An Update on Apple Cultivars, Brands and Club-Marketing

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Since our last articles of new apple varieties (Brown and Maloney, 2008, 2009), there has been a rapid acceleration of new apples and new marketing strategies, as evidenced by the many websites that are tied to consumer marketing of new apples. In 2012 we have also seen the release of new varieties from private breeding programs (including private programs in Ohio, Washington State, Minnesota and Wisconsin) or nursery cooperatives. In investigating new varieties and cooperatives, it quickly becomes apparent that variety development and management has changed globally.

The importance of the name of a new apple cultivar in marketing is evident and supported by research at Cornell, where exciting names led consumers to spend more money for the same variety with a “generic” or non-exciting name (Rickard et al., 2011). Willingness-to-pay auctions are indicating traits of interest to consumers willing to pay a premium, and they are often variety dependent. In addition, the response from buyers is also being examined relative to new varieties and fruit size premiums (Carew et al., 2012).

The three major public US apple breeding programs: Cornell University (Susan Brown), Washington State University (Kate Evans) and the University of Minnesota (Jim Luby/David Bedford) are collaborating on the RosBREED project: Enabling marker assisted breeding in the Rosaceae (www.rosbreed.org). Through this project, apple breeders and their graduate students have developed a standardized phenotyping protocol (Evans et al., 2011) that is being used across all our programs for both characterizations at harvest and after storage, but also as the basis to identify molecular marker-trait associations. New varieties will continue to be released by our programs individually, but the breeding efforts to develop these new varieties will benefit from this coordinated research.

The cultivars discussed below are not an exhaustive summary of new releases. Some varieties were covered in our previous reviews. However this article focuses on new releases discussed in the industry press (web sites and trade journals) and new US plant patents issued (www.uspto.gov). Forty-eight standard varieties and 31 scab resistant releases are discussed. This acceleration in scab-resistant releases represents an increased focus on this breeding objective by many programs worldwide.

New or Increasing Apple Cultivars

‘Arctic series’: ‘Arctic Granny’ and ‘Arctic Golden’: The two varieties that start this list have generated controversy among the industry and consumers because they are the first transgenic, genetically engineered or biotechnology-derived apples, as opposed to all the other apples on this list that were developed using conventional breeding. These apples were created by Okanagan Specialty Fruits to have reduced browning, due to silencing of the PPO gene (polyphenoloxidase gene) that contributes to browning (www.arcticapples.com/). The US Apple Association came out with a position paper that stated while they were supportive of the technology; they were not supportive of these two varieties at this time since flesh browning was not perceived as enough advantage to counteract possible public concern. “The genetically modified apples in the petition offer questionable commercial benefit yet raise serious marketing questions for virtually all segments of our industry”. Public comments on the petition to deregulate these varieties was very emotional, perhaps due to the many transgenic plants already in the marketplace that the public did not have the opportunity to support or argue against.

‘Aurora Golden Gala’ (856923): A release from the breeding program in British Columbia, Canada. ‘Aurora’ is a yellow apple that is said to be difficult to pick from young trees and would benefit from research on better harvest indices. Since it is a recently released variety growers are encouraged to contact PICO for advice on harvest and cultural management. ‘Aurora Golden Gala’ information is available at www.picocorp.com/varieties/apples/aurora_golden_gala. Toivonen et al. (2007) used ‘Aurora Golden Gala’ to study factors affecting severity of bruises and bruise recovery, and found that harvest bruises and impact bruises from packing line belts could be managed, but that packing line apple to apple impact bruises were more damaging and there was less prospects for recovery.

‘Autumn Blush’: Derived from ‘Gradirose’, a novel pink skinned apple developed in France, ‘Autumn Blush’ will be marketed by the ABCz international company. ‘Autumn Blush’ will be offered exclusively at Tesco this year (www.abcz-group.com).

