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## Winter visitors farm tour: How do desert gardens grow?

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Published: Thursday, February 9, 2012 8:49 AM MST

MARICOPA, The Maricopa Agricultural Center has 2,100 acres devoted to farming research and education. It's big and impressive.

Then there's the demonstration garden planted by Jerry and Judy Walp, master gardeners from Maricopa.

It's small and impressive.

The garden is a key stop on "A Day at MAC Farm," the annual Desert Ag-Ventures tour for winter visitors and seniors. A spot for this year's tour can be reserved for

Feb. 21, 23 or 29.

Here's a quick rundown of what visitors can expect. They'll get a primer on desert agriculture and the latest agricultural research, a chance to siphon irrigation water through a hose and a hot lunch.

The demonstration garden is just behind the MAC office complex, across from the mock-up farm for school groups. The Walps themselves will be on hand to answer questions.

They became master gardeners through the Pinal County Cooperative Extension in Casa Grande. The farm and the extension are part of the University of Arizona.

Jerry is a retired industrial engineer. Judy is a retired teacher.

The Walps met me and a photographer at the demonstration garden. We were previewing the upcoming tour. The garden is about the size of a one-car garage. Still, the Walps got the most out of what they had. The garden grows turnips, beets, kale, lettuce, garlic and peas. A few flowers add a bit of beauty to the variety.

The Walps planted their first demonstration garden at MAC Farm about seven, eight years ago. They began putting in flowers about three years ago, bowing somewhat to popular demand, Jerry said.

To him, a vegetable garden is for vegetables.

"My philosophy is, if you can't eat it, I don't grow it," he said.

But people like flowers in a garden, so the Walps planted them.

They started this garden in October. The turnips are just about ready. The carrots will make their appearance in April.

With a winter growing season, the Walps kept to frost-tolerant plants.

The tour typically draws a lot of retired farmers from the Midwest and the East. Jerry said they often ask if they can grow these same vegetables back home during summer. The answer is yes. And, if they bump up against some cold weather, Jerry has an answer.

Plastic.

"You can extend your growing season four to six weeks by using black plastic," he said.

In this garden, he covered the rows with a plastic tarp, leaving spaces for the plants. The plastic keeps the soil warm, the moisture in and the weeds out.



Steven King/Dispatch photo, Master gardener Jerry Walp shows a turnip plucked from the demonstration garden at the Maricopa Agricultural Center during a tour earlier this month.

Visitors also ask about growing gardens in the winter. They don't need a big yard, Judy said.

"Even those who are just in RVs, we tell them how they can do this in pots ... or just in a barrel in front of their RV," she said.

And then there are the people who confess they have little luck with gardening.

Here too, Jerry has an answer.

"If they don't have a green thumb, I suggest they plant chives. You can't kill chives."

The demonstration garden stop comes about midway into the tour, which runs from 10 a.m. to 2:30 p.m. The visitors first meet up in the large MAC conference room. Here, they listen to morning presentations, watch a video on desert agriculture and play a game to test their knowledge.

Later, they go on a field trip to a real field. They ride in a trailer equipped with seating and pulled by a tractor.

In the field, they'll be greeted by Pedro Andrade, a UA assistant professor and MAC farm researcher. His specialty is precision agriculture. Andrade will explain that tractors are becoming information intense. Horsepower is being replaced by megabytes.

In our own mini-tour, we took a van out to a field. Andrade rode alongside. Victor Jimenez drove. He runs the educational arm of MAC Farm and organized the winter visitor tours about a dozen years ago. About halfway out, Andrade asked Jimenez to stop so he could point out a tractor making its way down a harvested cotton field. It was turning up the soil. Like many modern tractors, it had a GPS antenna, providing guidance by satellite.

But another antenna communicated with a control room on the farm. It did not have to wait for signals from outer space.

"I'm getting that information right this instant," Andrade said, as if to put himself in the driver's seat.

Known as auto-steer technology, it allows for real-time course correction. It could mean the difference between a precisely straight row and one off by as much as a yard.

Tractor drivers nowadays, Andrade added, are more than just farmhands. They have to be computer programmers as well. Through the Cooperative Extension, he and other researchers now train drivers how to program a tractor.

But this was just the warm-up. Jimenez drove us to the main act, proximal sensing. He parked at the end of a field freshly planted with durum wheat.

A spidery-looking tractor — a pair of arms extending outward on both sides — stopped at the end of the row, a few paces from the van.

The tractor had started life as a crop sprayer. Now it was a research vehicle, one that could lead to the crop sprayer of the future.

John Heun stepped down from the driver's seat. He wasn't your typical tractor driver, unless a lot of them happen to be electronics engineers.

He and Andrade took us to one end of the extended arm. Attached were two instruments: an optical sensor and a sonar sensor. The optical sensor bounces light off the plants to determine how green they are. The greener the plant the higher the rate of photosynthesis. That's a healthy plant. If not so green, it could be undernourished.

The sonar uses sound to gauge the size.

Together, the sensors work to determine how the plants are measuring up. And they could tell farmers if the plant needs more fertilizer or other chemicals — or as Andrade calls it, more material.

At the moment, the research tractor only does measurements. But the next step, Andrade said, is a tractor where the sensors point out just which plants need help — and deliver it on the spot.

"In essence, we're going to the basics of agriculture, putting the right amount of material in the right place at the right time," Andrade said.

Clearly, this isn't your grandfather's agriculture.

Jay Subramani's research, however, is a bit retro. He's focused on traditional cotton varieties — those that aren't genetically altered to resist pests.

Five universities and a government research facility have partnered to underwrite his research. He's growing cotton from different regional seeds to see which has the best yield and best quality.

Visitors will hear all about that at MAC Farm's cotton gin research facility. Subramani will likely hold their attention. He's enthusiastic about his work.

On the final stop on our own mini-tour, Subramani took us to a small warehouse stocked with bags of just-picked cotton and large, tightly packed bales.

He offered some background to his research.

Farmers are finding that genetically engineered cotton works as advertised. It kills bugs that eat cotton plants. But farmers also noticed a spillover effect, Subramani said. Fewer pests are around to attack traditional crops planted nearby. This led to a bottom-line conclusion. By adding traditional cotton to the mix, farmers could hold down expenses. Traditional cotton seeds cost less and farmers can propagate them for their own use. They can't do that with patented, genetically altered seeds.

So traditional cotton is getting a second look.

The cotton used in Subramani's research is grown at MAC Farm and ginned there as well. It's sent elsewhere to be milled into fabric and later tested for quality by an independent lab. In simple terms, it's a quest to find which cotton makes the best T-shirts.

All that is very educational, but Subramani won't overlook a tour favorite. That's a working replica of a cotton gin. It's about the size of a table saw.

"It's a simple mechanism, separating the fiber from the seeds. Something that was invented 200 years ago," Subramani said, adding: "There's always a crowd around that."

**What?** MAC Farm winter visitors' tour.

**When?** Feb. 21, 23 or 29.

**What's it Cost?** \$20 per person. Registration is first-come, first-served.

**Is there a registration deadline?** No, but each day's tour is limited to 60 people. Last year's dates were booked up.

**Want to know more?** Contact Bailey Stuart at 520-381-2200 or Victor Jimenez by email at [vjimenez@az.arizona.edu](mailto:vjimenez@az.arizona.edu).

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