



Floriculture at the University of Maine

by Lois Berg Stack, Stephanie Burnett, and Donglin Zhang

Floriculture is a team effort at the University of Maine. The program's research and teaching components are part of the Landscape Horticulture Program, which is housed in the Department of Plant, Soil and Environmental Sciences. In that program, Stephanie Burnett teaches and conducts research in floriculture. In Cooperative Extension, Lois Berg Stack conducts field research and works with the floriculture industry. Burnett and Stack collaborate with other University of Maine faculty members, Extension field faculty, colleagues at other institutions, and industry professionals. Through teamwork, they prepare students for careers in floriculture, conduct research that answers real-world questions, and educate industry members.

Teaching, Advising, and Internships

There are currently 85 students enrolled in the Landscape Horticulture Program (www.umaine.edu/lhc/). The program has four concentrations: business, horticulture therapy, landscape design, and science. The horticulture courses and electives each student takes varies depending on the concentration selected. However, all students take the core floriculture courses that Burnett teaches, herbaceous landscape plants and greenhouse management.

In both classes, Burnett uses on-campus resources, field trips, and industry guest speakers to provide students with hands-on experience. The Lyle E. Littlefield Ornamental Trial Garden and Research Center, directed by Brad Libby, and Stack's trial gardens are the northernmost ornamental trial gardens on the east coast of the United States. Burnett uses these resources to instruct students about what plants thrive in Maine's climate. In the greenhouse management class, students grow a crop of pot mums and tulips each spring in the Roger Clapp Greenhouse.

University of Maine horticulturist Donglin Zhang and Burnett have conducted class projects over the past few years that actively teach students the challenges of irrigating plants. This semester, the University of Maine Center for Teaching Excellence provided funding for greenhouse management students to design and build a drip irrigation system for their pot mums. At the beginning of the semester, only 25 percent of students with prior greenhouse experience had irrigated plants using drip irrigation. All students with prior experience had used hand watering to irrigate plants. The goal of this project is to provide students with experience irrigating crops in more efficient manners than through traditional hand watering.

Research and Field Trials

Stack conducts several field trial projects at Rogers Farm, the University of Maine's research facility for sustainable agriculture. These trials provide an opportunity for

greenhouse and garden center professionals, landscapers, home gardeners, and floriculture students to see first-hand which plants perform best in Maine gardens. At the farm, the field trials are located in the Penobscot County Master Gardener Display Garden. Master Gardener volunteers assist with planting, maintenance, and data collection. In 2005, a horticulture student completed his internship in the garden.

The field trials have three components. The first is an All-America Selections Display Garden that showcases recent award-winning annual flowers and vegetables. The field trials' second component showcases new introductions of vegetatively- and seed-propagated annuals, which Stack conducts with Extension colleague Gleason Gray. In 2006, these trials will include vegetative annuals from Proven Winners, Proven Selections, and Ball FloraPlant, and seed annuals from Ball Seed and PanAmerican Seed companies. Watch for the results in this fall's trade journals. For the third component, Stack trials shrub roses for winter hardiness, in collaboration with Leonard Perry at the University of Vermont. Since 1997, the Maine trials have tested over 150 species and cultivars of shrub roses. People are welcome to visit the field trials on their own. Each August, Stack and Gray host a field day for growers, in conjunction with the Mid Maine Greenhouse Growers Association (MMGGA), and a second field day for home gardeners.

Stack is collaborating on a new project with University of Maine entomologist Ellie Groden, to determine the winter hardiness and effectiveness of two parasitoids of lily leaf beetle. This pest has caused a decline in sales of lilies from greenhouses, garden centers, and landscapers, but the parasitoids offer hope of a non-chemical management technique that may help revive lily sales in the future.

Zhang and Stack have collaborated with several students in the past few years. They are working with Zhang's graduate student, Ajay Nair, to evaluate the usefulness of PGRs in managing powdery mildew on phlox and rudbeckia. They also worked with visiting graduate student Zhanying Gu from Central South Forestry Institute, Changsha, China, to study Florel's effectiveness in managing poinsettia height, and to survey consumers' poinsettia color preferences.

