



Production Protocol for Native Aquatic Plants

Native aquatic plants promote balanced ecosystems, improve water quality, control erosion, and contribute to the beauty of water bodies. However, they often are displaced by invasive aquatic species. **Hasandras et al. (p. 252)** used protocols originally developed for studying the growth and control of invasive aquatic species to grow the native aquatic plant, southern naiad. Using 100% sand with 2 g·kg⁻¹ controlled-release fertilizer layered under the substrate surface produced the best southern naiad plants. Further research will determine whether this production protocol improves transplant success into areas previously occupied by invasive aquatic plant species.

Biopolymer Horticultural Products Show Strong Potential

Petroleum-based plastic containers and synthetic fertilizers are effective for production of horticulture crops, but their use is linked to high fossil resource consumption and heavy environmental impact. **Schrader et al. (p. 257)** evaluated emerging biopolymer horticultural products for their effectiveness during greenhouse production and garden growth of floriculture crops, and during post-production culture of container ornamentals. Biopolymer products showed similar effectiveness to that of standard plastic containers and synthetic controlled-release fertilizers. Adoption of biopolymer horticultural technologies could improve environmental sustainability of horticulture without reducing productivity or efficiency, and without increasing labor intensity.

Insecticide Efficacy Linked to Scale Biology

Scale insects are notoriously difficult to control with insecticides. While previous work has attributed inconsistent chemical control to unrecognized differences in scale morphology, **Quesada et al. (267)** suggest that variation in the life histories of these pests can influence insecticide efficacy. In their study of seven synthetic insecticides with six different modes of action, efficacy of short-residual foliar insecticides was greatest when scale insects produced all of their offspring over the course of 1 week. Scales that dribbled out production of juveniles over 1 month were less-effectively controlled. In conclusion, scale life history should be considered in pesticide selection.

Salinity Tolerance of Seeded-type Bermudagrass Varieties

Seeded bermudagrass is a desirable option for turfgrass establishment and management in many situations, due to its reduced up-front cost compared to sod. In addition, bermudagrass has relatively high salinity tolerance, which can be useful in the landscape, especially when using reclaimed water as irrigation source. **Xiang et al. (p. 276)** evaluated differences in salinity tolerance among 10 seeded-type common bermudagrass varieties in a greenhouse study. 'Princess 77', 'Riviera', and 'Yukon' performed well at high salinity levels. Leaf firing was determined to be valuable for evaluating salinity tolerance when compared to several objective, non-destructive measurement tools.

Golf Courses Use Humus to Correct Soil Salinity

Salts can cause soil organic matter flocculation and loss. Important soil properties, such as water infiltration, water holding, aeration, and nutrient holding capacity, deteriorate as soil organic matter diminishes. Application of this principle was demonstrated in a 2-year study on two golf courses of wide geological variation. The two golf courses experienced soil salinity issues and high salt content in irrigation waters. By the application of humic acid at 3 gal/acre, or topdressing with 80% sand + 20% peat (by volume), **Zhu and Li (p. 284)** found that the addition of humus to soil increased soil microbial biomass and improved turf quality.

Motivations for Gardening

Gardening is a popular leisure activity for people in the U.S. **McFarland et al. (p. 289)** used an open-ended qualitative survey instrument to gather information from 177 gardeners to identify their reasons for gardening. Survey respondents were between the ages of 7 and 94 years old and reported gardening motivations that included themes of "social interaction," "aesthetics," "food availability/health/nutrition," "economics," "therapeutic," "environmental benefits," "nostalgia," and "personal productivity." Themes of personal productivity and nostalgia are those that have not been observed in previous research. More females reported gardening for personal productivity when compared to males.

Mechanical vs. Hand Removal in Wine Grape Leaves

The removal of leaves in the fruit-zone of grapevines is a cultural practice that improves fruit health and quality. A 2-year study on 'Riesling' vines by **Hed and Centinari (p. 296)** compared hand defoliation at pre-bloom (HD-I) to mechanized defoliation at pre-bloom (MD-I) and fruit set (MD-II). Despite removing only half the leaf area of HD-I, MD-I mimicked HD-I for improving cluster sunlight exposure, reducing cluster weight, berries per cluster, cluster compactness, and floral debris retention, in comparison to no defoliation. MD-I may provide an alternative to HD-I, to reduce the effects of the increasing price and shortage of labor.

Ethephon Increases Drought Tolerance of Kentucky Bluegrass

Drought stress is one of the major factors affecting turfgrass performance in water-limited areas. To maintain acceptable turf quality in Kentucky bluegrass, regular irrigation is necessary. Using plant growth regulators to promote plant performance under drought conditions is a way to reduce water usage in turfgrass management. **Zhang et al. (p. 319)** found that ethephon seed treatment (150 ppm) improved drought tolerance of Kentucky bluegrass seedlings by altering antioxidant enzyme activity, proline, and soluble protein content.

