

New Floral and Nursery Crop Studies Come Into Bloom

America's home gardeners and professional greenhouse and nursery growers are eager for new ideas to help them grow attractive, healthy flowers and plants. Studies at ARS labs across the country will provide just that. And everyone will benefit.

Flowers and plants add beauty and cheer to the places where we live and work. They help clean our air. And they may contain compounds that could prove invaluable for medical, pharmaceutical, and nutraceutical uses.

Some of ARS' ornamental plants research is funded under the auspices of a Floriculture and Nursery Research Initiative. Members of several industry groups, including the Society of American Florists, American Nursery and Landscape Association, and the Ohio Florists Association, spearheaded the effort to garner funds necessary to expand ARS' floral and nursery research.

This issue of *Agricultural Research* takes a look at some of the newer floral and nursery crop investigations. Check the story on pages 12 and 13 for a quick overview of work by California scientists who are seeking environmentally friendly alternatives to the widely used soil fumigant methyl bromide. Pages 14 through 16 present updates on greenhouse studies designed to outwit formidable floral foes such as powdery mildew and mites.

Other articles this month will take you inside ARS laboratories where ornamental crop studies have been under way for a longer time. Included among them is a glimpse at what's new from ARS' Floral and Nursery Plant Research Unit in Beltsville, Maryland.

These studies—and more—focus on key problems and research priorities identified by representatives of the country's \$11 billion floral and nursery industry. Many investigations are long-term, high-risk endeavors that offer the promise of reducing chemical use, improving the postharvest life of flowers and plants, or providing new ways to control the most damaging soilborne diseases.

Other experiments will concentrate on breeding of pest-resistant flowers and plants, reducing runoff from greenhouses and nurseries, or applying the newest advances in robotics to streamline—and make safer—tasks such as pesticide spraying. In addition to the research studies described, there's yet more work going on. At Riverside, California, for example, ARS scientists are determining whether two different kinds of statice (*Limonium* species)—sold as cut flowers—can thrive on salty water. That would offer a way to reuse irrigation water, such as that which drains from California's famed San Joaquin Valley. If growers could use this lower quality water instead of

fresh water, that could help conserve dwindling supplies of high-quality water.

The pesky banana moth (*Opogona sacchari*) is the target of new ARS inquiries in Hilo, Hawaii, designed to quell this natural enemy of the familiar dracaena plant. Also known as corn plant because of the shape and rippled surface of its leaves, dracaena is one of America's most popular indoor and patio plants. Banana moth eggs hatch into tiny whitish caterpillars that feed under the bark, sometimes killing the plant. The Hawaii scientists want to help growers find a safe, simple, effective way to quash the moth.

Meanwhile, molecular biologists are unlocking secrets to the genes that control prized traits. Biotechnology offers breeders new possibilities for producing plants with superb new colors, forms, and fragrances, as well as characteristics that make the plants easier to grow.

How about blossoms with more petals than ever before? At the Plant Gene Expression Center in Albany, California, researchers have pinpointed a gene that apparently plays a key role in regulating the number of petals that make up the blooms of thale-cress (*Arabidopsis*). In their experiments with this gene, which scientists have named *ULTRAPETALA*, the researchers have produced blossoms that boast six creamy-white petals instead of the usual four.

Genes and genetic diversity are also the focus of research at the new Ornamental Plant Germplasm Center at The Ohio State University, Columbus. A joint venture of ARS and the university, the center will safeguard seeds, bulbs, and other germplasm of herbaceous ornamental species. Domesticated varieties and their wild, rare, and heirloom relatives will be stored there so that the genes of these plants can be preserved. And new studies there will produce improved methods for keeping the stored materials viable.

All this is especially good news for those of us who enjoy gardening, America's number-one hobby. Working with plants can provide solace and a welcome respite from the harried pace of an increasingly high-tech world. It reestablishes a connection with the soil—something many of us have lost in the years since our parents or grandparents left the farm to become urban dwellers.

Whether we are planting fresh geraniums in small pots on the sunny windowsill of a city apartment or preparing a new bed in a suburban backyard for a few flats of colorful pansies, we are enriched by the experience of helping to make living things grow.

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