

### Tolerance of watermelon cultivars to cucurbit anthracnose, 2016

Watermelon cultivars were seeded in the greenhouse on 19 Apr and transplanted on 26 May into a field at the Cherry Research Farm in Goldsboro, NC (N35°22'12.3"; W78°02'55.7"). Watermelons were transplanted on raised beds (3-ft wide, 30-ft long with 15-ft fallow borders) covered with white plastic mulch at 3-ft spacing in a randomized complete block design. Each experimental unit consisted of one plot of ten plants per cultivar, and replicated four times for each cultivar and arranged in a randomized complete block design. Loamy soil was present under three replications, while heavy clay was present under the fourth replication. The field was previously cropped to strawberries and soybeans. Plants were fertilized weekly with at least 10 gallons of fertilizer (4-0-8) per acre. Plants were supplied with approximately 1 in. of water per week, as necessary, using drip tape under the plastic. Each plant was inoculated on three dates with a water suspension of  $4.8 \times 10^5$  conidia/liter (approximately 5,000 conidia/plant or 10.4 ml per plant) using an isolate of *Colletotrichum orbiculare* from North Carolina. Inoculum was applied as a foliar spray using a Solo 425 backpack sprayer and fan nozzle on the following dates: 31 May, 2 Jun, and 14 Jun. Disease severity was recorded weekly for six weeks for each plot on 2 Jul, 9 Jul, 16 Jul, 24 Jul, 6 Aug, and 13 Aug. Disease severity was estimated as percent leaf area with necrosis caused by anthracnose. Data was analyzed using the software ARM (Gylling Data Management, Brookings, SD), analysis of variance (ANOVA) and the Tukey's HSD test to separate means.

Anthracnose was first detected on 2 Jul at approximately 1% disease severity across all cultivars in the field. After the initial disease rating, an additional five ratings were taken of all the plots. Total rainfall on the station consisted of 4.6 in., 4.18 in., 6.55 in., and 2.61 in. during the months of May, Jun, Jul, and Aug, respectively. Disease severity was lowest on Congo (25%) and Florida Giant (26.3%) and was highest on Sorbet F1 (82.5%), followed by Dixie Queen (76.3%). For disease severity on the final rating on 13 Aug, Congo (25%) was statistically better than only three of the 35 other cultivars: Sorbet F1 (82.5%), Dixie Queen (76.3%), and Starbrite (75.0%), while Florida Giant (26.3%) was only statistically better than Sorbet F1 and Dixie Queen. No significant difference was noticed when calculating Tukey's HSD test of means for the remaining cultivars in relation to the less severe Congo and Florida Giant and the most severe Sorbet F1, Dixie Queen, and Starbrite. In the table, cultivars are sorted by the final disease severity to anthracnose rated on 13 Aug.

Cultivar	Disease severity* (%)	Cultivar	Disease severity (%)	Cultivar	Disease severity (%)
Congo	25.0 c**	Mickylee	52.5 abc	Royal Sweet	60.0 abc
Florida Giant	26.3 bc	Sangria	52.5 abc	Yellow Buttercup	60.0 abc
Sweet Delight	37.5 abc	Black Diamond	53.8 abc	Mardis Gras	60.0 abc
Ruby	37.5 abc	Carolina Cross	53.8 abc	Melody	61.3 abc
Au Producer	38.8 abc	Moon & Stars	55.0 abc	Top Gun	63.8 abc
Unbridled	42.5 abc	SV0241WA	55.0 abc	SSX 8585	66.3 abc
7387	45.0 abc	Jubilee	55.0 abc	Vista	67.5 abc
Secretariat	46.3 abc	Bold Ruler	56.3 abc	Estrella	70.0 abc
Solitaire	47.5 abc	Fantasy	56.3 abc	Provider	73.8 abc
Jubilee II	48.8 abc	Traveler F1	57.5 abc	Starbrite	75.0 ab
Tri-X 313	48.8 abc	Tendersweet Orange	58.8 abc	Dixie Queen	76.3 a
Troubadour F1	50.0 abc	720	58.8 abc	Sorbet F1	82.5 a

\*The final disease severity was calculated for each cultivar based on the proportion of plant tissue that is symptomatic in a plot (foliar lesions). Means shown are the average of the four replications per cultivar.

\*\*Column numbers followed by the same letter are not statistically different ( $P=0.05$ , Tukey's HSD)