

120° and Harvesting

Rays of light capture the subtleties of shading on gleaming red tomatoes, purple eggplant and multi-colored peppers. As you brush past, the fragrance of sweet basil tantalizes with the promise of Italian cooking. This is not the setting of the local grocery produce aisle, but a location a few steps earlier in the food chain. A new state-of-the-art Controlled Environment Structure (CES)—commonly called a greenhouse—is the latest commercial venture in La Paz County. With input from the University of Arizona Cooperative Extension, it is hoped such ventures will invigorate the local economy through full-time agricultural jobs, food distribution and high-quality produce available in local stores.

More than a greenhouse, agriculture in a CES is based on the ability to control all aspects of plant growth, including air temperature, humidity and carbon dioxide levels, as well as all aspects of drip irrigation—amount of water, timing and liquid fertilization—through a sophisticated computer program.

All of these aspects combine to create a controlled environment that is capable of growing produce all year, with harvests occurring at least twice a week. Because no soil is used in hydroponic systems, there are no weeds to impede plant growth and no herbicides are needed. Another benefit of hydroponics is that it requires considerably less water than conventional agriculture. The reduced need for herbicides and increased water savings make this an environmentally friendly method of crop production.

The Vicksburg Indoor Produce (VIP) greenhouse is a pilot project. If crops can be successfully and economically grown and marketed on a local scale, it is hoped that the facility will increase dramatically in size, employing a large workforce. Other farmers in La Paz County and surrounding counties have shown interest.

One of four new agricultural ventures in La Paz County that line Vicksburg Road as you drive north from Interstate 10, the greenhouse is flanked by three dairies, one of which will incorporate a bio-fuels plant. The association with Vicksburg Indoor Produce allows faculty and staff from the University of Arizona and La Paz County Cooperative Extension to evaluate the productivity and marketability of several varieties of tomatoes, cucumbers, lettuce, sweet peppers, hot peppers, eggplant and a mix of flavored basil grown in a greenhouse environment.

One unique aspect of the Vicksburg Farms facility is the deep flow lettuce pond, the only one of its kind in Arizona. Eleven different varieties of lettuce have been evaluated. Because temperatures in Western Arizona can skyrocket past 120 degrees, and lettuce has never been considered a summer crop, heat-tolerant varieties have been planted for summer testing. Methods for controlling maximum air

Compiled by Joanne Littlefield



**La Paz County's
New Greenhouse**

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and water temperatures associated with lettuce production are also being investigated.

La Paz County Cooperative Extension program coordinator Debbie May is in charge of education and research. She has selected several traditional greenhouse tomato, cucumber and pepper crops for trials, along with a variety of specialty Southwest peppers and chiles. She has also added interesting alternative crops such as pure white eggplant, Thai eggplant, lime basil, licorice basil, and heirloom tomatoes.

Produce is currently marketed by Vicksburg Indoor Produce through small local markets and the Bashas' grocery store in Parker. In addition, Lamm's, a small farmers market in the nearby town of Salome, and a local couple from Bouse distribute produce to residents and winter visitors. All excess produce is donated to the senior center, to the La Paz County jail, and to local groups including the VFW posts.

The facility is also open for master gardener classes and educational tours by appointment. More than 1,000 youth and adults have taken part in educational tours since the grand opening in October 2006. The youth tours are combined with classroom nutrition programs and physical activity programs at schools throughout La Paz County.

CES agriculture has the potential to provide a larger number of year-round, higher skilled jobs than traditional agriculture, according

to Linda Masters, director of La Paz County Cooperative Extension. The remote location provides benefits and challenges to businesses and the county. People living in the area are in need of consistent employment—which is a benefit—but the trained employee pool is small. With fluctuating gas prices, travel between the towns in La Paz County presents a challenge.

At present, due to its small size, Vicksburg Indoor Produce only employs two full-time workers with help from several part-timers when needed for construction or to maintain crop health, harvest crop yields, maintain the greenhouse structure, and keep the facility clean. In the past year, six master gardeners provided over 300 hours of volunteer time to help with educational tours, and a farmers market was set up to attract visitors to the greenhouse.

Masters says UA research is also examining the economics of CES agriculture as a means of small rural business development.

"We know that greenhouse tomatoes can be profitably grown on a large scale in southeast Arizona where water and weather conditions are ideal," she says. "We intend to look at smaller scale operations, a variety of alternative crops, and impacts of 'less-than-ideal' water chemistry and weather conditions to determine if CES agriculture is a possibility for rural agricultural development throughout Arizona where conditions are less favorable." ❖

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Program coordinator Debbie May checks plants at Vicksburg Indoor Produce. Crops raised on table-height benches (about a third of the greenhouse area) include herbs, peppers, chiles and eggplant. The greenhouse also features a vine crop area, planted with tomatoes, cucumbers, peppers and eggplant.



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