



## Western Vegetable Newsletter

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### **1. Soil solarization provides control of Fusarium wilt in Yuma lettuce**

When faced with a pest that threatens their crops, Yuma vegetable producers don't automatically reach for a bottle of pesticides and spray their fields. They have a toolbox of other tools they may turn to first in an effort to protect their crops. Use of these nonchemical tools, or cultural practices, is part of an approach called integrated pest management. But they're not always feasible for commercial agriculture, and used alone they have limited applications. Helping drive the search for other alternative pest control methods are declining profit margins, rising costs, global competition and an increase in environmental regulations that threaten to reduce the number of chemical pest controls. These alternatives include:

**Crop rotation:** Rotating crops to break up insect, disease and weed pressure has been an accepted and effective practice for centuries. While crop rotation is somewhat effective, it is not economically feasible for growers of our high value winter commodities to rotate to a crop grown in the winter that provides low or negative grower returns.

**Soil-less culture:** The use of soil-less media have proven effective on small scale plots in greenhouses, but are not economically feasible or practical for large acreage.  
**Cover crops:** Planting a 2 or 3-year cover crop is effective, but provides negative grower returns.

**Resistant varieties:** In many cases, varieties resistant to disease are not currently unavailable and, although promising, many resistant varieties include genetically modified plants which might be met with significant consumer resistance.

In a refreshing twist, Dr. Mike Matheron at the University of Arizona Ag Research Center has recently shown an 81 percent reduction in the effects of fusarium wilt, *Fusarium oxysporum*, in Yuma grown lettuce by utilizing soil solarization.

Solarization is a method in which clear plastic is laid on the soil surface to trap solar radiation and heat the soil to temperatures high enough to kill pests. The top six inches of soil can heat up to as high as 125 degrees – hot enough to kill a wide range of soil inhabiting pests.

Fusarium wilt first appeared in U.S. lettuce in Huron, Calif. in 1995. The disease was found in Yuma County, Ariz. lettuce fields in 2001. While few fields currently have Fusarium wilt, Matheron expects more to be found this year. One of the wilt's spores, he said, allows the fungus to remain in the soil for an estimated 10 to 15 years.

“For long-term control, soil solarization is something we need to pursue and may be quite valuable,” Matheron said. Soil flooding also shows promising results but solarization was the most effective of the two-tested UA methods. In 2005, the UA conducted a field trial in which plastic was laid for 60 days. Non-solarized areas showed the incidence of *Fusarium* while the solarized soil grew healthy lettuce. At crop maturity, unsolarized areas featured fewer marketable heads while head growth in solarized areas was quite good. Although long-term control strategies include resistant cultivars, “We don’t have fusarium resistant crisp head cultivars now,” he noted. “The seed companies are working to develop these and hopefully we’ll have them in the future.”

Since its inception in 1976, soil solarization has been tested and modified under local conditions in more than 50 countries. Solarization has already proven to be an effective pest control tool for tomato, pepper and eggplant production in the northern part of Florida and North Carolina, strawberry production in California, tree nursery production in the southeastern US and orchard crops in California.

## **2. Crop Production, a New UA Degree Program - Kurt Nolte & Stephen Poe, University of Arizona**

The University of Arizona in Yuma began a locally dedicated academic program in 1994 consisting of agricultural business and production courses leading towards a bachelor's of science degree in Agricultural Systems Management. The degree program is a collaborative effort among prominent faculty at the University of Arizona, Northern Arizona University and Arizona Western College and prepares students for employment in the agricultural and business industries.

As part of a proud tradition of providing academic opportunities in agriculture for students in the southwest, the University of Arizona, College of Agriculture & Life Sciences, has recently developed a new degree program in Crop Production. Newly approved by the Arizona Board of Regents, the major is an integrative and applied program that cuts across two departments, Plant Sciences and Soil, Water & Environmental Sciences. By consolidating efforts into a single degree offering, the flexible program provides a specific and focused curriculum in either agronomy or turf science. Having a strong foundation within the sciences, the major combines a balance of

crop and soil science courses into a program that launches graduates into an increasingly technical job market.

For Yuma students, the new degree program is being offered as a 2+1+1 academic major with 2 years invested in earning an AS Agricultural Science degree at Arizona Western College, 1 year at UA-Yuma and 1 year at the UA main campus, in Tucson. The year in Yuma provides a unique opportunity for students to learn about the actual management of pests/diseases, the cultural or technical aspects of production and gain valuable experience in one of the premier winter vegetable production areas in the world. With the entire Yuma agriculture faculty available for instruction, the University of Arizona in Yuma will impact student learning from a collection of world renowned instructors and scientists, each covering a variety of agriculturally related topic areas.

It is anticipated that this program will enable the UA to compete with other institutions, such as those in California and New Mexico, since many southwest agricultural employers want this program and can place students who go through this program within their industry.

