

# Howdy from Texas A&M!



by Terri W. Starman

Where shall I start telling y'all about floriculture at Texas A&M? Well first, we are big and hot!!! *How big are we?* Texas A&M is the nation's sixth largest university, with an enrollment of more than 45,000 students. Across the state, the Department of Horticultural Sciences has about 45 faculty members and a supporting staff of more than 35 people. Faculty members specialize in research, teaching and service in all commodity areas of horticulture including floral, nursery, fruit, nut and vegetable crops. Dr. Tim Davis is professor and head of the Department of Horticultural Sciences in College Station and resident director of the Texas A&M Research and Extension Center in Dallas. Undergraduate and graduate student enrollments are more than 150 and 50, respectively. We teach about 30 different courses related to floriculture and ornamental horticulture. We require an on-the-job internship training program of all undergraduate students.

We also have two endowed chairs and one more to come that are related to floriculture. They are the Benz Chair of Floral Design and the Basye Chair in Rose Breeding. The floriculture/ornamental horticulture industry in Texas is extraordinary in its support of our teaching, research, and Extension efforts at Texas A&M. Led by Ellen Ellison of Ellison's Greenhouses in Brenham, Texas, industry members have raised \$500,000 which will be matched by Texas A&M University and its College of Agriculture and Life Sciences to create a \$1 million Endowed Chair in Floriculture/Greenhouse Crops. This endowed chair will strengthen the research and

educational programs that address the needs of the Texas floriculture and ornamental horticulture industries.

*How hot are we?* In College Station, which is located about 90 miles northwest of Houston, the average temperatures from June until August are 73°F night and 94°F day. Not a lot of temperate plants like to flower at those temperatures. But what is blooming and growing at Texas A&M is our floriculture program. And besides those three months in summer, we have wonderful weather the rest of the year. None of those cold, bleak, winter days with low light levels that only an African violet will bloom under for us! We have big skies and good light in Texas, that's for sure. And we have a bright future for the floriculture industry.

## Our Floriculture Research Targets Industry Needs

Because we are so big and hot, much of our research effort is aimed at developing new crops that are adapted to our climate. Texas has a wide range of climates and soil conditions. The Texas Nursery and Landscape Association (TNLA) has divided the state into eight specific plant adaptability areas for the purposes of plant selection. In addition to plant adaptability, other common premises of our many varied research projects are water quality and conservation and development of environmentally sound, sustainable production systems.

## The CEMAP Program

The Coordinated Education and Marketing Assistance Program (CEMAP) is an industry/university cooperative program in which university and industry leaders partner in the identification of superior landscape plants for Texas and their subsequent promotion in the marketplace. The stated purposes of the CEMAP program are to "provide highly effective marketing assistance to growers and retailers, particularly during slower periods of the nursery year" and to "ensure that consumers utilize the very best and most environmentally

responsible plant materials, products, and horticultural techniques."

One of the key points that distinguishes this program from similar plant promotion programs in other states is the coupling of evaluation and selection processes with statewide testing in a state with climate zones as diverse as most nations. CEMAP has assembled the talent and horticultural mentality to discover, modify, and/or create plants which have a characteristic or characteristics that make these plants easy to popularize to the majority of consumers. CEMAP recognizes superior genetics in old and new plant materials, then proliferates these selections and popularizes them, for the first time or again if need be, using all available mass media. One of the key characteristics of this program is the ability of the plant to be mass produced – CEMAP insists on the availability of a substantial (hundreds of thousands) supply of the selected plants before the promotion is undertaken. There is a coordinated marketing effort for each plant that provides producers, wholesalers, and retailers an opportunity to fill the production pipeline in advance of planned promotions. The plants are tailored to Texas and are so well adapted and versatile that the majority of the customers will have a positive experience with the plant.

Researchers in College Station and at the Experiment Stations in Dallas, Overton, and Weslaco are actively engaged in research with floral crops including cut flowers, flowering potted plants, foliage plants, and bedding and garden plants. Here is just a sample of the research that is ongoing.

## Texas A&M Research and Extension Center at College Station

Dr. David H. Byrne works on rose germplasm collection and evaluation. Byrne has gone to China twice to collect both wild and cultivated roses from this species-rich region. Together with Dr. H. Brent Pemberton, he has

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evaluated more than 300 rose accessions in the disease (black spot, cercospora, and powdery mildew) evaluation plots set up in College Station and Overton. Byrne and Pemberton have a regional rose evaluation trial (Texas Super Star program) in which commercial firms can enter roses for evaluation for their disease resistance and other important horticultural traits. They also focus on incorporation of high levels of disease resistance into commercial germplasm, such as the mechanism of resistance displayed by the species *Rosa roxburghii*, which appears immune to the black spot fungus. In cooperation with Dr. Sriyani Rajapakse of Clemson University, Byrne has developed a low density map of the rose genome which is the first step in the identification and isolation of markers that can be used in breeding.

