Blueberry Cultivars Released from North Carolina State University Blueberry Breeding Program

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Brief History of the Program

North Carolina State University has a long history of involvement in blueberry variety development. Cooperative breeding efforts with the USDA were begun in the 1930s following the loss of plants of the early cultivated blueberry varieties developed by the USDA in New Jersey to blueberry stem canker. Stem canker is a fungus disease caused by Botryosphaeria corticis which is native to the coastal plain of the southeastern US. The first stem canker resistant varieties were released in the 1950s, with Wolcott being the most widely planted initially. However, by the time many of the Wolcott plantings reached maturity, it was discovered that the stem canker fungus had mutated and it was quite susceptible to several of the new “races” of the fungus. Following the loss of Wolcott to stem canker, Croatan gradually became the mainstay of the North Carolina industry, and remained so until fairly recently. Two significant events played an important role in the NCSU program in the 1970s. The first was the increasing importance of another fungal disease, stem blight, caused by Botyosphaeria dothidea, which devastated two recent large size NCSU varieties, Harrison and Bluechip. This was enough to prevent either from becoming important varieties. In addition, Harrison was also highly susceptible to Phomopsis fruit rot which further sealed its doom. The second significant event in the 1970s was the introduction of “southern highbush” into breeding programs throughout the southeastern US. The first southern highbush varieties released from NCSU were O’Neal, Blue Ridge and Cape Fear, of which O’Neal has been most important to the NC industry, the southeastern US and most Low chill production areas around the world. The second most important southern highbush variety from NCSU up to the present time has been Reveille which had the distinction of being the first variety adapted to mechanical harvest for the fresh market. The improved adaptation and superior fruit quality of southern highbush types continues to dominate breeding efforts today. Altogether 11 standard highbush, 16 southern highbush, 11 rabbiteye, 2 pentaploids and 4 ornamental blueberry varieties have been introduced by the NCSU breeding program over the years. The contributions of the first three breeders to the program are listed below. The fourth breeder, Margaret Schaber, was hired after the last two varieties, Pinnacle and Heintooga, were already planned for release, so she has not been involved in any releases up to the present time. The most important varieties are listed in bold print in the lists that follow.

On April one, 2015, the Horticultural Science Department at N. C. State University welcomed its fifth blueberry breeder/geneticist, Dr. Hamid Ashrafi.
Varieties released by Professor E. B. Morrow, the first NCSU blueberry breeder
Murphy (with USDA)-highbush – 1950 blueberry stem canker resistant
Wolcott(“ “ )- “ stem canker resistant at time of release
Angola ( “ ”)- “ 1952 blueberry stem canker resistant
Ivanhoe ( “ ”)- “ not stem canker resistant, imp. parent
Croatan ( “ ”)- “ 1954 blueberry stem canker resistant; industry std.

Varieties released by Dr. Gene Galletta
Garden Blue(with USDA)-rabbiteye – 1958
Menditoo(with USDA)- “ “
Morrow(with USDA)-highbush – 1964 blueberry stem canker resistant, v. early
Harrison( “ ”)- “ 1973 stem canker res. (v. susc. to Phomopsis fruit rot)

Varieties released by Dr. Jim Ballington immediately after assuming leadership for blueberry breeding at NCSU and based on Gene Galletta’s efforts
Bluechip(with USDA)-highbush 1977 stem canker res., susc. to stem blight
Centurion(“ “ )-rabbiteye “ late bloom and ripening, self-fruitful
Powderblue(with USDA)-rabbiteye – 1977 late, ex. color, broadly adapted*
Premier(with USDA)-rabbiteye – 1977 early, large size, v. good quality, self-fruitful, tolerant to higher pH*
Everblue – ornamental (V. darrowii) – 1977
Johnblue - “ (“ “ )- “

Varieties released by Dr. Jim Ballington
Bloodstone – ornamental (V. crassifolium subsp. sempervirens) – 1984
Wells’ Delight – ornamental (V. crassifolium subsp. crassifolium) - 1984
Blue Ridge(with USDA)-southern highbush – 1987 midseason, high acid flavor
Bounty(with USDA)-highbush – 1987 stem canker resistant, low-spreading, hard to train
Cape Fear(with USDA)-southern highbush – 1987 susceptible to “soft fruit disorder”
O’Neal(with USDA)-southern highbush – 1987 v. early; so. highbush std.
Reveille-southern highbush – 1990 adapted to mech. harv. for the fresh mkt.
Ira-rabbiteye – 1997 late blooming, self-fruitful, high pH tolerant, excellent parent*
Montgomery-rabbiteye – 1997 early, excel. color, moderate vigor*
Yadkin-rabbiteye – 1997 very high quality, self-fruitful, moderate vigor*
Pender-highbush “ adapted to mech. harv., mainly for processing; ½ wild highbush
Summit(with USDA & UAR)-southern highbush – 1997 v. high quality, stem blight susc.
Echota-highbush – 1998 late, med. size, excel. color, high prod., broad soil adaptation
Duplin(with USDA)-southern highbush – 1998 early-mid; good cold hardiness, low plant
**Sampson**-southern highbush – 1998 approx. Croatan seas., good size & qual., fruit
softens, good parent for southern highbush breeding
Arlen(with USDA)-southern highbush – 2000 res. to stem blight, late-mid., cold hardy,
excellent parent for southern highbush breeding
Onslow-rabbiteye – 2000 late bloom and ripe, large size, good quality, self-fruitful,
tolerant to high pH*

Columbus-rabbiteye – 2002 large size, ex. color, midseas., v. good qual., ex. shelf-life*
Craven-southern highbush – 2003 adapted to mech. harv. for fresh mkt, early, variegated
good quality, medium size, not self-fertile
Pamlico-southern highbush – 2003 adapted to mech harv. for fresh mkt., early-mid.
Beaufort- southern highbush – 2005 late-mid, adapted to MH for fresh mkt.**
Carteret- “ “ 2005 early, good quality, high prod., berries leak**
**New Hanover**-southern highbush – 2005 large size, early, v. good qual, ex. color**
Robeson-pentaploid – 2005 starts 2 wks before Premier; good color & quality, soft
fruit, tolerant to higher pH, Phytophthora Root Rot resistant, few seeds**
Pinnacle (with USDA) – southern highbush – 2013 early, large size, excellent quality***
Heintooga- pentaploid – 2015 ripening overlaps with late midseason to late season
highbush, less than one fully developed seed per berry, good color, scar, firmness
and flavor***

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Currently Important Varieties in **bold**
*Resistant to fruit cracking (a significant problem with many rabbiteye cultivars)
**US Plant Patent
*** US Plant Patent applied for