

Organic apple orchard floor maintenance techniques

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This is the "Swiss Sandwich System" in Golden Smoothie orchard in Clarksville Experimental Station, Mich. Credit: Photo by Ronald L. Perry

Successful organic apple farming literally starts from the ground up. Maintaining a healthy orchard floor is the key to preventing weeds and keeping soil healthy. Logically, finding effective methods to increase production and marketability of organic apples is critically important to growers who have to deal with pests and disease without the use of conventional tools available to nonorganic growers.

Dario Stefanelli of Michigan State University's Department of Horticulture led a study to evaluate three types of rootstocks of 'Pacific Gala' apples. Published in *HortScience*, the study compared three methods of orchard floor maintenance.

The first was an alfalfa hay mulch treatment, applied by hand in the spring and fall, to prevent weed growth and maintain [soil](#) moisture. Drawbacks of this method include the expense, maintenance, risk of rodent damage, possible nutrient leaching, and incubation of some weed species.

The second treatment was a flame burning technique in which a propane burner was used to heat the weeds under the tree canopy. The cost of this method was low, however the risks of fire, branch injury, and damage to plastic irrigation systems increased.

The third method is known as the Swiss sandwich system, which leaves a strip of vegetation to grow naturally in the tree row with two shallow tilled strips on each side. The grassy strip offers insects a space to live without bothering the trees and acts as ground cover, which improves soil condition and adds nutrients. The tilled strips help to reduce competition for water and nutrients. And, because there is no need to mow, this method is easy to maintain. However, this method, without additional fertilization, resulted in less suitable growing conditions.

No differences were noted between rootstocks with the alfalfa hay mulch treatment, though it did improve the appearance of the trees. It also created the most favorable soil conditions for growing 'Pacific Gala' trees. Trees on the Supporter 4 rootstock had the highest growth values, while there were no significant differences between the other two rootstocks. Rootstock was not a factor in crop levels of mulch-treated trees. The M.9 RN 29 rootstock was the most productive using the Swiss sandwich system and the flame treatments. The other two rootstocks' results were the same for both systems.

According to Stefanelli, the results suggest "M.9 RN 29 and the low-cost [Swiss sandwich system] are the most suitable combination that should be considered by growers who want to plant 'Pacific Gala' under organic

protocols in Michigan and related climatic regions."

More information: The complete study and abstract are available on the ASHS Hortscience electronic journal web site:

[hortsci.ashspublications.org/c ... nt/abstract/44/2/263](https://hortsci.ashspublications.org/content/abstract/44/2/263)

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