Dr. Fred T. Davies' current floriculture-related research involves assessing the influence of nitrogen fertilization on insect herbivore population dynamics and crop quality using chrysanthemum as a model crop. His team is determining the influence of nitrogen fertilization levels on pest management inputs in greenhouse conditions. They have found cotton aphid and Western flower thrips population growth rates increase exponentially with increasing fertilization rates. Aphids exposed to high fertility regimes depressed plant vegetative and reproductive growth and increased ethylene production in reproductive buds and young leaves, thus influencing plant quality and saleability.

Dr. David William Reed's research in the area of floriculture nutrition is specifically based on water quality and optimum nutrition levels in minimal leach systems (ebb and flood). His efforts are currently focused on identifying the toxicity levels of each of the salts commonly found in irrigation water. He has found that the major salinity effect of irrigation water is primarily due to total salt concentration, and there is a lesser contribution of

individual salt toxicities. He also uses subirrigation to determine the optimum nutrition levels under conditions of zero or minimal leaching. His work has shown these levels are about half (or less) the levels commonly recommended in top-watered constant feed systems.

Dr. Terri W. Starman's research on new floriculture crops is aimed at finding plants adaptable to Texas summers and extending the market into spring and fall. She has been working with timing and scheduling, photoperiod, light intensity, and plant growth regulators on growth and flowering of vegetative annuals. There are so many new vegetative annuals on the market, it can be challenging for a grower trying to get started or just to keep up. Starman's work is aimed at helping growers decide which cultivars to choose for a specific marketing window and which ones to grow in a cool or warm greenhouse. She looks at cultivar selection for new products in small pots, hanging baskets, or container gardens. Her plant growth regulator work includes the use of Florel and growth retardants as foliar sprays, tank mixes, and late-season drenches. Her latest work is on shelf life of vegetative annuals to characterize postharvest disorders and determine differences between cultivars. Her studies include the effects of shipping and nitrogen toning on shelf life. Several chemicals with beneficial effects on postharvest longevity are being evaluated. Starman has expertise in floral design and has used that knowledge to teach growers and students how to combine floral crops into container gardens. Starman also conducts poinsettia trials.

### Texas A&M Research and Extension Center at Dallas

In Dallas, Drs. Wayne Mackay and Tim Davis continue to develop *Lupinus havardii* as cut flowers, along with conducting postharvest vase life research. They recently have developed a breeding line of plants that are ethylene insensitive and have made improvements in vase life of all of the advanced breeding lines, compared to 'Texas Sapphire' and 'Texas Ice' which were released in 1997. Mackay and Dr. Narendra Sankhla have begun to study the factors that limit vase life in *Phlox*

*paniculata* and have developed some treatments to dramatically extend vase life.

Also in Dallas, Dr. Raul Cabrera conducts mineral nutrition and fertilization research in ornamental crops, including cut roses, herbaceous perennials, and container nursery crops. Specific research subjects include nitrogen (N) uptake and N use efficiency in crops, fate of N fertilizers (N balances and leaching losses), use and management of controlled-release fertilizers and liquid feed programs, crop salinity tolerance and management, water quality, and growing media management.

Dr. Cynthia McKenney helped to initiate a breeding project to identify wildflowers with potential for landscape use in demanding environments. Accessions with outstanding attributes were collected, and comparison trials were conducted over several seasons. To date, two applications have been submitted for Plant Variety Protection (PVP), which are *Melampodium leucanthemum* 'Plains' (blackfoot daisy) and *Glandularia bipinnatifida* 'Vibrant' (Verbena). McKenney has been involved in screening hundreds of wildflower accessions for increased branching, compact growth habit, and increased floral density. Other crops currently being investigated are *Calylophus berlandieri pinifolius* (sundrops) and *Salvia farinacea* (mealy sage).

### Texas A&M Research and Extension Center at Overton

Dr. H. Brent Pemberton's research program is designed to serve the greenhouse and nursery industries in northeast Texas. A major project is the East Texas Bedding Plant Greenhouse and Garden Performance Trials. This program features spring and fall trials in cooperation with the Texas A&M Dallas Center and the Dallas Arboretum and Botanical Garden. Pemberton's program also addresses production problems in the areas of height and flowering control of greenhouse bedding plant and potted crops. Another major area of research is with roses. Work with pot roses has focused on postharvest shipping


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# ofa Academic Update

problems and the effects of growing environment on postharvest quality. Other work with roses is on field production of garden roses, including disease resistance testing and fungicide efficacy testing. In a joint project with the University of Arizona, recent efforts also include the effects of digging date and cold storage as well as moisture loss during the digging and potting operations on the forcing quality of potted garden roses.

