



## Sustainable Landscape Interpretation Enhances Student Acceptance

Sustainable landscapes are increasingly recognized for their potential to enhance ecological benefits in urban and suburban landscapes. However, adoption of sustainable landscapes requires public acceptance of sustainable landscaping paradigms and practices. This research examines the impact of sustainable landscape interpretation on student perception of a sustainable campus landscape. **Saksa et al. (p. 402)** found that interpretation improved student awareness and acceptance of sustainable landscaping practices and changes in students' perceptions of landscapes were greater as engagement with interpretation increased. For those developing or managing sustainable landscapes in public sites, interpretation aimed at landscape users is useful for enhancing acceptance of those landscapes.

## Effective Clubroot Resistance in Green Cabbage

Clubroot is a soil-borne disease that can be a major limiting factor in the production of cole crops. **Saude et al. (p. 311)** evaluated clubroot incidence on resistant green cabbage varieties ('Kilaxi', 'Kilherb', 'Kilaton', and 'Tekila') grown in infested muck (organic) and mineral soil. These varieties were compared to a susceptible variety ('Bronco') that was either untreated or treated with fungicide. Clubroot incidence on 'Bronco' ranged from 64% to 100%, and was not reduced by fungicide application. Incidence was 0% to 3% on the untreated resistant cabbage varieties. Genetic resistance effectively controlled clubroot in heavily infested soils.

## Environmental Impact of Crops Determined Using Life Cycle Assessment

**Ingram and Fernandez (p. 275)** describe life cycle assessment (LCA) as a research tool to study the environmental impact of horticultural crop production systems and processes. LCA uses internationally accepted standards to quantify the environmental impact, such as carbon footprint, of input components of a product. LCA is one more tool in horticultural scientists' arsenal to study system dynamics while engaging system component research. Reliable

information generated from such assessments is needed for fine-tuning production systems and communicating with the public about the value of such horticultural products as shade trees.

## Tree-based Mulches Influence Soil Properties and Plant Growth

**Maggard et al. (p. 353)** determined the responses of soil properties and plant growth to the application of various tree-based mulches and provided specific information regarding the attributes of eastern redcedar mulch. They found that tree-based mulches benefit plant growth and survival by maintaining greater soil moisture, decreasing competition from weeds, and moderating soil temperatures compared to no mulch. Eastern redcedar mulch provided similar benefits as other common tree-based mulches, and is a viable forest product. Conversion into mulch may provide an environmentally friendly alternative use for eastern redcedar and other underutilized woody species.

## Horticultural Therapy Improves Social Skills of Children

Children with intellectual disabilities are faced with a wide range of obstacles that impact their social skills (e.g., self-assertion, self-control, cooperation), often causing them to avoid social relationships. **Kim et al. (p. 320)** found that a horticultural therapy program based on B.F. Skinner's behavior modification theory, coupled with a special education science curriculum designed for Korean children, resulted in a significant improvement in their social skills and interaction with others. Using the program, the children displayed increased cooperation, self-control, assertion, and responsibility.

## Economic Impact of Mechanization on Nurseries and Greenhouses

Workers in participating wholesale nurseries and greenhouses in eight southern states perform about one-fifth of their main tasks with some form of mechanization. **Posadas (p. 388)** reports that improved mechanization resulted in increased total workers earnings, as nurseries and greenhouses were able to pay their workers higher wages and salaries. Increased levels of mechanization produced neutral effects on employment and raised the value of the marginal productivity of labor. Adoption of technology by wholesale nurseries and greenhouses did not displace workers.

## Vaccine Protein Production in Hydroponically Grown Tomatoes

Hydroponic tomato production in a greenhouse is considered to be a suitable system for plant-made pharmaceutical protein production. **Matsuda et al. (p. 362)** examined the effect of a high electrical conductivity (EC) of hydroponic nutrient solution as a factor that may affect the protein

concentration in fruit of transgenic tomato expressing a candidate subunit vaccine against plague (F1-V). They found that the high EC treatment lowered fruit F1-V concentration without altering plant growth and development. Adjustment of nutrient solution EC at an appropriate level is necessary for preventing a possible decrease in fruit F1-V of the transgenic tomato.

## Forest Residual Substrate Is an Option for Nursery Production

Interest in alternative, wood-based substrates has been high in recent years. One of these materials, clean chip residual (CCR), is a forest byproduct containing bark, wood, and leaves. Previous studies have demonstrated that CCR is a suitable replacement for pine bark-based substrates in nursery crop production; however, the status and availability of this material for horticultural uses were unknown. **Boyer et al. (p. 381)** examined forest-harvesting operations in the southeastern U.S., and found that they are highly variable. Adequate resources are available for horticultural use of CCR, but the logistics to connect harvesters and nursery growers will need to be developed.

