Geneva® 41 A New Fire Blight Resistant, Dwarfing Apple Rootstock

Authors: Gennaro Fazio1,3, Herb S. Aldwinckle2, James Cummins3 and Terence L. Robinson3

1. United States Department of Agriculture, Agricultural Research Service, Plant Genetic Resources Unit, NYSAES, Geneva, NY 14456
2. Department of Plant Pathology, Cornell University, NYSAES, Geneva, NY 14456
3. Department of Horticultural Sciences, Cornell University, Geneva, NY 14456

ABSTRACT

The Geneva® Apple Rootstock Breeding program which was initiated in 1968 by Dr. James Cummins and Dr. Herb Aldwinckle of Cornell University and which has been continued as a joint breeding program with the United States Department of Agriculture Agricultural Research Service (USDA-ARS) since 1998, has released a new dwarf apple rootstock which is named Geneva® 41 or G.41. G.41 (a progeny from a 1975 cross of ‘Malling 27’ X ‘Robusta 5’) is a selection that has been tested as CG 3041 at the New York State Agricultural Experiment Station, Geneva, NY, in commercial orchards in the U.S., and at research stations across the USA and Canada. G.41 is a fully dwarfing rootstock with vigor similar to M.9 T337 but with less vigor than M.9. Pam2. It is highly resistant to fire blight and Phytophthora with no tree death from these diseases in field trials or inoculated experiments. G.41 has also shown tolerance to replant disease. Its precocity and productivity have been exceptional, equaling M.9 in all trials and surpassing M.9 in some trials. It also confers excellent fruit size and induces wide crotch angles in the scion. It appears to be very winter hardy and showed no damage following the test winter of 1994 in NY. Propagation by layering in the stool bed G.41 is not consistent and will require higher stool bed planting densities or tissue culture mother plants to improve its rooting. G.41 also produces some side shoots in the stool bed. In the nursery liners of G.41 produce a smaller tree than G.16 liners but similar to M.9 which is very acceptable. Unlike G.16, G.41 is not sensitive to latent viruses. G.41 has similar graft union strength to M.9 and requires a trellis to promote the growth of trees in non treated soil (replant) to the growth during bloom in 1999 at Geneva. Scions budded on fire blight susceptible rootstocks will eventually die (girdled) whereas scions on resistant rootstocks will require simple pruning of affected branches as needed.

DISEASE RESISTANCE

In most trials Geneva 41 has performed as well or better than its main competitor M.9.

NURSERY PERFORMANCE

The shoot bud productivity (trees/liner) of Geneva 41 is about 70 % of M.9 EMRA. Rooting capacity varies from nursery to nursery as shown below where lines from two different nurseries in the U.S. have remarkably different rooting. Liners harvested in Geneva, NY generally have at least three good roots.

References:

