

Novel watermelon rootstock knocks out disease and pests

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Carolina Strongback ripe fruit with seeds. Credit: Agricultural Research Service

A new watermelon line, developed by Agricultural Research Service (ARS) and Clemson University scientists, gets to the root of the problem of a major disease and pest of watermelon crops in the southern United States.

Carolina Strongback is a [rootstock watermelon](#) that is resistant to Fusarium wilt and the southern root-knot [nematode](#), according to William "Pat" Wechter, plant pathologist with the ARS U.S. Vegetable Research Laboratory (USVL) in Charleston, South Carolina. Fusarium

wilt, a soilborne disease that threatens vegetable crops, can stay in the soil for 30 years or longer, and fumigants used to control it are no longer available, he added. In addition, watermelon is extremely susceptible to nematodes, which are especially brutal on crops in the Southeast.

Susceptible watermelons can be grafted onto resistant rootstocks of other vegetables such as squash and pumpkin to control certain pathogens, Wechter said. Grafting, which has been used in other countries for years, is a new concept in the United States. Some watermelons grafted to squash rootstock have shown to be resistant to Fusarium wilt, but they were susceptible to southern root-knot nematode.

When tested in highly infested soils with fusarium and nematodes, Carolina Strongback performed well and maintained a high production level of harvested fruit, according to Wechter.

To develop this watermelon line, Wechter worked with two wild citron watermelon (*Citrullus amarus*) lines that possessed resistance to Fusarium wilt and nematodes. Working with USVL geneticist Amnon Levi, Wechter crossed the *Citrullus amarus* lines, and then made selections for numerous generations to produce the best plants. Wechter partnered with Clemson University horticulture scientist Richard Hassell, an expert at grafting rootstock, to test the plants. They continued to make more selections to produce the final resistant line—Carolina Strongback.

Selected for its grafting qualities and [seed production](#), Carolina Strongback material can be used by seed companies, [vegetable](#) grafting companies and watermelon growers as a rootstock for growing susceptible watermelon cultivars in soils infested by the watermelon Fusarium wilt pathogen and root-knot nematodes.

Provided by Agricultural Research Service

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