



# Apple 'Robusta 5' - Resilient Rootstock

Cornell University & USDA Agricultural Research Service, USA

Apple cultivars rely on resilient rootstocks to provide resistance to sometimes devastating pests and diseases. The Geneva apple rootstock breeding program relies on disease resistant germplasm to develop their world-famous rootstocks. In particular, the wild apple hybrid *Malus x robusta* 'Robusta 5', maintained by the U.S. National Plant Germplasm System (NPGS) facility in Geneva, New York, has contributed resistance to Geneva® apple rootstocks. Millions of apple trees planted in the U.S. and throughout the world owe their special resiliency characteristics to Robusta 5.



Photo by Gennaro Fazio

Nursery plantings of Geneva® apple rootstocks.

## PROJECT GOALS

- ✓ Generate apple rootstocks that improve the resiliency and productivity of apple orchards

### Problems Addressed

U.S. apple growers plant dwarfing apple rootstocks to increase productivity and fruit quality of their orchards. These dwarfing stocks represent technologies developed prior to the 19th century and were susceptible to devastating diseases such as fire blight, as well as insect pests like woolly aphids and root rot caused by Phytophthora. These pests and pathogens have devastated apple orchards in the U.S., sometimes causing their complete destruction.

### Solutions Developed

Through conventional breeding and selection, Cornell University and USDA scientists have been developing a collection of rootstocks that can be deployed across diverse orchards. These rootstocks address insect and disease resistance, yield, post-harvest disorders, and more. Robusta 5 was used to provide these releases with genetic resistance to fire blight, replant disease, and woolly apple aphids. The disease resistance genetic traits in Robusta 5 have been deployed in over 100 million trees worldwide. With 13 million trees sold each year, the value of Robusta 5's resistance is conservatively \$91 million annually.



Written by: G. Fazio, T. Robinson, K. Chen (editor)

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