



Rootstocks for Tree Fruit in Heavy Calcareous Soils

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The following is a list of recommended tree fruit rootstocks for western Colorado. Rootstocks that are not recommended, but often used in this area, are also listed. Research reports and personal experience of the authors have been used to generate this list. Many new rootstocks are being evaluated at Western Colorado Research Center (WCRC) of Colorado State University at Grand Junction and will be the basis for future updates.

1. Peach and Nectarine rootstocks ²

- Suited for calcareous soils
 - Titan Hybrids –
 - Peach-almond hybrid
 - Very susceptible to water-logging ³
 - Bailey
 - Seedling rootstock
 - Tested at WCRC
 - Larger fruit size
 - No suckering
 - Higher fruit efficiency
 - Tolerant to cold
 - Hansen
 - Peach / almond hybrid
 - Very susceptible to water-logging
 - Cadaman
 - Intraspecific plum hybrid
 - Tested at WCRC

- Bigger fruit size
- Higher fruit efficiency
- Low suckering
- Viking
 - Peach / almond / plum / apricot hybrid
 - **Sensitive to *Phytophthora*⁴ root and crown rot and crown gall**
 - Needs a well prepared soil
 - Very good anchorage
 - Resistant to nematodes
- Siberian C
 - A cold-resistant peach rootstock
 - Claimed to have the ability of transmitting its cold hardiness to scion varieties
- Krymsk ® 86
 - Peach/plum hybrid
 - Standard tree size
 - Compatible with almond, peach, plum, and apricot
 - Good anchorage
 - Tolerates heavy and wet soils
- Nemaguard
 - **Not suited to calcareous soils**

Newer Potential Rootstocks (under test at WCRC)

Controller 5

- Developed in California
- Tree size is 70% of standard tree

Controller 9

- Developed in California
- Tree size is 90% of standard tree

Atlas

Nickeles

- Results in bigger trees

Micoback

- Results in smaller trees

Apple rootstocks ⁵

- Big trees:
 - B. 118 (Budagovsky 118; Bud 118)
 - Tree size is 80 – 85% of standard tree
 - Very winter hardy
 - Resistant to *Phytophthora* root and crown rot and fire blight
 - Slow to bear with moderate productivity
 - P. 9
 - **Not Recommended**
 - Susceptible to *Phytophthora* root and crown rot in heavy soils
 - M111
 - Tree size is 75 – 85% of standard tree
 - Great with M9 dwarfing interstem for a more dwarf-sized tree
 - Works well in heavy soils
 - well anchored
 - does not tolerate wet feet
 - **M106**
 - **Not recommended**
 - **Susceptible to *Phytophthora* root and crown rot problems in heavy soils**
- Medium size trees:
 - B. 490 (Budagovsky 490; Bud 490)
 - Tree size is 60 – 70% of standard tree
 - Well anchored
 - Moderate winter hardiness
 - May be susceptible to late winter freezes
 - Almost no suckering
 - M 7a
 - Tree size is 50-60% of standard tree
 - Should not require support
 - Considered one of the more ideal rootstocks suited for home gardeners
 - Nice open spreading habit, with a good root system
 - Has suckers
 - G. 30 (Geneva 30)
 - Tree size is 60 - 65 % of standard tree
 - Needs to be supported
- Dwarf trees: ⁶

- G. 16 (Geneva 16)
 - Tree size is 35-45% of standard tree
 - Resistant to *Phytophthora* root rot and crown rot, apple scab and fireblight
 - More precocious than M9
 - No root suckers
 - Reasonably good root anchorage, but probably will still need some support as the fruit develops
 - Very early bearing, very productive
 - Susceptible to powdery mildew and woolly apple aphid
 - Little or no suckering
- G41
 - May have a weak root system – needs staking
 - Resistant to fire blight and *Phytophthora* root and crown rot
 - Precocious and productive
 - Fruit of Jonagold may be smaller than on G 16
- B9 (Budagovsky 9; Bud 9)
 - Tree size is 35 - 40 % of standard tree
 - Very early bearing, very productive
 - Needs to be supported
 - Needs well drained soils
 - **Does not tolerate wet soils**
 - Hardier than M9
 - Very resistant to *Phytophthora* root rot and collar rot, powdery mildew, and apple scab
 - Susceptible to fire blight, tomato ringspot virus and suckering

