

Floriculture research results in national award

By NMSU Staff

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A bouquet of flowers may be fragrant and beautiful to the eye

but the beauty soon fades, leaving behind wilting petals.



EYE ON RESEARCH

Recognizing the challenges flower industries face in maximizing the longevity of cut flowers has won a local professor and two other research scientists a national publication award.

Geno A. Picchioni, a professor of horticulture at New Mexico State University, along with Wayne A. Mackay, of the University of Florida, and Mario Valenzuela-Vazquez, of the Universidad Autónoma de Ciudad Juárez, won the American Society for Horticultural Science Outstanding Ornamental Horticulture Publications Award for 2008.

Their article, "Correlative Supply and Demand Functions in *Lupinus havardii*: A Forgotten Side of Cut Flower Physiology?" introduces a new and possibly controversial concept in cut flower physiology known as correlative control.

"The floriculture profession has not looked at this process," Picchioni said, adding that to his knowledge, they are the first to publish anything in floriculture based on this concept.

What the researchers found through their studies is a correlation between



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Sabine Green, the floriculture program coordinator in the Department of Plant and Environmental Sciences, and Geno Picchioni, a professor in that department, examine a Eustoma flower that has similar inflorescence qualities to the bluebonnet that was the focus of the award-winning research paper.

flowers and agronomic crops, such as barley, maize and wheat.

Picchioni explained that in the correlative control process, a senescing, or dying, vegetative organ, such as a mature leaf, and an expanding reproductive structure, such as the grain, influence each other and coordinate the development of the other organ. In agronomy, this process plays a major role in determining grain protein concentration.

"In order to advance our floriculture concept to the horticulture audience, it is necessary to draw upon the extensive agronomic database," Picchioni said.

For their article, the researchers analyzed the *Lupinus havardii*, better known as the Big Bend bluebonnet, from the moment it was harvested to its sixth day of life postharvest.

What they found is that the flower structures rapid-

ly change their function from being a growing "sink" to being a resource provider.

Picchioni said that when the flower is a part of the parent plant, it gets its nutrients from the whole plant and the soil. When that flower is cut, those advantages are taken away and the flower no longer has the opportunity to go through the process of photosynthesis and other assimilation processes.

As a result, nutrients are transported from mature flowers in the lower part of the stem to newly opening flowers at the top of the stem. The researchers tracked this process by marking the flower stem with a tag after it was harvested and then analyzing the new flowers that appeared at the same time that mature flowers began to shrivel up.

Picchioni likened the correlative control concept to the popular phrase, "You

can't have your cake and eat it too." He added that in the postharvest life of a cut flower, the lower flowers are giving way to the new buds and flowers on top.

"It's one process at the expense of another," he said.

Agronomists, Picchioni said, face a similar challenge pertaining to the grain yield/grain quality relationship.

Picchioni said one of the things that really caught his eye through the research of the Big Bend bluebonnet was that 100 percent of the nitrogen taken in by new flowers could be traced back to nitrogen exported from mature flowers.

The article and matching photograph ran in the January 2007 issue of the *Journal of the American Society for Horticultural Science*.

Picchioni said he was happy just to learn some months ago that the photo accompanying the story would be featured on the front page of the journal. He was very pleased though to learn of the national award.

"I didn't see it coming. I had no idea," he said. "It completely blew me away."

In receiving this award, Picchioni said he wants to expand upon the level of basic science of floriculture in his department.

"It's good to point out something we don't know because it drives future research," he said.

"Eye on Research" is provided by New Mexico State University. This week's feature was written by Audry Olmsted of University Communications.