### Texas A&M Research and Extension Center at Weslaco

Dr. Yin-Tung Wang is well recognized for his pioneer research on potted, blooming orchids at the Weslaco Center in the Lower Rio Grande Valley. He began his research on orchids in 1990, before the potted orchids became so popular. Wang primarily works on the phalaenopsis orchids, but also has done research on *Dendrobium*, *Cattleya*, and *Paphiopedilum* (the slipper orchid) species. His work on orchids covers mineral nutrition, water salinity, media selection, flowering physiology, programming flowering, irradiance, temperature effects, postharvest handling, and growth regulation. Wang found that phalaenopsis require light above a certain level to respond to flowering-inducing cool temperatures. This breakthrough knowledge was used to develop a technique for deferring flowering for peak demand periods. His research demonstrated that orchids do not need the high phosphorus that was being recommended. Wang continues to work on flowering physiology and breeding of phalaenopsis to facilitate flowering at high temperatures without the need for air-conditioned greenhouses. He currently studies how cooler days and warmer nights affect growth and flowering. He is also working on finding a solution to correct the leaf mottling on Oncididae orchids.

### Unique Things about Our Department

**Aggie-Horticulture.** Be sure to check it out at <http://aggie-horticulture.tamu.edu/>. Aggie-Horticulture is the crown jewel of the Aggie Horticulture Network – the largest information server containing files related to horticulture teaching, research, Extension, and public service. Operational since October 1994, this server has grown from 10,000 hits per month to its current average of more than 6 million hits per month (high monthly total: 7.5 million hits). It is the home of the popular gardening information site [PLANTanswers](http://PLANTanswers). The network also includes The Horticulture Database Server with more than 30 databases being served, including the Texas Native Trees, Texas Native Shrubs, Ornamental PicturePages, and Aggies for Hire databases. If you are looking for new employees, check out Aggies for Hire. hortIPM provides comprehensive information exclusively about integrated pest management including information pages and a searchable database of IPM control options.

**Our Facilities.** The Department of Horticultural Sciences is located in the Horticulture/Forest Science Building (HFSB) at Texas A&M University. The M. Benz Gallery of Floral Art in the HFSB was created to provide a setting for treasures from the Benz estate. Display cases in this park-like atrium of the Horticulture/Forest Science Building hold exhibits for the pleasure of students and the community at-large. A fine arts collection contains sculpture and bronze vessels, pictorial art portraying the Renaissance period through the Modernists with emphasis on Oriental block prints and Western wildlife, ceramic containers ranging from the earliest Aztec period to the most contemporary, and an extensive array of photography capturing people and places, flowers and plants, art and design on a global scale. Of special interest are the gold orchids cast by the

“lost-wax method” from fresh blossoms in Mr. Benz’ own collection. Since its dedication in April 1986, the M. Benz Gallery of Floral Art has provided an environment in which students of the Benz School and Texas A&M University can experience floral design as the fine art envisioned by M. “Buddy” Benz.

In addition to our building, we have more than 20,000 square feet of greenhouse space dedicated to research and teaching. We have two gardens: The Holistic Garden is adjacent to our building, and the TAMU Horticultural Gardens and Field Laboratory is located about 2 miles away. This 15-acre facility contains 300+ plant specimens in 27 different beds and planting areas. In addition to the gardens, the facility offers a 20,000- square-foot container nursery, 4,000 square feet of covered overwintering structures, and 6,000 square feet of greenhouse area. The Holistic Garden is used year-round for students to work in the gardens. The gardens include a culinary herb garden, vegetable gardens, flower gardens, fruit plantings, butterfly garden, and areas of wildlife habitat. The adaptive garden is being enlarged, and a new childrens’ garden area is being added.

### The Benz School of Floral Design.

For more than 55 years, persons from all walks of life have attended the Benz School of Floral Design because of their interest in the retail florist industry. The school was founded by M. “Buddy” Benz, who developed the theories upon which most education in floral design is based today. When started in 1945, the Benz School was one of the first short courses in the industry. During the spring and summer, the Benz School offers multiple sessions, each with an enrollment of 20 students to guarantee personal instruction. The text for the course is *Flowers: Geometric Form* by M. “Buddy” Benz and James L. “Jim” Johnson. This beautifully revised book,

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considered by many to be the guide to modern floral design, is used by colleges, universities, high schools, and vocational programs.

Jim Johnson has been director, curator, and instructor of the Benz School of Floral Design since 1980. He was personally selected by Benz to serve as the standard-bearer for the school, to further its reputation for fresh ideas and

innovative design, and to maintain the esteem in which the Benz name has been held. He holds the prestigious Benz Chair of Floral Design at Texas A&M, where he is a senior lecturer in the Department of Horticultural Sciences. Johnson also has been a featured designer for the American Institute of Floral Designers (AIFD), and he is the author of five Texas Certified Florist Program courses. At Texas A&M, Johnson directs the program in retail floriculture, including floral design and cooperative education.

I have left out a lot of folks and a lot of information, but I've filled my allotted space. Please visit Aggie-Horticulture, and stop by to see us whenever your travels bring you to Texas.

**Terri Starman**  
Texas A&M University  
Room 202 HFSB  
College Station, TX 77843-2133  
979-862-2910  
Fax: 979-845-0627  
tstarman@tamu.edu

