



Improved Fertilization for Gesnariad

There is limited information regarding the growth requirements of gesnariad, and stunting is a common problem. Using a multi-objective decision-making model, **Luo et al. (p. 100)** analyzed the interaction between irrigation volume and nitrogen, phosphorus, and potassium fertilization rates on five growth parameters: plant height, crown diameter, number of leaves, single leaf area, and fresh weight. They determined that the optimum combination of nutrient solution volume for gesnariad growth performance was 100.2 mL water, 3.6 mmol·L⁻¹ nitrogen, 0.10 mmol·L⁻¹ phosphorus, and 1.2 mmol·L⁻¹ potassium.

Irrigation Systems for Young Pecan Trees

Irrigation is widely used in pecan orchards. **ShalekBriski et al. (p. 109)** examined the effects of five irrigation systems and one non-irrigated treatment on trunk diameter, leaf element concentration, weight per nut, and kernel percentage of young pecan trees in Oklahoma. No significant differences were observed for changes in trunk diameter and weight per nut from 2010 to 2016. When using a spatial Durbin error model, trees with two sub-surface drip lines (long watering interval) and 35-ft-diameter microsprinklers had significantly greater trunk diameters than the non-irrigated control. Irrigation system affected some element concentrations and weight per nut.

Automated Irrigation for Container Nurseries

An automated irrigation schedule based on routine leaching fraction (leachate/water applied) testing and weather data acquired on-site was compared to a container nursery's traditional irrigation practice of substrate moisture sampling. In seven unreplicated trials in Florida, **Million and Yeager (p. 114)** found that the automated irrigation schedule decreased water use for micro-irrigated production in large containers, but had little or no benefit for sprinkler production in small containers. At the end of the trials, the technology was adopted nursery-wide. Expected savings in labor costs was more of an impetus for adoption than estimated savings in water-pumping costs.

Drip Irrigation Improves Olive Productivity in China

Little is known about the effects of different irrigation strategies on olive productivity in China. In a 2-year study, **Quan et al. (p. 122)** found that flood irrigation increased vegetative growth, olive and oil yield, fruit moisture, and oil content in comparison with a rain-fed control. Although fruit weight, pulp rate, and oil content were the lowest, drip irrigation had the greatest positive effects on vegetative growth, flowers, fruit set, olive yield, and oil yield. The authors suggest that drip irrigation in winter and spring is the best irrigation strategy for olive productivity in southwestern China.

Mechanically Pruned Wine Grapes in California

Pruning of wine grapes remains the most labor-intensive portion of grape growing. **Kurtural et al. (p. 128)** compared three training systems during a conversion to mechanical pruning. Grapevines grown on a mechanically pruned single high-wire system had the greatest yield and lowest labor cost. The berry quality and flavonoid content of mechanically pruned grapes were not different from lower-yielding cane- or spur-pruned grapevines. Under the hot climate of California, a mechanically pruned single high-wire system is recommended to maintain productivity without sacrificing berry composition.

Sweetpotato Slips for High Tunnel Systems

Commercial production of sweetpotato propagules is concentrated among a few U.S. coastal states. Farmers in the midwestern U.S. have limited access to planting material. Considering the crop's cold sensitivity and the increasing use of high tunnels in the north-central U.S., **Hoppenstedt et al. (p. 140)** conducted a 2-year study to compare slip beds grown in high tunnels to the more common open-field method. They report that high tunnel slip production may provide growers a viable opportunity for diversifying crop rotations and managing their own sweetpotato production schedule without compromising root yield or marketability following transplanting.

Liquid Fertilizers for Bell Pepper in Georgia

Most growers in southern Georgia fertigate bell peppers with liquid fertilizers; however, there is uncertainty about which fertilizer compositions perform best. **Coolong et al. (163)** evaluated two types of liquid fertilizer programs over 2 years in Tifton, GA. While results varied with year, the authors found that liquid fertilizer programs containing calcium resulted in reduced blossom-end rot in peppers. The authors suggest that growers incorporate a liquid fertilizer with some calcium in their fertilizer program instead of relying on preplant applications of calcium alone.

