Spotlight

Improvement of Ocular Discomfort Using Indoor Plants

Indoor air quality (IAQ) is one of the most important factors affecting the health of indoor residents, particularly young children. Kim et al. (p. 386) examined the severity of ocular discomfort symptoms (soreness, itch, dryness, grittiness, and redness) in association with IAQ. Participants in the indoor space with improved IAQ experienced lessened symptom severity, and IAQ was improved efficiently by the use of indoor plants. Indoor plant intervention can be regarded as a practical way to improve the health of indoor residents.

Tomato Productivity Affected by Grafting Method and Rootstock

Small-acreage and/or organic growers are interested in grafting their own plants, especially for use in high tunnel systems. The shoot removal (SR) technique involves removing the meristem during grafting to reduce scion water stress post-grafting. Masterson et al. (p. 399) found that the SR method reduced the benefit of grafting with ‘Trooper Lite’ rootstock, whereas ‘Maxifort’ rootstock was penalized less. Early yields were reduced with both rootstocks. Growers may find that if the SR technique is utilized, earlier planting dates may be needed to offset the time required for scion re-growth and that proper rootstock selection is critical.

Summer Cover Crops for Weed Suppression

Cover crops can be used as a sustainable weed management tool in vegetable production. Kruse and Nair (p. 409) investigated impacts of short-duration summer cover crops on weed suppression and lettuce yield. Buckwheat provided the highest degree of weed suppression. Southernpea provided additional nitrogen, enhanced lettuce growth, and led to an earlier harvest. Sorghum-sudangrass showed evidence of detrimental effects to lettuce. This study demonstrated the feasibility of cover crops as sustainable weed management tools; however, cover crop selection is critical to reduce harmful effects on vegetable crops.

Protocols for Fall Sweet Corn in the South-Central U.S.

Seasonality is a major constraint to the expansion of local vegetable production. Kahn and Brandenberger (p. 417) found that in eastern Oklahoma sweet corn could be sown to an acceptable stand during the last 2 weeks of July given timely irrigation and a seeding rate of about 1.5 seeds/ft. Use of a variety with genetic resistance to lepidopteran pests (GSS-0966) was critical to success. Data supported recommendations to apply supplemental insecticides to transgenic sweet corn. A spray schedule that rotated carbaryl and permethrin showed potential to reduce the percentage of ears with insect damage > 1½ inches from the cob tip.

Summer Fertilization is Critical to Avocado Yield

Efforts by Salvo and Lovatt (p. 426) to develop ‘Hass’ avocado nitrogen (N) best management practices demonstrated that meeting the N demand of developmental processes occurring in July and August (exponential growth of setting fruit, vegetative shoot growth, initiation of floral development for next year’s crop, mature fruit abscission) was an environment-friendly, cost-effective strategy to maximize yield. Application of annual total N split in July and August resulted in 4-year cumulative total yields and yields of commercially valuable size fruit equal to trees receiving three-fold more annual N at five key developmental stages.

Shallow Subsurface Drip Tested in Winter Squash

Coolong (p. 436) compared shallow subsurface drip to surface drip irrigation in acorn squash. In a wetter, cooler season, the subsurface drip outperformed the surface application. However, in a hot dry season, the surface irrigation system was superior. This may have been due to improved early growth by the surface-grown plants during the hotter, drier growing season. The cool, wet season plants were able to establish themselves in the subsurface system, where the roots were initially further away from emitters. This suggests that environmental conditions may significantly impact the performance of subsurface drip irrigation.

Antitranspirants Enhance Water Stress Tolerance of Bedding Plants

Water stress during shipping and retailing of bedding plants can cause damage severe enough to make the crop unmarketable. To reduce such damage, antitranspirants have been used to enhance temporary tolerance to water deficit stress by limiting transpirational water loss. Park et al. (p. 444) evaluated the efficacy of two physical and three physiological antitranspirants. Of the antitranspirants tested on six bedding plants, β-pinene polymer (βP) and a biologically active form of abscisic acid (s-ABA) extended the shelf life by blocking
and closing stomata, respectively. However, βP caused floral damage and s-ABA induced mild leaf chlorosis.

**Plastic Mulch and Transplant Fertilizer Increase Tomato Yield**

Phosphorous-containing transplant solutions are commonly recommended to gardeners and commercial vegetable growers without regard for existing soil fertility. Rohwer and Fritz (p. 460) found that a soluble fertilizer containing phosphorous hastened and increased tomato fruit yield in high-phosphorus soil. The response was similar for plants grown with no additional phosphorus at transplant, but with black plastic mulch for just 26 to 28 days at the beginning of the season. Using both phosphorus-containing transplant solution and plastic mulch provided the greatest increase in fruit yield.

**Vertical Strawberry Production System Tested in Illinois**

Vertical production of specialty crops may help to increase profitability of high tunnels in the midwestern U.S. Wortman et al. (p. 466) evaluated the effect of variety, growing media, and nutrient source on yield of strawberry grown in vertical, hydroponic, high tunnel systems at central and southern Illinois. Top-yielding varieties varied by year and location, but variety performance did not differ between organic and synthetic nutrient sources. Perlite mixed with coco coir or vermiculite was a better medium than perlite alone. Yield was reduced 15% when fertilized with organic nutrients compared to synthetic, but certified organic hydroponic production seems feasible.