Cherry rootstock

- Gisela 12
 - Tree size is 75% of standard tree
 - More precocious than Mazzard – usually bearing a crop in the second year
 - Tends to over-crop early in their orchard life ⁷
 - Produces lots of fruit below 10 feet
 - Requires more aggressive pruning and fruit thinning, and requires additional fertilizers and irrigation than is currently given other cherry rootstocks
- Gisela 5
 - Tree size is 50% of standard tree

- More Precocious than Mazzard
 - usually bears a crop in the second year
- Tends to over-crop early in their orchard life
- Produces lots of fruit below 10 feet high
- Requires more aggressive pruning and fruit thinning, and requires additional fertilizers and irrigation than is currently given standard cherry rootstocks
- Zee Stem on Citation rootstock
 - This combination has a dwarfing effect
- Krymsk[®] 6
 - Adaptable even in heavy soils
 - Moderately resistant to wet soil
 - Tree size is 70% of standard tree
- Mahaleb
 - NOT recommended

Apricot rootstock

- Alfred, Goldcot, Manchurian and Veecot
 - recommended in Ontario based on winter hardiness⁸
- Marianna 2624
 - Good for heavy soils
- Citation
 - Tree size is 60 to 70% of standard tree
 - Very winter hardy
 - Well anchored
- *Prunus besseyi* rootstocks
 - Usually result in smaller but shorter-lived trees
- Myrobalan plum seedling rootstocks
 - Not recommended as they tend to break at the graft.
- American plum Seedling rootstocks
 - Not recommended as they develop a large bulge at the graft and tend to break off at that point

Pear rootstock

- Winter Nellis
 - Moderately susceptible to bacterial canker (*Pseudomonas*), oak root fungus (*Armillaria*), and fungal (*Phytophthora*) root and crown rot
 - Roots may be weak and susceptible to pear decline
- OHxF 333 (Old Home and Farmingdale)

- Tree size is 50-70% of standard tree
- Well anchored
- Productive
- OHxF 97
 - Tree size is 95-100% of standard tree
 - Well anchored
- OHxF 51
 - Tree size is 80% of standard tree; smaller on heavy soils
 - **Unsatisfactory due to lack of cold hardiness**
- *Pyrus betulafolia*
 - Tree size is 100% of standard tree
 - An excellent rootstock for Asian Pears
 - Has survived temperatures to -20 F.⁹
 - **Less tolerant of lime-induced chlorosis than most pear rootstocks**
 - **Not recommended for heavy calcareous soils unless soil is very well amended and well drained**
- Calleryana
 - Disease-resistant
 - Drought tolerant
 - Tree size is 100% of standard tree
 - Begin bearing at an early age
 - Fruit sizes generally are larger than on standard roots¹⁰

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² Size control of peaches through rootstocks using other *Prunus* species has not been satisfactorily achieved due to incompatibility or poor tree vigor.

³ <http://www.ent.uga.edu/peach/peachhbk/preplant/rootstocks.pdf>

³ Soil amendments should be used to improve drainage and help ensure water logging does not occur.

⁴ *Phytophthora* root and crown rot is more prevalent in wet and heavy soils. Amending the soil to improve drainage reduces problems with this disease.

⁵ Always plant apple trees with the graft above ground.

⁶ This tree needs support. Use a single steel/GI iron post or espalier the tree against a fence or wall.

⁷ Fruit thinning for the first few years is necessary to achieve good size cherries.

⁸ <http://www.omafra.gov.on.ca/english/crops/facts/02-035.htm#e>

⁹ <http://extension.oregonstate.edu/catalog/html/pnw/pnw341-e/#anchor94531>

¹⁰ <http://extension.oregonstate.edu/catalog/html/pnw/pnw341-e/#anchor94531>