Salicylic Acid Increases Market Value of Red Sweet Peppers

Ibrahim et al. (p. 170) report that spraying greenhouse-grown 'Barbero', 'Ferrari', and 'Imperio' pepper plants with humic and salicylic acids (0.5 to $1.5 \text{ g}\cdot\text{L}^{-1}$) at 20, 40, and 60 days after transplanting increased fruit yield, nutritional quality (e.g., vitamin C content), total soluble solids content, titratable acidity, and total sugar content, as compared with control plants. Salicylic acid treatment was more effective than humic acid treatment. 'Ferrari' showed significantly higher yield and productivity than 'Barbero' or 'Imperio.' The authors recommend foliar application of $1.5 \text{ g}\cdot\text{L}^{-1}$ salicylic acid, as it increased total yield up to 27.7% depending on variety.

Straw is not Always Beneficial for Strawberries

Gannett et al. (p. 179) found that preplant soil amendments that vary in carbon:nitrogen ratio, including grass clippings, wheat straw, and sawdust, affected soil health indicators in perennial strawberry fields in predictable ways, but these indicators were not correlated with yield. Straw incorporated into the soil before planting negatively affected plant density and yield in the first fruiting year, but did not affect yield when incorporated between rows in established plantings. The authors suggest that growers avoid replanting strawberries into a site that has previously had straw mulch applied, unless the residue has decomposed.

Selection of Circulation Pumps in Hydroponic Systems

In plant factories and other hydroponic systems, nutrient solution is moved via pumps. Some plants are sensitive to the pump type or solution treatment process used in the system. Liu and Huang (p. 189) conducted experiments to clarify the roles of various treatment methods and commercially available circulation pumps. They report that a 254-nm ultraviolet sterilization system caused the precipitation of iron ions, lowering the concentration of iron. None of the pumps, centrifugal magnetic-drive water pump, regenerative self-priming pump, or submersible water pump, affected the concentration of most ions.

Break Dormancy and Optimize Storage of Torrid Panicgrass Seed

Torrid panicgrass is a native Hawaiian grass identified as a candidate for use in re-vegetation. Efforts to utilize this species have been complicated by problems with seed

dormancy. Lukas et al. (p. 199) evaluated exogenous chemicals and storage treatments to overcome dormancy and enhance long-term storage of seed. Optimal conditions to relieve dormancy were seeds equilibrated to 12% relative humidity (RH) and stored at $30 \text{ }^\circ\text{C}$ for a period of 8 months, which resulted in 55% germination. Maintenance of viability in up to 10 months was achieved with seeds stored at 12% RH and 10, 20, or $30 \text{ }^\circ\text{C}$.

Using Wild Taro Waste in Composting

In some regions of the world, wild taro is an invasive species requiring management and disposal. Sembera et al. (p. 205) investigated the use of wild taro waste as a feedstock in composting and evaluated the quality of the resulting compost. They found that wild taro propagules exposed to temperatures between 45 and $52 \text{ }^\circ\text{C}$ for at least 3 days were killed, and that these temperatures were easily achieved in the composting process. Compost quality tests determined the compost created utilizing wild taro was of equal to higher value than current compost quality standards.

Growth and Flowering Control of Young Pecan Trees

Due to the strongly vegetative nature of relatively young pecan trees and the absence of dwarfing rootstocks or varieties, controlling tree size is a major problem in high-density pecan orchards. Zhu and Stafne (p. 210) studied the efficacy of paclobutrazol to control tree growth and increase the number of different shoot lengths and female flowers. A soil drench application of $30 \text{ mg}\cdot\text{cm}^{-2}$ produced many more shoots varying from 5 to 30 cm in length, which accounted for at least 63.3% of all female flowers the following spring.

Bracketology in Plant Identification Courses

Plant identification courses are fundamental in horticulture program curricula, and maintaining student engagement and interest can be challenging. Miller (p. 223) describes Plant Madness, a game-based activity modeled after March Madness, that was integrated into a plant identification course. The activity provided opportunities for students to learn plant materials, practice public speaking skills, be creative, and have fun in class. Student feedback for two semesters indicated that Plant Madness was well received. Ninety five percent or more of the students liked the activity and recommended repeating it.