‘Autumn Glory’: Offered exclusively by Domex Superfresh Growers in the Pacific Northwest, ‘Autumn Glory’ (a hybrid
of ‘Fuji’ x ‘Golden Delicious’) is described as apple flavor, intensified. It is red on a yellow background and is said to be grower and packer friendly.

‘Blondee’: This clean yellow apple offered by Summit Sales (Integrated Plant Management, Inc.) was granted USPP # 19,007. Its susceptibility to fire blight is similar to ‘Gala’.

‘Cameo’: A new group/club “Cameo Partners International” was formed in Europe to promote this variety.

‘Crimson Snow’® (mc38 S): A variety being commercialized by Kiku Ltd in Europe and Turkey. Mc38 was discovered and had its initial introduction and production in Australia. ‘Crimson Snow’® is distinctive in having white flesh and ripening after ‘Fuji’.

‘DS-22’ (Trademarked name pending): A new variety of unknown parentage from the private breeding program of Doug Sheflebine in Wisconsin will be commercialized and marketed as a club variety by Fred Wescott of Minnesota (Lehnert, 2012)

‘Envy’™ (‘Scilate’): A ‘Braeburn’ x ‘Royal Gala’ hybrid (or reverse) with a ruby outer color and crisp white flesh, this apple was developed by NZ researchers and is being produced in NZ (www.envyapple.com) and in Washington State by the Oppenheimer group (www.oppype.com). ‘Envy’ has the same parents as ‘Jazz’, but produces fruits of a larger size.

‘EverCrisp’: The first variety from the Midwestern Apple Improvement Association (MAIA) in Ohio (www.everycrispapple.com). This new apple is a hybrid of ‘Fuji’ x ‘Honeycrisp’, with the sweet flavor of ‘Fuji’, some of the ‘Honeycrisp’ texture attributes and a productive tree. It is reported to have good storage life, befitting its name.

‘Fuji’ sports:

‘Aztec Fuji’® (DT2): A blush strain that originated in New Zealand (Waimea Variety Management Ltd.), ‘Aztec Fuji’® is reported to be a very high coloring strain.

‘Moana’: This limb mutation of ‘Nagafu-6 Fuji’ has nearly a complete red blush. USPP # 21,450 was granted in November 2010.

‘Gala’ sports:

‘Premier Star’: This sport of ‘Royal Gala’ was discovered in New Zealand and was quickly commercialized, with a focus on the Asian markets during its introductory phase. Its good color and high sugar make it especially suited for that market (www.premierstar.co.nz/).

‘Galmac’ (‘Camelot’): Developed in Switzerland, this hybrid of ‘Gala’ x ‘Jerseymac’ has good quality, but a very short harvest period for peak quality. Fruits ripen in late July and are targeted for sale to celebrate Switzerland’s National Day on August 1st. (Figure 1)

‘Genesis’™: A new apple marketed by The Yummy Fruit Company in New Zealand, ‘Genesis’ is a hybrid of ‘Braeburn’ x ‘Royal Gala’ that is red, sweet, firm and crisp.

‘Gradiyel’: Granted USPP # 22,974, this hybrid of ‘Christmas Rose’ x ‘Gradigold’ was developed in France and is described as having a semi-upright habit, free flowering and fruiting and good storage life.

‘Honeycrisp’ sport:

‘Royal Red Honeycrisp’™ (LJ-1000): This sport was discovered in Washington State and granted USPP# 22,244 in November 2011. LJ-1000 is said to color earlier and have higher sugar than standard ‘Honeycrisp’. It will be offered exclusively by Willow Drive Nursery, with sales projected to start in 2013 (Lehnert, 2012).

‘Jazz’ (‘Scifresh’) sport:

‘Southfield’: A limb sport of ‘Scifresh’ that was discovered in New Zealand, this sport is reported to have better color and to mature earlier. It was granted USPP# 22,990.

‘Jonagold’ sport:

‘Jonastar’: ‘Jonastar’ which was granted USPP #20,590, offers a nice red stripe over a red background. Its earlier coloring ensures fully colored fruits at harvest.