## Turfgrass Fertilization Impacts Urban Water Quality

**Carey et al. (p. 280)** review turfgrass fertilizer management practices in urban watersheds and describe factors that may impair water quality. In addition to landscape site and soil characteristics, turfgrass cultural practices like fertilization affect the magnitude of nutrient leaching and runoff. Improperly managed turfgrass negatively impacts the environment. In urban landscapes, fertilization strategies should maximize nutrient utilization efficiency by the plant and reduce nutrient export risks. Intensive education programs based on human dimensions research may be useful in persuading watershed residents to adopt appropriate fertilizer management practices.

## Modified Paddock Vacuum Reduces Chinese Chestnut Harvest Labor

Harvest labor costs for small-scale Chinese chestnut orchards are as much as 50% of the cost of production. **Warmund et al. (p. 376)** evaluated the economic feasibility of using a manual nut-harvesting tool versus two types of paddock vacuums. Economic analyses revealed that the larger modified paddock vacuum was the lowest-cost method of harvesting chestnuts at labor rates of \$10, \$12, and \$15 per hour labor with yields greater than 4555, 3466, and 2510 kg, respectively. Thus, the modified pasture vacuum may provide a relatively inexpensive method for small producers to mechanize chestnut harvest.

## Eco-friendly Nets Improve Tomato Transplant Production

**Gogo et al. (p. 292)** report that the use of netting improved tomato transplant production when compared to open field production. Netting raised air temperature and relative humidity, advanced seedling emergence by 2 days, and improved percentage of emergence, root development, stem diameter, leaf number, and seedling growth. Stomatal conductance and chlorophyll content were higher in seedlings under netting, while insect pests and diseases were reduced. The use of netting for tomato transplant production resulted in a 36.5% reduction in seed cost through improved emergence and reduced pest damage.

## Winter Sprouting Broccoli Overwinters in Unheated High Tunnels

In colder climates, the demand for locally grown vegetables is particularly high in early spring, when storage crops are gone and before summer crops are available. In England, the heirloom vegetable known as “purple sprouting broccoli” is planted in late summer and harvested the following spring. **Martin and Sideman (p. 345)** found that several purple and white winter sprouting broccoli varieties successfully overwintered for spring harvest inside unheated high tunnels in the northeastern U.S. Adding a layer of rowcover greatly improved plant survival. This specialty crop offers potential for crop rotation with summer-planted high tunnel crops.

## School Gardens Impact the Health of Hispanic Children

Researchers have found that low-income and Hispanic children are particularly at risk for consumption related illnesses such as obesity and Type II diabetes due, in part, to a decreased intake of fruit and vegetables. **Nolan et al. (p. 299)** found an increase in nutritional knowledge and positive attitudes in Hispanic second to fifth graders toward fruit and vegetables following a nutrition and active gardening curriculum. Early childhood is a critical period for developing obesity, and this type of program may be an effective tool to help teachers encourage Hispanic students, in particular, toward healthier diets that potentially can have lifelong impacts.

## Identification of Plant Families Using a New Online Key

An interactive plant key was developed to assist students in identifying plant families using historic botanical illustrations or live plant samples. **Wilson and Flory (p. 410)** report on a database that contains 196 angiosperm families, each with up to 220 botanical characters. This multiple-entry tool can be utilized nationwide to supplement on-site lab courses or distance education classes in horticulture, botany, taxonomy, and biology.

## Mechanical Hedging and Early Hard-tipping Increase Blackberry Yield

A traditional soft-tipping (tipping canes to 3 ft tall by removing about 4 inches) was compared to hard-tipping (tipping canes to 3 ft tall by removing about 1.5 ft) on four dates through each of two summers in primocane-fruiting blackberry grown in a closed tunnel in Oregon. **Strik and Buller (p. 325)** found that hard-tipped canes produced more branches and fruit than soft-tipped canes. Hard-tipping early in the season increased yield three-fold compared to soft-tipping canes early. Performing a hard-hedge early in the season using mechanical methods showed promise for maximizing economic returns.

## Nursery Plant Quality Affects Strawberry Production

**Menzel and Smith (p. 330)** studied the effects of time of planting and plant size on the performance of 'Festival' and 'Florida Fortuna' strawberry plants growing in south-eastern Queensland, Australia. This area is similar to the

strawberry-growing area in Florida. Yields were generally greater in transplants planted in late March/early April compared with transplants planted later. These times corresponded to when material of the two varieties was first available from the strawberry nurseries. Small plants had lower yields, irrespective of time that they were planted. Producers should consider paying a premium for large transplants delivered early in the season.

## Nitrogen Fertilization Needs of Warm- and Cool-season Annuals

Three warm-season and three cool-season annual species in subsoil filled raised beds were supplied with slow-release nitrogen (N) fertilizer over an 18-week period at an annual N rate of 0, 2, 4, 6, and 12 lb/1000 ft<sup>2</sup>. **Shurberg et al. (p. 368)** found that all species required N inputs at annual rates exceeding 8 lb/1000 ft<sup>2</sup> to achieve maximum size, shoot biomass, or chlorophyll. However, acceptable quality plants were produced at lower N rates of 4 to 6 lb/1000 ft<sup>2</sup> per year. Fertilization at lower rates based on aesthetics may reduce nutrient losses in runoff or leachate from excess fertilizer.