Seedling Growth of Creeping Bentgrass Varieties under Drought

Zhang et al. (p. 327) evaluated seedling growth of 23 commercially available creeping bentgrass varieties under polyethylene glycol 6000-induced drought conditions in a hydroponic system. Shoot dry weight and longest root length were not affected by drought. However, root dry weight and root to shoot dry weight ratio increased, while specific root length and absolute water content were reduced under drought. Among the creeping bentgrass varieties evaluated, higher growth was observed in Independence and Crystal Bluelinks, indicating better adaptation to drought.

Herb Transplant Production Using Swine Lagoon Sludge

Herb production is becoming more popular in the vegetable industry. **Herring et al. (p. 337)** compared compost composed of swine lagoon sludge and peanut hulls against commercially available potting substrates to produce transplants of basil, chives, and dill. Seeds sown in each medium with no additional fertilizer throughout the 53-day trial produced significantly more growth in the swine lagoon compost than the commercial mixes. The physical and chemical requirements of transplant production were met with swine lagoon compost without additional fertilizers or amendments.

Grafting Improves Tomato Production and Water Use

Improvement in the application and use of water is a universal goal in agriculture. **Suchoff et al. (p. 344)** examined the water-use efficiency of high-tunnel-grown tomato grafted onto rootstocks of differing root system morphologies. The study was conducted on a commercial farm and the results indicated that when using 'Beaufort' as a rootstock, irrigation can be reduced by half with no negative effect on total marketable yield. Water-use efficiency was tripled compared to the grower's traditional production system.

Smartphone Irrigation-scheduling Applications

Recently developed smartphone irrigation-scheduling applications were evaluated using tomato and watermelon in Georgia by **Miller et al. (p. 354)**. These applications use real-time weather data from nearby weather stations to help schedule irrigation in a wide range of crops. Yields of plasticulture-grown tomato and watermelon were not affected compared to current recommended irrigation methods; however, total

irrigation volumes were reduced using the applications. These tools have the potential to improve irrigation management for growers in southern Georgia.

Propagating Nursery Crops with Submist Aeroponics

Submist aeroponic systems have been largely unexplored for the propagation of woody nursery crops, which are generally rooted using overhead mist. **Peterson et al. (p. 378)** evaluated an aeroponic system that applied mist only to the basal ends of inkberry and Korean lilac semihardwood stem cuttings. The quality of root systems on cuttings rooted by submist matched or exceeded that of cuttings rooted by overhead mist. Rooted cuttings of Korean lilac transplanted readily to a solid medium after propagation in submist; they produced more root growth than cuttings from overhead mist post-transplant.

Grapevine Recovery Options after Winter Damage

Todaro and Dami (p. 382) evaluated the effects of training and pruning in winter-damaged 'Cabernet franc' grapevines. Training and pruning methods with increased buds per vine resulted in increased shoots, leaf area, pruning weight, clusters, and yield per vine, but decreased juice soluble solids. The Fan training system with cane pruning and multiple trunks produced the most optimum trunk size, yield, cropload, and fruit composition. Following trunk freeze damage, the authors recommend retaining all shoots using the Fan training during the growing season and selecting normal-sized canes for trunk replacement during the subsequent dormant season.

Managing Nursery Pests with Predatory Mites

The use of predatory mites for biological control of thrips, herbivorous mites, whiteflies, and other pests is widely accepted in ornamental greenhouse production systems. However, adoption of predatory mites in outdoor container and field ornamental production requires more research to support its efficacy. **Adesso et al. (p. 391)** conducted trials using swirski mites in controlled-release sachets to evaluate this predator's ability to suppress common pest species (broad mite, spider mite, thrips) on containerized red maple and flowering dogwood. Preliminary results indicate swirski mites can be effective in preventing outbreaks of these pests when applied to tree canopies in controlled-release sachets.

Amaranth Varieties for Greens in the Northeastern U.S.

Amaranth leaves are a traditional vegetable in cultures around the world, but underdeveloped and understudied varieties are challenges to intensive production. **Schweig and Brown (p. 399)** evaluated 10 amaranth varieties in multiple plantings in southern New England. Most varieties produced similar yields in mid-summer, but yields were highly variable in the early and late season. Several varieties produced high yields throughout the season, including the two top performers, Miriah and Green Pointed Leaf. Substantial differences in descriptive traits, like leaf color and leaf to stem ratio, demonstrate the importance of considering target market and intended use in variety selection.