to Damson it has no astringency. It has purple skin and yellow flesh, and is self-compatible. It ripens in mid-September in Geneva, and is self-incompatible. It is pollinized effectively by French Damson and Castleton™.

- Rosy Gage™ – (≈ NY 101 = NY 77.610.1) This Cornell-Geneva selection has just been released under this trademarked name. This green-yellow plum has exceptionally high sugar content and flavor. It ripens just after Oullins and has more pink/amber colored flesh in blust most seasons. The tree crops very heavily and retains high quality with large fruit loads. Fruits tend to be hidden in the foliage, which is abundant on this spreading, but vigorous tree. The tree is brown rot and black knot susceptible. It is highly productive and self-compatible. It ripens in the last half of September in Geneva. This variety is firm enough to store and ship to commercial markets.

- Reine Claude Condicta – This pink/purple skinned plum with high quality amber flesh is somewhat crisp and very sweet. It ripens with Early Italian and Castleton™ and sets lighter crops than the Oullins and gage-types listed above. This plum is so unusual in quality and color that every farmland should have it. It is self-incompatible and requires a pollinizer. Recent French literature recommends as pollinizers: Stanley, Prune d’Ente 303, Monsieur Hatif, and Royale de Montauban (Audubert et al, 1995).

- Reine Claude Mirabelle – This variety, originally called Reine-Claude, which dates back to the 1500s in France, was named Greengage after the Englishman Mr. Gage who imported cherries to England in 1750. It is hardy and productive, and not prone to biennial bearing. It is more vigorous than Greengage, and is self-compatible as most Gage plums and is self-fertile. Brown rot can be a serious problem if multiple pickings are not made to keep ripe clusters open. The fruit starts to ripen in the first half of August in Geneva.

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- Amerika Mirabelle – This variety has golden skin with 20 percent pink blush. Fruit is very slightly larger than the Jamses™ tree crops very heavily and will become biennial. Primary uses are for jam and wine/brandy. It ripens in early September in Geneva. It is self-incompatible and pollinized well by French Damson and Castleton™.

- French Damson – This processing plum is used for its intense purple pigments and strong flavor that is too aromatic for the fresh market and is usually blended in processed products. Fruit is small and round with blue skin and green flesh. It ripens in mid-September in Geneva. There are over a dozen other varieties of blue damson plums and another whole group of yellow/amber skinned kinds that have generally been called “Bullace Plums” in European literature. All have the strong flavor. None are self-compatible. Other mirabelle varieties and other blue skinned plums from European ancestry will pollinate them.

- Geneva Mirabelle™ (= NY 858) – This Cornell-Geneva selection has just been released under the trademarked name. It is similar to American Mirabelle except it is round and somewhat later in ripening. It is self-incompatible and pollinized well by French Damson and Castleton™.

- Blues Jam™ (= NY 9041 = NY 58.904.1) – This plum has fruit slightly larger than Damson. It has a moderate level of astringency, lower than Damson. The skin is purple-blue with greenish-yellow flesh. The pit is free. It is self-sterile. It is somewhat susceptible to mite attack on the leaves but it is much less so than the Damsons. It is self-incompatible and pollinized well by French Damson and Castleton™.

References


Michelle Lenfelder currently completed her Masters Degree at Cornell University with Dr. Ian Merwin who is a research and teaching professor at Cornell and who leads Cornell’s research program in orchard ground cover management.

Conclusion
As growers begin to think about orchard replanting this spring, it is important that they consider the impacts of apple replant disease on their new planting. Since pre-plant soil treatments, specifically fumigants, have mitigated replant disease in the past, our results indicate that these efforts may no longer be necessary in some sites. Instead, observations from this experiment would suggest selecting tolerant rootstocks like ‘CG.6210’ and ‘C.36’ as the best defense against replant disease. Because of this vigor, these rootstocks may not be conducive to high-density plantings, in which case, altering the planting scheme into the old grass lanes could also mitigate the problem when less-vigorous, non-tolerant rootstocks are preferred.