‘Jonathan’ sport:

‘Chrisolyn’ (‘Cambell Jonathan’): USPP # 21,300, granted in 2010, ‘Chrisolyn’ is a sport of ‘Robinson’ and is distinctive in having alternating dark red and bright red stripes in contract to the fainter stripes of standard ‘Jonathan’.

‘Junami’® (‘Milwa’ or ‘Diwa’): Inova Fruit in the Netherlands manages the varieties, ‘Junami’, ‘Ruebens’ and ‘Wellant’ and have excellent web pages to cover marketing and information for growers of their varieties (www.inovafruit.nl/pagina/ Junami/1198/en/). In the US, Rainier Fruit markets this Swiss developed variety, which was granted USPP# 19,615 in January 2009. ‘Junami’ resulted from a cross of a hybrid of ‘Idared’ x ‘Maigold’ by ‘Elstar’ and is marketed for its juiciness and crunch, with young consumers targeted (www.junami-apple.com/en/) (Figure 2). The website suggests that the pronunciation of this variety’s name should rhyme with “tuna me”.

Figure 1. Galmac, a Swiss bred apple variety, which ripens near Aug. 1 the Swiss National Day.

Figure 2. Junami, a Swiss bred apple variety, which is managed by Rainer Fruits in the US.
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‘Lady Alice’: A chance seedling discovered in Washington, Rainer Fruit markets ‘Lady Alice’. The round, dense apple is sweet and has flesh that resists browning after it is sliced.

‘Lemonade’: A yellow apple said to have a “fizzy” taste, elongated shape and a slightly tart taste and firm texture. ‘Lemonade’ is one of several new apple varieties marketed by Yummy Fruit Company in NZ (www.yummyfruit.co.nz). This variety is susceptible to bruising.

‘Lola’* (‘Maribelle’): This variety resulted from a cross of a hybrid of ‘Meiprinces x ‘Gloster’ by ‘Elstar’. This is a product from the private breeding program of Ing de Sonnaville in the Netherlands and fruits are grown by 73 growers and marketed by Jabema BV. The large fruits are a deep pink color and store similar to ‘Jonagold’. This is not a club variety.

‘Mairac’ (‘La Flamboyante’): This apple from the Swiss breeding program is a hybrid of ‘Gala’ x ‘Maigold’ and was released in 2002 (www.mairac.ch). Although rating very well in taste tests, crop regulation and sensitivity to cold and CO₂ injury are challenges being addressed by researchers.

‘Maloni Lily’: A very small sized genetically dwarf apple tree from the same breeding program that developed the red-fleshed ‘Redlove’ series.

New York apples: ‘New York 1’ and ‘New York 2’ (Trademarked names pending): These two new Cornell apple varieties are being marketed in North America by New York Apple Growers NYAG, LLC, in a cooperative partnership with the NY industry and Cornell. Trademarked names are being tested and should be released in the near future. ‘New York 1’ is a hybrid of ‘Honeycrisp’ x an advanced NY breeding selection that has quality similar to ‘Jonagold’. Fruits are very crisp, juicy and have a sweet flavor (Brown and Maloney, 2011 a, b). ‘New York 1’ is not prone to the many challenges of its ‘Honeycrisp’ parent and also offers well-colored fruits. It was granted USPP # 22,228. ‘New York 2’ is a ‘Braeburn’ by ‘Autumncrisp’ hybrid that combines a grower-friendly tree with well-colored red fruits with good resistance to flesh browning after slicing. The fruits are crisp, juicy and have a good balance of sugar and acid. NY 2 has USPP # 22,207. The Cornell program will have future “open” releases available to all growers, not just New York. For any future managed varieties, NYAG LLC will have a seat at the table as well other interested parties. New high quality selections as well as new scab resistant and columnar forms will be patented and released in the near future.

‘Pink Lady’* sports: A few new sports of ‘Pink Lady’ are available this year:

‘Maslin’ cv.: PLMAS98): This sport boasts early maturing, ripening 2 weeks ahead of ‘Cripps Pink’ with some reports stating it is 3 to 4 weeks earlier. Granted USPP# 21,412.