Dr. Jeff Silvertooth, a key collaborator in the development of the program, made note last month at a UA preseason vegetable workshop that J.T. Boswell Company, a large farming/land/water holding company in California and Australia, donated a \$30K grant last year in order to begin recruitment, advertising and further development of the program. "They are very interested in this because they hire many graduates with an agronomic background to fill managerial positions. Students from schools such as the UC system, Fresno State, New Mexico State, etc. are becoming fewer and farther between, so increasing the number of students benefits the industry as a whole." Similarly, the Arizona Vegetable Growers Association donated \$10K to an endowment that will be used to support scholarships in this program. The Arizona Crop Protection Association's scholarship program is also available to students in this program.

The new degree program is unique in Arizona. NAU and ASU do not offer similar programs and could be a reason why good students leave the state for a degree in production agriculture. A degree in Crop Production from the University of Arizona provides the competitive edge for those interested in a future in production agriculture. For more information call the Department of Soil, Water and Environmental Sciences at (520) 621-1646 (Tom Wilson) or the Department of Plant Science at (520) 621-1582 (Elizabeth Davison). Students can also contact Dr. Stephen Poe, the UA-Yuma Academic Program Coordinator, at (928) 317-6418.

### **3. Ag-tourism: Entertainment or education?**

Lately, I have been guiding tours for a variety of groups that are either passing through Yuma on their way to California or somehow related to the agricultural industry. In the past I was asked to be a tour-bus guide for a collection of about 20 tourists from San Diego.

As I chatted with this particular group, I asked them where they were headed after they left Yuma following the tour that afternoon. “Back to San Diego,” they told me, almost in unison.

These visitors weren't simply passing through Yuma on their way to Las Vegas or Phoenix, they came to specifically visit Yuma and its produce industry.

I had a momentary flashback to our successful “Lettuce Days” celebration this past year. There, I volunteered at the equipment display area, answering question after question about the vegetables grown here and the science behind it.

It was as clear then as it was on this recent tour that people who know little about agriculture are really interested in learning about vegetable production in Yuma.

Back on the bus, the tour concluded with a visit to a Somerton broccoli field in the process of being harvested. These 65- to almost 90-year-old people, cameras ready, acted like eager children as they hopped off the bus to get, for some, their first glimpse of how their food is produced.

Things that we take for granted are true treasures for others.

As I drove back to the college, I began to think about how lucky we are to be in an area where agriculture is such a dominant picture in our landscape and wanted to find out why so many people are drawn to learning about it.

I quickly realized that while the popularity of specific enterprises such as “pumpkin patches or U-Pick farms” may ebb and flow, the idea of catering to the public desire for a “farm experience” remains.

In fact, a Wisconsin ag-tourism project in 1995 identified five primary audiences for agricultural tourism: 1) elderly people who take bus tours to see the country; 2) people who are aware that agriculture is high-tech, very visible and educational; 3) people who want to learn about where their food comes from; 4) families interested in tours that could be enjoyed by both parents and children; and 5) persons already involved in agriculture, including international visitors.

Agricultural tourism can educate urban tourists about the problems and challenges facing growers and the people associated with farming. While most Yuma residents know that agriculture is a vital component to our community, more and more people from urban areas are becoming isolated from the industry.

In December 2002, the Yuma Area Ag Council invited members of our state Legislature to Yuma for a one-day agricultural tour of the produce industry in our area. It seems that even our state policy makers in Phoenix appear out of touch with our billion-dollar produce industry.

Ag-tourism provides an educational avenue for people who are not in mainstream agriculture.

Yet, ag-tourism in Yuma is infinitesimal when compared to other farming areas in the United States. As an example, ag-tourism has caught fire in the Midwest, primarily due to the falling prices of agronomic crops and products produced in that area of the country.

There, farmers use ag-tourism as an “entertainment venue” and a supplement to their income. The chief qualification for Midwest rural landowners who expect to make a living from their land through ag-tourism is the desire and ability to cater to tourists and meet their expectations of a farm visit.

Some farmers have made their farms totally accessible to visitors. Tourists are invited to observe the growing crop, view the harvest process and taste and purchase the final product. The whole visit usually takes just one or two hours, but some farms have facilities for visitors to linger, perhaps to have a picnic and simply enjoy the rural ambiance.

Last fall in Wisconsin, several workshops were organized with farmers, local business leaders and motor coach tour operators to discuss how best to organize and put on farm tours.

Committees were formed to look at tour site evaluations, inventory of the area's resources, tour marketing and familiarization of tours. Another committee is organizing tours for people such as tour bus guides and local reporters to educate them about agricultural tourism.

Yuma agriculture is much different than in the Midwest. Agriculture here is fast paced, big business, multi-state, transitory and complex, and it is clearly not dependent on tourism for its survival. Understandably, food safety and security issues also prohibit large-scale visitation to Yuma produce fields.

Consequently, Yuma ag-tourism may never develop into anything more than a few isolated tours for selected groups each year.

Yet, Yuma agriculture does understand the necessity of public outreach and education. Youth organizations like FFA and 4-H, successful events like Lettuce Days, our weekly Farmers Market and our Yuma County Fair provide opportunities for agricultural experiences at a local level.

It seems fitting that if tourists or visitors at all levels can be educated on issues that concern our agricultural industry either from tours or other agriculturally related events, policies more favorable to agriculture or those that promote agriculture awareness could be better established in our area.