

New training, ultra-high-density planting systems recommended for sweet cherry

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Super Slender Axe: short-pruning maintains the production close to the central leader in sweet cherry orchards. Credit: Photo by Stefano Musacchi.

As a result of new dwarfing rootstock selections, improvements in crop

protectants, and better methods of postharvest handling and storage, production of sweet cherry is increasing around the world. New sweet cherry cultivars that allow for improved mechanical harvest have also been introduced, and semi-dwarfing and dwarfing rootstocks have improved the potential for developing high-density planting systems for sweet cherry. A new study showed that high-density planting in sweet cherry orchards can produce significant yields by the second and third year after planting.

Stefano Musacchi, Federico Gagliardi, and Sara Serra released a study in *HortScience* in which they report on the vegetative growth and fruit production behavior of different sweet cherry cultivars grown using multiple new ultra-high-density [planting](#) (HDP) and training systems. "The current trend toward higher densities in pome and stone fruit orchards, including sweet cherry, requires adopting more efficient training systems," they explained. The researchers established an experimental orchard in the Ferrara province in Italy for the trial, where they evaluated a variety of sweet cherry cultivars grafted on two different Gisela rootstocks. Each cultivar-rootstock combination was trained to spindle, V-system, or Super Spindle Axis (SSA). Planting densities ranged from 1905 trees/ha for spindle with Gisela 6 to 5714 trees/ha for V-system and SSA with Gisela 5. The scientists then evaluated traits including cherry vegetative growth, yield productivity, and fruit quality.

Results showed that, among the three systems grafted on Gisela 5, trees trained to the spindle system had the highest trunk cross-sectional area, followed by V-system, and SSA. Seven years after planting, 'Ferrovia' had the highest cumulative yield among cultivars grafted on Gisela 5, especially with V-system training systems. For cultivars grafted on Gisela 6, 'Giorgia' had the highest cumulative yield after 7 years, but 'Grace Star' had higher production than 'Giorgia' in 1 year.

"Our results demonstrated that it is possible to develop a high-density planting sweet cherry orchard producing a significant yield by the second and third year after planting," the authors said. "The SSA and V-systems, in combination with the correct cultivar, guaranteed a high level of production and positively affected fruit quality. Generally speaking, the low production per tree is compensated by a high number of trees and the achieved quality is very high, with over 90% of fruit having a diameter over 28 mm." The authors added that that pruning will be a key factor for minimizing wood aging and yield reduction, and also recommended implementing a system that protects against frost and rain to maintain efficient trees and avoid fluctuations in [sweet cherry](#) crop levels.

More information: *HortScience*, hortsci.ashspublications.org/content/50/1/59.abstract

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