

## Stems succeed in sunny Southwest

Flowers aren't typical crops for Southwestern farmers. But New Mexico's sunshine might make it the ideal place to grow colorful garden flowers that stay in full bloom year-round.

NMSU graduate student Sabine Whitley began researching the viability of growing everlasting flowers in the Southwest in 1998. Everlasting flowers, which retain their color and form when dried, traditionally have been grown in the Northwest.

"Everlasting cut flowers are a huge market, and southern New Mexico is great for growing them," Whitley says. "We have a long growing season with more days of sunshine and nice weather than almost any place in the nation."

She found that New Mexico's sunshine provides the high

degree of light essential for retaining color intensity in everlasting cut flowers.

"Another plus is the lack of humidity and the high heat we get here—both are good for drying the flowers. We don't need artificial dehumidifiers or ovens like the ones used in the Northwest," she says.

Whitley collected data during summer 2000 to see which plants were optimal for southern New Mexico's climate. She documented information on four species of annual flowers planted in six rows of research plots at NMSU's Fabian Garcia Research Center in Las Cruces.

"We also planted six other species just to see how they would grow here. We tried to stay away from traditional crops like statice, which have been grown in this area before," Whitley says. "We focused on new crops."

Whitley collected data on globe amaranth (*gomphrena globosa*), strawberry fields (*gomphrena haageana*), wheat celosia (*celosia spicata*) and crested

cockscorn (*celosia argentea*).

Former associate professor Marisa Wall served as her adviser and assisted with the species selection for the research project. Spring plantings were conducted for all species, but Whitley's research shows the celosias fared better in the fall.

"The flowers were extremely productive, especially the gomphrenas. You can grow everlasting cut flowers year-round here, because it's such a mild winter," she says.

Whitley dried the flowers in a dark barn and says the low humidity and high heat made the drying process easy. "You do have to watch out for molds, which occur if you don't have enough air movement," she says. "There's a fine line between having enough air movement and too much."

Whitley says cut flower crops are a good management option for Mesilla Valley farmers.

"Because they haven't been grown here before, cut flower crops don't tend to have the dis-



SABINE WHITLEY

### Grows better by design:

Horticulture graduate student Sabine Whitley designs an arrangement for a student flower sale. One of Whitley's research crops, crested cockscomb, right, thrives in the New Mexico sunshine.

ease problems that traditional Mesilla Valley crops have. If you grow a crop year after year, the crop diseases settle in the soil. But if farmers use cut flowers in their crop rotations, the diseases don't have a way to multiply, and the flowers can keep those disease problems down." she

says. "Farmers can grow chile in the summer and flower crops in the cool season."

Farmers' fields and bank accounts could benefit from cut flower crops. Whitley has looked into marketing cut, dried flowers on a mass scale and says the market is wide open. "From personal

experience, they're easy to sell," she says.

Whitley says big chunks of land aren't necessary for growing cut flower plants. Backyard hobbyists also can turn a nice profit. "I cut 50 stems off one gomphrena in my backyard," she says. "And I harvested three times!"

## Garden trip makes science fun

It's not your average classroom, but NMSU's Landscape Garden brings textbooks to life on a small patch of land at NMSU's Fabian Garcia Research Center in Las Cruces. The garden is a popular field trip destination for elementary students who learn about plants, trees and even aquatic ecosystems.

Ryan Work, a senior horticulture student, manages the garden and strives to show children the beauty of nature. He leads them through the native plant area, explaining the importance of using plants that don't require much water in a desert environment. He walks the children through the medicinal plant garden, which doubles as an outdoor classroom for university students studying the medicinal properties of plants. Then, at the gazebo, he shows them the sculpture garden, which spells "NMSU" in flowers.

"I grew up without a real appreciation for nature, so I want to instill that awareness and appreciation in the students who tour the garden," he says. "I want them to learn about the environment while they're here, so I get them doing hands-on projects."

In one project, the children collect about 25 different seeds on their garden tour and learn about

seed propagation. In another project, the students build an aquatic habitat using papier-maché and aquatic plant cuttings.

First-grader Nathañelle Sowell says she had a "really neat time" at the garden. "I liked making the little pond. I made a fish and some rocks out of the dough to put in it, and then I put a seashell right in the middle."

The papier-maché pond mimics a real-life project that Work and fellow students Alex Benitez and Steven Hogenmiller completed this summer for a horticulture class. The students installed a large pond with a waterfall at the garden.

"Water features are becoming very popular around the country, so we installed water plants that grow well in this area," Work says. "That's the whole purpose of the Landscape Garden itself—to showcase plants that grow well here."

Under the watchful eye of horticulture professor John Mexal and with technical guidance from assistant professor Rolston St. Hilaire, the horticulture students worked on the project most of the summer. They designed the pond and waterfall, selected the plants and built the pond.

"Then we added fish, snails, dragonflies and water bacteria," he tells the elementary school



ANNA MARIA PEREZ-WRIGHT

**Hands-on science:** Jornada Elementary School first-grader Regan Cadena learns about aquatic ecosystems from senior horticulture student Ryan Work. Work helps children understand more about nature through special projects at NMSU's Landscape Garden.

students. "These help make it a self-sufficient, natural ecosystem, and we don't use any chemicals."

