In Canada, new apple rootstocks outperform the industry standard and produce more fruit

**What is this research about?**

Apple trees are not usually grown on their own roots. Instead, they are typically grafted to an apple rootstock, which is the bottom portion of a young tree cut to about 10 inches in height while it is still planted in the nursery. A short shoot (whip) or bud from a tree of the chosen variety of apple is notched and inserted into a notch on the rootstock. The two parts are firmly tied together and then the two grow as one. The purpose of the rootstock is to concentrate on the growth of the tree so the rest of the tree can concentrate on the production of fruit. When the apple rootstock comes from a dwarf tree, the tree remains small while producing many fruit. Most apple rootstocks come from the United Kingdom and when planted in Canada, the resulting fruit crop is often smaller and less resistant to disease. Newer rootstocks are being developed in North America to address local environments and climates. More research is needed, however, to understand how well these new rootstock species compare to those traditionally used in the apple growing industry.

**What did the researchers do?**

Whips of one-year-old Jonagold, McIntosh and Novaspy apple varieties were grafted to 3 new varieties of semi-dwarf apple rootstocks (AR86-1-20, CG.008 and CG.30) as well as to two industry standards (M26 and M26EMLA). The joined grafts were planted in orchards in Nova Scotia, New Brunswick and Ontario. Over 8 growing seasons, the researchers measured how many trees survived, how fast they grew, how much fruit was produced, and the amount of fruit based on tree size. Standard industry practices were followed with respect to watering and fertilizing trees and thinning fruit.

**What you need to know:**

Canadian apple farmers can increase their harvests by using new varieties of apple rootstocks that have been developed for local climates and conditions.
What did the researchers find?
The industry standard rootstocks did not perform as well when compared to the three new varieties. In Nova Scotia, Jonagold and McIntosh trees grew largest on AR86-1-20, while Novaspy grew largest on CG.30. The CG.30 rootstock produced the most fruit with Jonagold and Novaspy trees, while McIntosh trees produced most on CG.008. In New Brunswick, only Novaspy trees were planted, which grew largest and produced the most fruit on AR86-1-20. Although smaller trees grew on CG.30 rootstocks, they produced the most Novaspy apples when size of tree was considered. In Ontario, only Jonagold and Novaspy trees were planted and both grew largest on AR86-1-20. The most Jonagold and Novaspy fruit was produced on the CG.30 rootstock, while CG.008 had the most fruit when size of tree was considered.

Keywords:
Apple rootstock, growing climate, Jonagold, McIntosh, Novaspy

How can you use this research?
Apple growers can use this research to select more climatically suitable apple rootstocks to improve their harvests. Plant scientists can use this research to further the development of apple rootstocks that are suitable for the North American climate and conditions.

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