References
Gras Ameliorat – This may not be a cultivar. It is a variety of French Damson, which is self-incompatible and requires a pollinizer. It is self-compatible. It ripens in mid-September in Geneva, and is self-incompatible. It is pollinized effectively by French Damson and Castleton™.

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Mirabelles, Damsons & Bullaces
This category of plums includes varieties that are increasingly of interest on two marketing fronts: wine/brandy, and fresh snack-foods. While these two uses may seem unusually different to be utilizing the same varieties, the linking factor is the high sugar and high acid content, which is an ideal attribute for wine/brandy terms.

American Mirabelle – This variety has golden skin with 20 percent pink blush. Fruit is very slightly larger than Jam Ses-
yields a very nice jam or sauce if you pay attention to managing the astringency.

Mirabelle de Metz – This variety is extensively used in Europe for production of high value brandy. We have not grown it recently at the Geneva Experiment Station.

References
Audubert, Alain. et al.. 1995. La Reine-Claude. CTIFL Monograph, Paris

Robert Andersen is a recently retired emeritus professor of Horticulture at Cornell’s Geneva Experiment Station who specializes in the breeding and culture of stone fruits. He led Cornell’s breeding, culture and extension program on stone fruits from 1990 to 2005. Jay Freer is a research technician that works with Bob Andersen and Courtney Weber. Courtney Weber is a research and extension professor at Cornell’s Geneva Experiment Station who currently leads Cornell’s research and extension program in breeding plums and berry crops.

That do not possess ARD tolerance. It has been suggested that this old row replant stunting occurs because pathogens reside on tree roots in those old rows (Savory, 1966) and/or because beneficial microbes develop preferentially in the “fresh” soil of the old grass lane (Rumberger et al., 2004).

The pre-plant soil treatments, unlike the rootstock and planting position factors, did not lead to growth or yield differences, as reported in some previous replant experiments (Hoitink and Fahy, 1986; Mai and Abawi, 1981). There was a trend toward improved tree growth in composted plots in the second year, but this difference was not significant compared with the growth of trees in the control plots receiving no pre-plant treatment (Fig. 3C). Compost quality or stability could explain this lack of change; nonetheless, we concluded that compost did not improve replant conditions or establishment at this site. Soil fumigation with Telone-C-17 may actually have impeded growth, as trees in fumigated plots occasionally grew worse than those in the control plots (Figs. 1B and 3C). This may have resulted from inadequate time for dissipation between the application of the fumigant and the date of tree planting. Another explanation is that fumigation may have harmed beneficial microbial populations in the soil, thus reducing tree growth (Rumberger et al., 2004; Yao et al., 2006).

Soil and Leaf Analyses: Soil and leaf nutrient levels and soil nematode populations were also monitored at this site (data not shown). Compost treatments enhanced macronutrient and organic matter levels in the soil. Similar responses were also evident in the old grass lane positions. Nonetheless, nutrient levels were observed at satisfactory levels across all pre-plant soil treatments and planting positions (Stiles and Reid, 1991). The increased macronutrients and organic matter resulting from compost treatment and the old grass lane position did not translate into enhanced tree nutrition, as measured by leaf nutrient levels, or improved tree growth or yield.

Root lesion nematode populations varied across the pre-plant soil treatments and planting positions, though overall numbers were low according to published damage thresholds for replant sites (Jaffe et al., 1982). Compost treatments reduced populations of root lesion nematode, and the potential for compost as a suppressant of nematodes and pathogens has been noted in previous research (Hoitink and Fahy, 1986). Fumigation eliminated this nematode pest. Root lesion nematodes were found in greater number in the old grass lanes than in the old tree rows, which would suggest an affinity for grass roots over apple roots. Nonetheless, because of their low overall numbers and the improved tree growth in the old grass lanes, we concluded that root lesion nematode was not a major factor at this replant site.

Parallel ‘M.9’ Experiment: Because of the experimental design, ‘M.9’ performance was analyzed separately from the other five rootstocks, and it provided a separate case study of the four pre-plant soil treatments. Its performance across the four pre-plant soil treatments showed no differences, with growth and yield in the compost and fumigation plots similar to the control. These results provide further evidence against the time, effort, and expense of pre-plant soil treatments in mitigating the replant problem.