UMass Extension

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IPM Fact Sheet Series

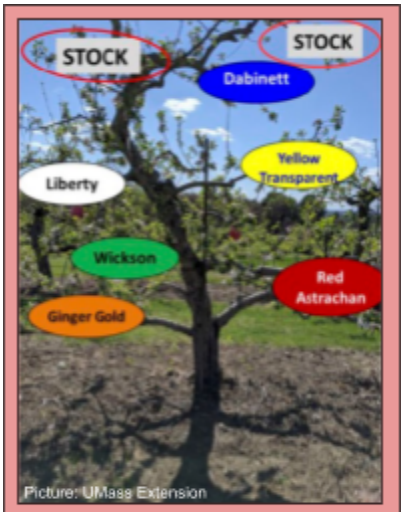
UMass Extension Fruit Team
Fact Sheet #

Grafted Apple Trees

What are grafted apple trees?: In the context of IPM and sustainable fruit production, the term "grafted apple tree" refers to a tree that has been grafted with six cultivars proven to be most attractive to common pests found in apple orchards, making it an effective trap crop (a crop that is more attractive to particular pests than the cash crop).


Two Dabinett scions were grafted to the rootstock to ensure an effective graft; both scions grew and the farmer elected to keep them both for even greater pest attraction.

What is grafting?: Apple trees are not grown by seed, they are grown by grafting, which is the joining of multiple plants (usually two) into one, for the purpose of producing more desirable fruit. Grafting is not hybridization; the process uses one plant as a rootstock, and the other component (called the scion) is a flowering branch that will bear the fruit. There are multiple methods of grafting, but the general procedure is to mar the rootstock, and affix the scion to the lesion; eventually, the two specimens grow together. The cells of the two trees form a callus, a rough scab-like spot that protects the graft union. This enables a grower to reproduce a favorable tree grown in the previous season. The cells of the two trees form a callus, a crust-like growth that protects the compromised area.

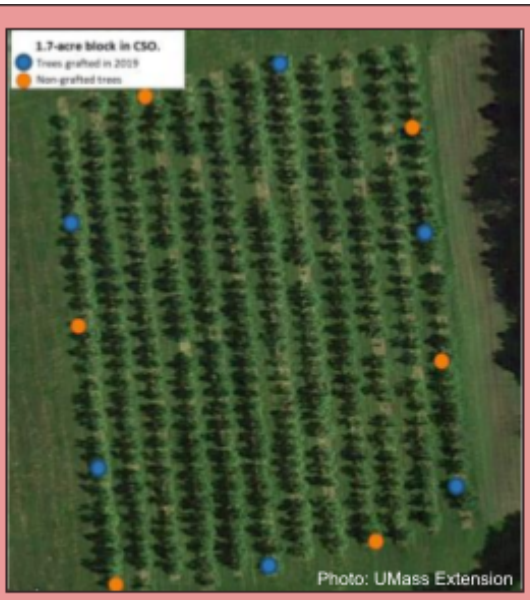


A grafted apple tree with the six cultivars labeled.

Six cultivars: The six cultivars used in grafted apple trees are called Red Astrachan, Ginger Gold, Liberty, Yellow Transparent, Wickson, and Dabinett. The volatiles they emit are proven to be most attractive to nuisance insects. Volatiles (also referred to as volatile organic compounds or VOCs) are metabolic compounds emitted by almost any kind of tissues in response to a variety of stimuli, for a vast array of ecological functions, such as pollinator attraction, plant-to-plant communication, environmental stress adaptation, and the incidental

attraction of predators. Previously, it was believed that volatiles were used exclusively by plants for communication purposes, but current science recognizes that organisms in all kingdoms of life produce volatiles to carry out a myriad of interactions.

Role in IPM: Grafted apple trees are employed in commercial fruit production as a trap crop. They are planted 30 meters apart in the outer perimeter of a block of apple trees; instead of deploying pesticides onto the entire block, only the trap trees are sprayed. This significantly reduces pesticide use, an eco-friendly result that is also financially advantageous; this method is extremely cost-effective, not only because of the decreased use of pesticides, but also because the construction of these grafted apple trees is very inexpensive.



An aerial view of how the grafted apple trees are arranged in a block.

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Additional information available on the MYIPM app: https://apps.bugwood.org/apps/myipmseries/

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References: (not formatted…. should I include these in the final draft?)

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