‘Pflogg’ cv.: This sport is a spur-type, with a compact tree type and the fruits are reported to ripen one-two weeks earlier than ‘Pink Lady’. Granted USPP # 21,555 in 2010.

‘RGlORS’: A limb sport of ‘Rosy Glow’ (itself a sport of ‘Cripps Pink’) discovered in Italy, and being distinctive in having a uniform russet. USPP # 21,272 was granted in 2010.

‘Pinova’ sport:

‘Chantelop’ (‘Daligris’): This whole tree sport of ‘Pinova’ is being marketed by Guy Ligonniere in France. It has been granted USPP #21,722 in 2011. ‘Daligris’ is distinctive in having a fine russet on the fruit and an orange-red coloration. It ripens about a week earlier than ‘Pinova’ and has a distinct aniseed flavor.

‘PremA153*: USPP#21,936, offered by Brandt’s Fruit Trees, Inc. is a hybrid of ‘Gala’ x ‘Braeburn’. Trees are very productive and fruits are elongated in shape. PremA153 is a green/yellow apple with a blush. Fruits should be picked when the green color is breaking to gold. This is a very dense fruit, which benefits from storage for flavor enhancement.

‘Premier Star*: See ‘Gala’ sports.

‘Redlove’* series: Red fleshed apples developed by a private breeder (Markus Kobelt, Lubera nursery in Switzerland, and the company Fruture (partners with a Swiss commercial tree nursery and a Swiss apple grower) and offered in exclusive licensing to different companies in different territories (Figure 3). There is a private company, Fruit of Tomorrow, or Next Generation Fruits, located in the Netherlands that is associated with Lubera (www.nextfruitgeneration.nl/products/red_flesh_apple/). Some of the selections in this line are stated to be scab resistant- noted below- while others do not have that designation.

‘Redlove’ 119/06*: This selection is referred to as the ‘sweet line’.

‘Redlove’ Calypso*: The web site states that ‘Calypso’ is scab resistant.

‘Redlove’ Circe*: Ripening in late August/early September, ‘Circe’ has a sweet/sour balance and can be stored until the end of September.

‘Redlove’ Era*: Stated to be scab resistant, ‘Era’ is said to ripen in mid-September and can be stored until December/January. It is sweet/sour.

‘Redlove’ Sirena*: Said to be scab resistant and similar to ‘Elstar in its acidity.’ ‘Sirena’ ripens in August/September and can only be stored about one month.

‘Salish’** (SPA 493): This new Canadian apple is from a cross of ‘Splendour’ and ‘Gala’ that was made in 1981. This same cross, also produced progeny that became ‘Nicolai and ‘Aurora Golden Gala.’ ‘Salish’ was released from Ag-Canada in Summerland, B.C., in cooperation with PICO, the Okanagan Plant Improvement Corporation (www.picocorp.com/varieties/apples). This is a crisp, juicy apple that is grower friendly. Fifteen growers in Canada have signed agreements to grow ‘Salish’. These Okanagan growers will have a five-year start on the competition. The name ‘Salish’ describes Aboriginal languages used in regions of Canada.

‘Smarad’: A reduced branching (columnar) apple tree form with green fruit. This hybrid of ‘Granny Smith’ x ‘Wijcik McIntosh’ (the original source of the columnar gene) was developed in Serbia by breeder Prof. Ognjanov.

‘Smitten’* (PremA17): This NZ hybrid from Prevar has a...
pedigree that includes ‘Royal Gala’ and ‘Braeburn’ and the UK varieties ‘Fiesta’ and ‘Falstaff’. The tag line “Once bitten, forever Smitten” will be part of the marketing by six NZ companies under a Seventeen Limited umbrella. Information about the variety and the organization is found at www.smittenapple.co.nz/why-nz/. Chief attributes include high Brix, great crunch and long storage life. ‘Smitten’ is harvested about two weeks before ‘Royal Gala’. Initial introduction in the UK has been very favorable, perhaps in part due to its pedigree including two popular English varieties.