**Gardening Intervention Benefits the Health of Elderly Women**

Park et al. (p. 474) found that a 15-session gardening intervention improved the physical and psychological health of elderly women over 70 years old. Twenty-four women participated in a twice-weekly gardening intervention as a low to moderate-intensity physical activity. The participants significantly reduced waist circumference and improved their aerobic endurance, hand dexterity, cognitive function, and amount of daily physical activity. Elderly women in the control group experienced age-related reductions in physical and psychological health related to lean mass, agility, and depression.

**U.S. Consumer Expenditures for Fresh Flowers and Potted Plants**

The U.S. floral industry has been experiencing declining sales in the past decades, causing many to speculate as to the underlying causes. Zhao et al. (p. 484) analyzed Consumer Expenditure Survey data from 1996 to 2013, and found that the sources of declining demand can be attributed to decreases in both number of flower purchasers and expenditure among flower purchasers. Major factors affecting the likelihood of flower purchases and the expenditure on flowers were identified, including consumer socio-demographic characteristics, time trend, geographic location, and housing status.

**Ethephon Drenches Control Growth and Improve Flowering of Plumbago**

Paclobutrazol and flurprimidol doses of 1 mg/pot controlled height ‘Imperial Dark Blue’ plumbago, while higher concentrations resulted in uneven growth and excessive stunting. Barker et al. (p. 493) found ethephon drenches of 125 to 250 mg L⁻¹ provided more consistent results in controlling diameter and increasing branching and flowering versus paclobutrazol or flurprimidol. Growth suppression with ethephon drenches was gradual, limiting overdose risks, and plants treated with ethephon drenches had a higher aesthetic appeal due to a fuller appearance and increased flowering.

**Promising Olive Varieties for Oil Production in Hawaii**

There is a potential market for high-value, boutique olive oil produced in Hawaii. Miyasaka and Hamasaki (p. 497) planted 10 olive varieties at two sites in Hawaii (elevation 2700 and 3100 ft). At 2700 ft, three varieties (Arbequina, Arbosana, and Koroneiki) flowered, fruited, and produced oil yields of greater than 20% after approximately 2 years of growth in the field. The other seven varieties (Coratina, Frantoio, Leccino, Mission, Moraiolo, Pendolino, and Taggiasca) did not flower and fruit during 2 to 4 years after transplanting at 2700 ft, perhaps due to a greater requirement for chilling hours below 12.5 °C.

**Commercial Media Alter Petunia Growth and Flowering**

Different substrates contain various components that can have direct and/or indirect effects on plant growth and development. Li and Mattson (p. 507) evaluated the effect of different commercial media on petunia transplants with fertigation/clear water irrigation. They found that the substrates dramatically affected growth and flowering. Selection of commercial media can play a large role in plant performance and production of containerized greenhouse plants. Commercial growers should conduct in-house trials of substrates to select those that perform well in their growing environment and with their fertilization practices.

**Stakeholder Opinions About Invasive Species**

Understanding stakeholder opinions can help guide educational outreach to gain public support for invasive species management programs. Oxley et al. (p. 514) surveyed San
Marcos River stakeholders to assess their views of invasive species and their management. The majority of survey participants believed non-native, invasive species should be controlled to conserve the environment, where they damage native Texas species, and, in particular, when they threaten rare Texas native species. Proposed management methods influenced levels of support for invasive species control. The results of the survey can be used to develop and implement public education programs.

Continuing Education Important for Master Gardener Retention

Master Gardeners in Iowa were surveyed to determine their motivations for volunteering and to identify popular continuing education topics, preferred delivery methods, and usage of social media. The primary reasons to volunteer were to learn more about gardening and help others in their communities. Aligning these reasons for volunteering and continuing education topics with volunteer interests was essential in successful recruitment and retention. Takle et al. (p. 522) speculated that preferences for continuing education topics, delivery methods, and social media usage in Iowa would be similar for other Master Gardener programs across the country.

Simple Water Requirement Calculators for Fruits and Vegetables

Determining water needs for new drip irrigation users growing a variety of fruits and vegetables is difficult and can involve a multitude of confusing crop coefficients in conjunction with long-term average evapotranspiration data. Rowell and Soe (p. 530) developed simple rotating disc calculators so that extension workers and growers could quickly and easily estimate water requirements for a variety of crops. Using simplified coefficients and growth stages (vegetables) or canopy cover (fruits), the calculators helped lower adoption barriers to a new and unfamiliar technology.

Cauliflower Variety Trial in New York

Cauliflower is an excellent crop for growers in the northeastern U.S.; however, little is known about how commercial varieties perform under New York field conditions. Kreis et al. (p. 542) evaluated 12 commercial varieties for horticultural traits and susceptibility to alternaria leaf spot. The purple varieties, Graffiti and Violet Queen, showed less disease than some of the other varieties in the trial. Varieties, Artica and Apex were among the highest yielding each year. Other varieties differed each year of the trial as a result of growing conditions.