Work says the finishing touch to the pond area will be two banana trees that will be planted next to the waterfall this spring.

The research center is located on University Avenue, one-quarter mile west of South Main Street.

## Giving bluebonnets a boost

If you're having trouble finding blue flowers for your bouquet, you're not alone. "There is a lack of blue flowers for commercial use," says Mario Valenzuela, an NMSU horticulture graduate student.

Feeling blue? Don't despair.

Valenzuela and Geno Picchioni, a horticulturist with NMSU's Agricultural Experiment Station, are working on a solution. They're trying to get the bluebonnet—a bright purplish blue wildflower native to the Texas Big Bend region and northern Mexico—ready for the cut flower market.

"The bluebonnet has a beautiful color that could fill this market hole," Valenzuela says.

There's just one hitch.

"The problem is that the flower doesn't last as long as conventional cut flowers like roses or mums," he says. As the cut bluebonnet's floral spikes age, the bottom blooms die off, because the spikes divert all of their resources to produce the upper, younger blooms.

When treated with a silver-based compound, the ripening process that leads to the dried up flowers is slowed. However, since the compound contains a heavy metal that has been banned in flower-loving European countries, the domestic greenhouse industry probably can't rely on it in the future, Picchioni says.

The scientists tried to solve the problem by using a calcium salt instead of the silver-based compound. After a two-year study, they found that while the calcium did increase the vase life of the flower, it wasn't a consistent solution.

"Based on our earlier work with some fruit and vegetable crops, we didn't see the 'home run' we expected," Picchioni says.

However, they did discover that calcium dramatically increased the plant's root system. "The increased root growth from the calcium applications allowed the plants to use phosphorus and potassium more efficiently," Picchioni says. "This is important because it will reduce runoff of fertilizer nutrients from greenhouse operations."

Yet the primary problem of the short vase life remained. The researchers next looked for an alternative method to stop the spikes from aging so rapidly. This time, they chose an environmentally friendly chemical known as ethylbloc, which stops the production of a natural plant ripening hormone called ethylene.

Beginning in July 1999, Valenzuela applied the ethylbloc four separate times to the bluebonnet spikes after they had been cut. Ethylbloc had to be applied as

a gas in a temperature-controlled environment. The researchers found that the spikes did last longer. The actual vase life was extended from four or five days to

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ARNULFO ALDRETE



**The harvest:** A team of NMSU scientists are trying to find a way to prolong the vase life of bluebonnet flowers. Using a face mask to prevent human contamination of flower tissues, Mario Valenzuela harvests bluebonnet spikes for lab studies.

about nine days.

Picchioni says, in addition to increasing root size and vase life, calcium also plays an important role in maintaining the viability

of plant cells and tissues. Thus, the next step of the research is to find a way to get more calcium into the spikes without stressing the plant's tissue. The researchers

also plan to investigate chemical changes at the cellular level, which are a major factor in postharvest losses.

## The grass is greener

Money might not grow on trees, but NMSU's scientists have found a way to grow it in the grass. Since 1990, a patented grass from NMSU's College of Agriculture and Home Economics has earned more than \$650,000 in royalties.

Known as NuMex Sahara, the specially adapted Bermuda grass is underfoot on golf courses and sports fields in 65 countries. After a 1999 research and marketing effort, the grass is found close to home now, too. NuMex Sahara seed is sold at mass retailers like Wal-Mart, Lowe's and Home Depot.

The certified variety, released by NMSU in 1987, was the first improved, seeded Bermuda grass designed for commercial turf.

"It's easier to seed than it is to sprig, and it's less expensive, especially on large areas, so the seeded Bermuda grasses have caught on," says NMSU professor emeritus Arden Baltensperger, the plant breeder who developed NuMex Sahara after more than a decade of research. "It's also easier to transport seed rather than sod."

That portability has allowed the durable grass to make its way to golf course fairways in Hawaii, soccer fields in Peru and palace grounds in Saudi Arabia. Closer to home, the grass has been installed on golf courses like Desert Lakes in Alamogordo and Painted Dunes in El Paso, and on



**Blade runners:** NuMex Sahara, a specially adapted Bermuda grass that's grown around the globe, has raked in more than \$650,000 in royalties. NMSU turf grass experts Bernd Leinauer, left, and Arden Baltensperger say the grass variety is easy to seed, with an improved texture and brighter color.

Deming's school grounds. Now, homeowners can have the grass that's fit for royalty.

In New Mexico, compared with common Bermuda grass, NuMex Sahara offers a brighter green color and improved texture. Lawns planted with the uniform, certified seed can be reseeded later without creating patchy spots.

"What we've done with NuMex Sahara is a huge step," says Ernie Millner, senior vice president for Seeds West, a divi-

sion of Pennington Seed, which markets the variety under an exclusive agreement. "We've taken it from mostly professional turf installers throughout the United States and put it into mass merchandising around the world."

The college's share of the royalties are helping to fund a new turfgrass specialist position for the Cooperative Extension Service, filled by Bernd Leinauer.