“Sweetie” (PremA280): Another apple from the Prerar™ program in New Zealand, ‘Sweetie’ is a cross between ‘Braeburn’ and ‘Royal Gala’ that matures just before ‘Royal Gala’. The elongated fruit is bicolor and has a sweet, rich taste. ‘Sweetie’ is being grown by Broetje Orchards and sold by First Fruits Marketing in the US. Consumer testing suggests that fans of ‘Gala’ and ‘Fuji’ will favor ‘Sweetie’. PLU 3628 issued. Started with a 30-acre test block in Washington.

Washington (WA) State University’s new apples: Washington State’s apple breeding program has named three apples that will be restricted to Washington State: ‘WA 2’, a hybrid of ‘Splendour’ x ‘Gala’, that was granted USPP# 21, 710 (Evans et al., 2010), ‘WA 5’, a hybrid of ‘Splendour’ x ‘Co-op 15’ (Evans et al., 2011), and ‘WA 38’, a hybrid of ‘Enterprise’ x ‘Honeycrisp’ (Evans et al., 2012).

‘Zari’: A hybrid of ‘Elstar’ x ‘Delbardestivale’ developed by the Better3Fruits company in Belgium. ‘Zari’ is a vigorous growing tree.

‘Zonga’: A creation of the Better3Fruits breeding program in Belgium, ‘Zonga’ is a hybrid of ‘Aldene’ x ‘Delcorf’. It is an early season apple, ripening in Belgium in mid-August, or about 10 days before ‘Delcorf’.

Disease Resistance Breeding

Brown and Maloney (2008) reviewed research on disease resistance breeding in apple and detailed scab-resistant varieties available for testing or recently commercialized. Since that time the options for testing have expanded and research is leading to a better understanding of the mechanisms of resistance. Unfortunately, the majority of scab resistant selections are still derived from Malus floribunda (Vg gene), which has broken-down in many regions of production. With the increase in temperatures in many of our production region, new pathogens are becoming increasingly problematic: including Alternaria, marssoninia and assorted leaf spots and fruitrots. Information on sustainable, organic and/or integrated fruit production is increasingly available. The National Sustainable Agriculture Information Service ATTRA project published an Apple Organic Production Guide (Hinman and Ames, 2011). Peck and Merwin (2009) at Cornell also have a manual that can be downloaded. Books by Phillips (2012 and 2005) provide detailed information on orchard practices. In addition, Becker man (2009) developed a bulletin on how best to manage scab resistant cultivars, including a spray at peak infection for scab. Shedding and treating leaf litter with urea is recommended as a means to to reduce overwintering ascospores of apple scab (Sutton et al., 2009).

New or Increasing Scab Resistant Apple Cultivars

‘Adore’: Delbard Nurseries in France created and released the varieties ‘Divine’ and ‘Adore’ which are being grown and packed by the NZ apple exporter Heartland Fruit. ‘Adore’ is a small, sweet apple with “kid appeal” that may be sold in bags as part of the merchandising.

‘Antares’ (‘Dalinbel’): A hybrid of ‘Elstar’ by x 3191 developed in France, shares the strong acidity of its ‘Elstar’ parent, yet with high sugar content.

‘Ariane’ (x 6407): Hybrid of two advanced breeding selections, one selection, a hybrid of ‘Florina’ x ‘Prima,’ the other a selection from ‘Golden Delicious’ open-pollinated.

‘Bella’ (‘Rebella’ cv): A disease resistant apple from the Pilnitz/ Dresden breeding disease resistance program in Germany, now being marketed in the US. ‘Rebella’ was noted to have resistance to scab and fire blight.

‘Choupette’ (‘Dalinette’): Developed in France as a hybrid of two advanced breeding selections, ‘Choupette’ ranked well for quality in a trial of scab resistant selections (Militaru et al., 2010).

