

## Milestones in Watermelon Cultivar Development

Gabriele Gusmini and Todd C. Wehner

Department of Horticultural Science, North Carolina State University, Raleigh, NC 27695-7609

Watermelon [*Citrullus lanatus* (Thunb.) Matsum. & Nakai var. *lanatus*] is a major vegetable crop in the United States. Total production from 1999 to 2002 was 1.67 million Mg•year<sup>-1</sup> of marketable fruit, and the consumption *per capita* was 6.6 kg of fresh fruit (3-5, 7). During that time, the state with the highest production was Florida (ca. 380,000 Mg•year<sup>-1</sup>), and the state with the largest cultivated area was Texas (ca. 18,000 ha•year<sup>-1</sup>) (6).

Watermelon breeding has been going on for thousands of years, but science-based programs in the U.S. were not started until the late 1800s. By 1900, 'Angelino', 'Chilean', 'Florida Favorite', 'Georgia Rattlesnake', 'Cole Early', 'Kleckley Sweet', and other open-pollinated cultivars had been released (8). Initially, many watermelon cultivars with different fruit types were available to growers. However, as the market became more established, the cultivars converged on a few types. In addition, the limits to production imposed by new diseases favored those cultivars having resistance.

In 1954, C.F. Andrus released 'Charleston Gray', with elongate fruit shape, gray rind, and red flesh (Fig. 1). It was resistant to Fusarium wilt, anthracnose, and sunburn. 'Charleston Gray' became the leading cultivar in the commercial market, although niche markets and home gardeners continued to use a diverse array of types. In 1970, C.V. Hall released 'Allsweet' (Fig. 2) with resistance similar to 'Charleston Gray', but improved fruit quality. 'Allsweet' had elongate fruit shape and rind with wide dark green stripes. The Allsweet fruit type is still popular, even though alternative types have been introduced to the consumers during the last thirty years. Examples of new types are

'Dixielee' and 'Crimson Sweet', both having round fruit with narrow dark green stripes on a light green background. Another type is 'Sugar Baby', with round fruit and solid dark green rind.

A major change in watermelon breeding in the United States occurred in 1962 with the release of the first seedless watermelon cultivar, 'Tri-X-313', by O.J. Eigsti. However, it was not until the 1990s that seedless watermelons became commercially important, due to the slow improvement in fertility of the tetraploid parents used as the female parent in the production of triploid (seedless) hybrids.

In addition to Andrus, Eigsti, and Hall, a few other major contributors have improved American watermelons in the last fifty years. In the 1950s and 1960s, J.M Crall (University of Florida, Leesburg) released 'Dixielee', a successful alternative to 'Allsweet' for its different fruit-type and superior quality, and 'Minilee' and 'Mickylee', the first icebox (<5.5 kg/fruit) cultivars adapted to the Southeastern United States. Since the 1980s, W.S. Barham improved the techniques for breeding and producing seedless cultivars. In the 1980s and 1990s, T.V. Williams developed the hybrids 'Fiesta', 'Mardi Gras', and 'Sangria', which dominated the market during that time.

In 2003, X. Zhang introduced the mini seedless watermelon type, having 1.5 to 4.0 kg fruit weight. They appeal to those in small families who do not want to store leftover watermelon that cannot be finished in one meal. The first two cultivars released were 'Petite Perfection' and 'Precious Petite' (Syngenta Seeds - Rogers Brand) (1, 2).

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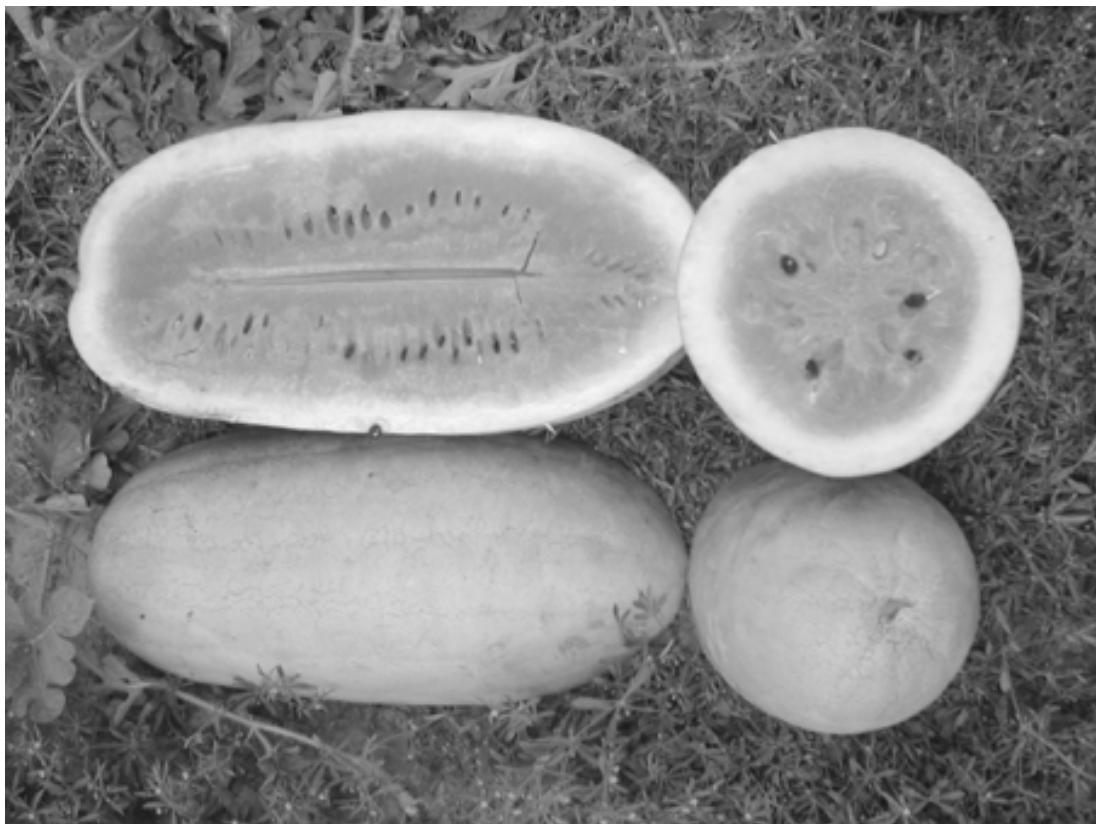


Figure 1. Cultivar Charleston Gray, released in 1954 by C.F. Andrus. Resistant to Fusarium wilt, anthracnose, and sunburn.



Figure 2. Cultivar Allsweet, released in 1970 by C.V. Hall. Resistance similar to 'Charleston Gray', but higher fruit quality.