Burnett's research focus is to improve the efficiency of crop production in New England, especially regarding irrigation and fertilization. In collaboration with Marc van Iersel from the University of Georgia, she is researching a method for automating greenhouse irrigation using moisture sensors. This method of irrigation would be less labor intensive and would decrease water and fertilizer waste. Burnett also attempts to address grower-specific problems as needed. For example, she is working with Stack, Zhang, and USDA-ARS scientist Zhongqi He to



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determine the effect of phosphorus on scaevola growth in response to grower interest.

Extension and Outreach

Maine's 750 commercial greenhouses range from very small size to nearly 3 acres. In addition, there are about 100 small-scale outdoor cut flower operations. In many cases, these operations are part of more diversified businesses. The University of Maine Cooperative Extension produces educational programs, publications, and support services for this industry.

Each January, Stack works with the Maine State Florists' and Growers' Association (MSFGA) to develop a day-long educational program for bedding plant growers. Also in January, Extension entomologist Jim Dill works with colleagues in Vermont and New Hampshire to produce the Tri-State Greenhouse IPM Workshops, held in all three states. This hands-on event has helped many bedding plant producers reduce their dependence on pesticides.

Stack works with colleagues from throughout New England and New York to develop the biennial New England Greenhouse Conference (www.uvm.edu/~pass/greenhouse/negc.html).

Greenhouse growers throughout New England rely on the New England Greenhouse Floriculture Guide: a Management Guide for Insects, Diseases, Weeds and Growth Regulators. Stack co-edits this publication with colleague Paul Lopes from the University of Massachusetts Cooperative Extension. In addition, University of Maine Cooperative Extension's entomologist Clay Kirby and plant pathologist Bruce Watt provide diagnostic services at no charge to the industry, and Stack interprets media tests.

Supporting Industry Leadership

Two exciting recent developments reflect the industry's emerging needs and the power of collaboration among industry members and the university.

The first development is Maine's Ornamental Horticulture Council (OHC). As in many states, Maine's ornamental horticulture industry is served by several trade associations: MSFGA, MMGGA, Maine Landscape and Nursery Association, Maine Arborists Association, Maine Christmas Tree Growers Association, and Maine Golf Course Superintendents Association. While each of these associations serves a sector of the industry, they joined together to form the OHC in 1996, to address issues of mutual interest. Over the years, this group has developed a marketing program, established a research fund at the University of Maine, produced a high quality display unit to promote the industry, and established a web site (www.ohcmaine.com). The OHC has also been

active in monitoring regulations and laws that affect the industry and informing individual businesses about how they can influence future regulations and laws.

The second development is the third tally of the economic impact of the ornamental horticulture industry in New England. Perry and Stack have worked with the New England Nursery Association to publish their third economic impact survey in 2006. New England's industry (businesses deriving at least 50 percent of their income from ornamental horticulture) is valued at \$4.6 billion (2004 figures). In Maine, the industry is now valued at \$315 million, up from \$286 in 2001. The survey also reveals that Maine's industry employs at least 10,800 people, including 5,000 full-time workers, and that businesses would hire an additional 1,600 people if they were available. From 2001 to 2004, more than 60 percent of the businesses reported an increase in gross sales, more than 50 percent reported an increase in cost of labor, and nearly 50 percent reported an increase in taxes paid.

What's Ahead for Maine Floriculture?

Burnett joined the faculty at University of Maine in July 2005, and is developing a strong floriculture research program. She also brings new energy to the classroom. Stack has firmly established ornamental crops as part of the program at Rogers Farm, giving the discipline greater visibility within the university. Zhang has refocused much of his work toward woody ornamentals, but he continues to collaborate on floricultural research. The industry continues to hire University of Maine students and gives them rave reviews.

The OHC has become a strong industry advocate in the agricultural, political and academic arenas, and is working hard to make horticulture a respected agriculture component. Its newly established research endowment fund is supporting two projects this year, and that's just the beginning. Come visit us, and see what we're up to!

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