‘Crimson Crisp’ (Co-op 39): US plant patent #16, 622 was granted to this scab resistant selection, a hybrid of two advanced selections, from the PRI program. In the NE183 planting, ‘Crimson Crisp’ was noted to be quite susceptible to powdery mildew, cedar apple rust and quince rust. Fruits are attractive and small to medium in size. ‘Crimson Crisp’ is also being offered for sale in Europe.

‘Dalinsweet’: A good quality apple, but with poor fruit appearance ratings (www.dalico.com).

‘Diva’ (SJC7123-1): This hybrid of ‘McIntosh’ by an advanced breeding selection is suited to northern apple production regions, for ice wine and cider production and for the fresh market (Khanizadeh et al., 2009). It was developed in Quebec, Canada.

‘Divine’: Delbard Nurseries in France created and released the varieties ‘Divine’ and ‘Adore’ which are being grown and packed by the NZ apple exporter Heartland Fruit and will be available in the US, via Washington State’s Giumarra Wenatchee. ‘Divine’ is said to have a traditional appearance (red on a yellow background and conspicuous lenticels) and a strong sweet flavor. It is a hybrid of (‘Golden Delicious’ x ‘Grive Rouge’ x ‘Florina’) and it ripens with ‘Braeburn’.

‘Gaia’: One of five new scab resistant apples released under the “Sweet Resistance” designation in 2011 by Concorso Italiano Vivaisti (CIV).

‘Gemini’: One of five new scab resistant apples released under the “Sweet Resistance” designation in 2011 by CIV in Italy. This variety should not be confused with the Canadian ‘Gemini’, which is a hybrid of ‘Norland’ by ‘Haralson’.

‘Goldlane’: Granted USPP # 21, 413 in October 2010, this columnar (reduced branching), scab resistant apple (Vg gene) is from the Czech Republic. It is a hybrid of an advanced selection x ‘Bohemia’, which is unpatented.

‘Fujion’: One of five new scab resistant apples released under the “Sweet Resistance” designation in 2011 by CIV. This apple is very sweet and can be picked in fewer harvests than ‘Fuji’. It is not prone to alternate bearing.

‘Inored’ is a scab resistant hybrid of ‘Pinova’ by an advanced breeding selection (x6398) made at Angers, France, the same program that released ‘Ariane’. ‘Inored’ was granted USPP# 22,794 in June 2012.

‘Isaaq’ (CIV323): The commercialization of ‘Isaaq’ represents a new partnership between CIV and Kiku Ltd. (www.isaaq.com). ‘Isaaq’ is advertised as a small snack apple.

‘Kalef’: This first scab resistant variety from the Stanthorpe program in Australia funded by the Queensland govern-
ment. The name is pronounced Kay-lee and it is Hawaiian for “loveable”. This variety will be marketed by Apple and Pear Australia Ltd. ‘Kalei’ is a red apple with prominent lenticels and is sweet and crisp, is precocious and is said to have high yields.

‘Ladina’: A ‘Topaz’ x ‘Fuji’ hybrid that is a new release from the Swiss breeding program.

‘Luna’ ‘TopGold’®: US plant patent # 16,084 granted in January of 2005. Another apple in the “Golden Sunshine Line” from the Czech republic, this yellow skinned apple shares the ‘Golden Delicious’ and ‘Topaz’ (scab resistant) pedigree. Fruit thinning is recommended. Integrated fruit production, rather than organic production is recommended in all but the drier EU sites.

‘Mercury’: This hybrid of ‘Topaz’ x ‘Rajka’ was developed in the Czech Republic.

‘Modi’: ‘Modi’, a hybrid of ‘Gala’ x ‘Liberty’, is increasing in production, due at least in part to the innovative marketing associated with commercialization (www.modiapple.com/en-UK/consorzio). ‘Modi’ was named for the artist Modigliani.

