

**Contact:**

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## Introduction:

The joint Cornell University and United States Department of Agriculture-Agricultural Research Service (USDA-ARS) Apple Rootstock Breeding and Evaluation Program develops new rootstock cultivars with an emphasis on productivity, yield efficiency, ease of nursery propagation, fire blight resistance, tolerance to extreme temperatures, resistance to the soil pathogens of the sub-temperate regions of the US, and tolerance to apple replant disorder.

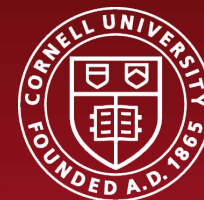
In many trials in North America and other worldwide locations all of the released GENEVA® rootstocks have demonstrated a “per acre productivity” and “tree yield efficiency” similar or higher than current commercial standards M.9 and M.26.

## General Characteristics of GENEVA® Apple Rootstocks

- Disease resistance
  - Fire blight
  - Crown and root rots (*Phytophthora*)
  - Replant disease complex\*
- Pest resistance
  - Woolly apple aphid\*
- Other characteristics
  - All are dwarf types that differ within dwarf sizes
  - Cold hardiness\*

\*Applies to some GENEVA® Apple Rootstocks.

# GENEVA® APPLE ROOTSTOCKS COMPARISON CHART v. 2



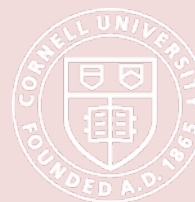
| GENEVA® Apple Rootstocks                                  |           |  |                     |                |                |                |                |                |                |                         |                |                |                |
|---|-----------|--|---------------------|----------------|----------------|----------------|----------------|----------------|----------------|-------------------------|----------------|----------------|----------------|
| Traits  | D1148     | D1147  | D3610               | D3539          | D4950          | D6263          | D3609          | D4190          | D2737          | D4951                   | D3785          | D3540          | D5107          |
|   | G.11      | G.16   | G.41 <sup>(a)</sup> | New!<br>G.213  | G.214          | New!<br>G.814  | G.935          | G.222          | G.202          | G.969                   | G.30           | G.210          | G.890          |
| Arranged in order by size (smallest to largest)           | M.9 T337  | M.9 T337                                       | M.9 T337            | M.9 T337       | M.9/M.26       | M.9/M.26       | M.26           | M.26           | M.26           | M.7                     | M.7            | M.7            | M.7/<br>MM.106 |
| Woolly Apple Aphid Resistance                             | High      | No   | High                | High           | High           | No             | No             | High           | High           | High                    | No             | High           | High           |
| Fire Blight Resistance                                    | Resistant | Resistant                                      | Very Resistant      | Very Resistant | Very Resistant | Very Resistant | Very Resistant | Very Resistant | Very Resistant | Very Resistant          | Very Resistant | Very Resistant | Very Resistant |
| Replant Disease Complex Resistance                        | Partial   | Partial  | Tolerant            | Tolerant       | Tolerant       | Tolerant       | Tolerant       | No             | Tolerant       | Tolerant                | Tolerant       | Tolerant       | Tolerant       |
| Crown and Root Rots (Phytophthora)                        | Tolerant  | Tolerant                                       | Tolerant            | Tolerant       | Tolerant       | Tolerant       | Tolerant       | Tolerant       | Tolerant       | Tolerant                | Tolerant       | Tolerant       | Tolerant       |
| Cold Hardiness  | Yes       | Partial:<br>Good Mid-winter,<br>Bad early-cold | Yes                 | TBD            | Yes            | Yes            | Yes            | Yes            | Yes            | Yes-Good,<br>Mid-winter | Yes            | Yes            | Yes            |
| Productivity/Yield Efficiency- as good or better than M.9 | Yes       | Yes  | Yes                 | Yes            | Yes            | Yes            | Yes            | Yes            | Yes            | Yes                     | Yes            | Yes            | Yes            |
| Low suckering and burr knots                              | TBD       | Yes  | Yes                 | Yes            | Yes            | Medium         | Yes            | Medium         | Yes            | Yes                     | Yes            | Yes            | Yes            |
| Susceptibility to latent viruses                          | No        | Yes  | No                  | No             | No             | Yes            | No             | No             | No             | No                      | No             | No             | No             |

TBD: To Be Determined.

(a) Remarks: G.41 has presented weak graft unions with the following scions: Cripps Pink, Scilate, and Honeycrisp. The well feathered trees are prone to breakage in strong winds in the first 2-3 years and additional care needs to be taken to prevent breakage. Breakage risk decreases with time.

Licensing for all varieties is available as exclusive or non-exclusive in selected Domestic and International Territories.

Chart data valid as of March 3, 2016, and supplied by Cornell University apple rootstock breeding team members, Gennaro Fazio, PhD., USDA Breeder, Terence Robinson, PhD, Cornell Breeder, and Herb Aldwinckle, PhD., Professor Emeritus.



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# Released GENEVA® Apple Rootstocks Arranged by Tree Size



Seedling Size



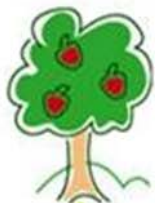
M.7-MM106

M.26

M.9 PAJ 2

M.9 T337

M.27 Size



**G.65**

**G.11**

**G.41**

**G.214**

**G.935**

**G.969**

**G.16**

**G.814**

**G.222**

**G.30**

**New Releases**

**G.213**

**G.202**

**G.210**

**G.890**

The GENEVA® Apple Rootstocks perform differently in Washington State conditions in comparison to the data displayed here that was collected in New York State.

Please contact your local extension agent for growing predictions for these varieties in your region.



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