‘MonaLisa’: This ‘Gala’ type apple has high resistance to apple scab and to Glomerella leaf spot and spider mites. It is a new low-chill variety, derived from ‘Gala’ x ‘Malus 4’; that has uniform red/purple fruits. This is from a breeding program in Brazil and was granted USPP# 23,003.

‘Moonlight’: A columnar (reduced branching), scab resistant apple, (USPP # 21, 511, 11/10), released by breeders from the Czech Republic. This hybrid of ‘Goldstar’ x ‘Telamon’ is very compact in form.

‘Opal’ (UEB 3264/2): This new yellow apple is marketed by Fruit Select (www.fruit-select.cz/variety.html) and is being managed in the US by Yakima based FirstFruits Marketing, LLC and Broetje Orchards (Figure 4). This variety originated in the Czech Republic from a cross of ‘Golden Delicious’ x ‘Topaz’ (scab resistant). ‘Opal’ is said to have high sugar (15-18 Brix) and good resistance to flesh browning after being cut. Consumer acceptance seems to be high, as evidenced by blog postings. Research by Pfeiffer et al. (2011) suggested that ‘Opal’ is a multiple pick variety, but is considered one of the best varieties in the “Golden Sunshine Line”, although it is the most susceptible to russetting. ‘Opal’ was granted US plant patent #19,276 as UEB 3264/2 in 2005. ‘Opal’ does best in regions that produce good ‘Golden Delicious’, so locations that are sunny and dry.

‘Orion’: A member of “The Golden Sunshine Line” from the Czech republic, ‘Orion’ has many good attributes, but does not store as well as ‘Opal’, has only medium yield and has conspicuous lenticels (Pfeiffer et al., 2011). US plant patent #19,276 was granted in 2008. The web site states fruit size may suffer under intensive cultivation. ‘Orion’ may be a single pick variety suited to organic production.

‘Renoir’: One of five new scab resistant apples released under the “Sweet Resistant” designation in 2011 by Conzorzio Italiano Vivaisti (CIV), this variety is unique in having 50 to 60% of the fruit surface covered by a fine russet. Quality is said to be reminiscent of ‘Renette’ types. While resistant to scab, ‘Renoir’ is mildly susceptible to powdery mildew.

‘Sirius’: A ‘Golden Delicious’ x ‘Topaz’ hybrid, this ‘Golden’ type apple has the Vf gene for scab resistance and it is a triploid. ‘Sirius’ ripens 10 days after ‘Golden Delicious’ and is marketed by the Artevos group.

‘Smeralda’: One of five new scab resistant apples released under the “Sweet Resistant” designation in 2011 by CIV in Italy. ‘Smeralda’ is a green apple ripening 30 days before ‘Granny Smith’.

‘Solaris’: A yellow-skinned, scab resistant, late ripening apple suited to the hobbyist or for the home gardener.

‘Story’ (‘Inored’ cv) A new red apple from the NOVADI cooperative in France, this variety has the Vf gene for scab resistance and also low to average susceptibility to powdery mildew. The taste is very sweet, with very low acidity. It is recommended for southern European climates and is said to have outstanding storage potential when stored at 3°C.

‘Topaz sport’: ‘Royal Crimson Topaz’ (Tupy 2 cv): This is a highly colored sport of the selection ‘Crimson Topaz’.

‘WineCrisp’™ (Co-op 31): This variety from the PRI cooperative was derived from a cross of two advanced selections. Dark red fruits ripen about two weeks after ‘Delicious’ and are said to be similar to ‘Gala’ in size. Fruits store well (Korban et al., 2009).

Brands, Breeding Groups and Marketing Groups

ABC z group: This collaborative group (Carolus C., Pepinieres Grard and Fresh Fruit Services Europe) has as its slogan “your partner from A to Z”. The group consists of tree fruit nurseries, producers and marketers. The partners are involved in a number of breeding programs such as ZIN, Novadi and Pepinieres Grards own breeding program. Information is available at www.abcz-group.com/en.

AIGN: The Association of International Nurseries includes many nurseries throughout the world. AIGN started the branding of apple varieties, with the ‘Pink Lady’ brand.

Artevos group; Modern Fruit Varieties: Artus-Gevo group: This group resulted from merging the ARTUS-GROUP and GEVO GmbH (equivalent to Ltd. in Germany) to promote and market new varieties. Forty apples are listed on the web site, including new releases from several breeding programs. Shareholders include national and international partners www.artevos.de/en/about-artevos.html.

Better 3 Fruits: This private breeding program in Belgium has named 4 varieties (‘Kanzi’, ‘Greenstar’, ‘Zari’ and ‘Zonga’) and lists three advanced selections (Apple 65, BCF44 (US plant patent application filed for this ‘Gala’ x ‘Braeburn’ hybrid) and BCF45- same parentage as BCF44 and US patent application filed) available for licensing on its web-site (www.better3fruits.com). A company called GKE, for Greenstar–Kanzi–Europe, was developed to help promote these two varieties in Europe.
Czech Republic: Many new apples have been released, marketed and commercialized from the breeding programs in the Czech Republic, and the degree of outreach and unique marketing approaches is generating interest in branding. “The Golden Sunshine” and “Urban apple trees” (discussed below) are two branding programs that involve materials developed by Czech Republic breeding programs.

Consortio Italiano Vivaisti (CIV): A consortium of three enterprises in Italy (www.cit.it), CIV has released ‘Rubens’ (‘Civni’), ‘Modi’ (‘Civyg 198) and an improved sport of ‘Fuji’, called ‘Toshiro’. CIV has also partnered with Kiku for commercialization of ‘Isaaq’ apple. They also developed the “Sweet Resistants” line of scab resistant apples.

Hungarian apple breeding: Four new disease resistant apples were released: ‘Artemisz’, ‘Cordelia’, ‘Heszta’ and ‘Rosmerta’ (Toth et al., 2012).

IFO: International Fruit Obtention specializes in research and development of new pome fruits and rootstocks.

INN: International Nursery Network (www.inn.org) represents groups of nurseries internationally that test and produce trees of new varieties for commercialization.

Prevar: Named for “Premium varieties”, selections from this group have the Prem prefix (www.prevar.co.nz). Prevar is an organization comprised of PFN - Pip Fruit NZ (45%), APAL-Apple and Pear Australia Ltd. (45%) and Plant Food and Research in NZ- the breeding organization. The AIGN® (Associated International Group of Nurseries) is a key service provider. Exclusive rights have been assigned to some of the “Prem” selections for commercialization.


“The Golden Sunshine Line®”: This group of scab resistant yellow apples from the Czech Republic share the parentage of ‘Golden Delicious’ and ‘Topaz’. Pfeiffer et al. (2011) reviewed their performance. At www.goldensunshineline.org/index.html, information is provided, along with the slogan “Our varieties are made in nature”.

“Urban columnar apple series”: Columnar, reduced branching’ apples from the Czech Republic that are targeted to the home garden market. New varieties in this series include: ‘Blushing Delight™’, ‘Golden Treat™’, ‘Tasty Red™’ and ‘Tangy Green™’. Information at www.gardendebut.com states these varieties are “Tall on taste for a limited space”.

ZIN: Zuchtungsinitiative Niedererlebe (Breeding Initiative Niedererlebe): A breeding program started in 2002 with private funding to develop varieties for Northern Germany. Members of the initiative include fruit breeding farms, Altes Land Fruit and some retailers. Breeding work is in cooperation with the Carolus nursery in Belgium and the Institute of fruit growing at the University of Applied Sciences Osnabruceck.

Future Articles on Apple Breeding and Genetic Improvement

A future New York Fruit Quarterly article will detail the advances being made in genetics and genomics in apple. Additional sources of information are available in a video on Cornell Apple Breeding: Taste the Apples of the Future that is available for viewing on YouTube (www.youtube.com/watch?v=UovfTCSY-hg) and a review of the apple breeding and genetic research is also found in Brown (2012).

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