What’s new?

In the May 14, on-line issue of 'The Packer', there is an article on the partnership taking place between HydroSerre Mirabel (the Quebec-based hydroponic entrepreneurs), Tanimura & Antle (the largest family-owned-and-operated produce company in the Salinas Valley in CA), and NEXT (the largest greenhouse lettuce producer in Mexico, formerly known as Vegetlan). This partnership has the potential to eventually supply the entire continent with living Boston lettuce year-round, and Tennessee will be a part of it.

HydroSerre Tennessee, LLC announced its selection of Livingston in Overton County as its “site of choice” to build a new production facility back in February. The main product grown at the site will be a full head of lettuce with the root ball attached, promising “fresher flavor”, but the company also plans to produce herbs and other specialty greens there. HydroSerre Tennessee, LLC will invest in excess of $40 million into the community and provide nearly 300 jobs.

The first 12.5-acre greenhouse is due to be in production by February, and is the first of four identical greenhouses to be built in Livingston. When completed this facility will produce 50 million heads of lettuce annually, says Martin Desrochers, president of HydroSerre Mirabel. This firm now has operations in Quebec, Tennessee and Mexico, and believes they can supply the needs of the East Coast, he said. “Overton County provides an optimal location for this facility, since it is close to the Eastern corridor and allows us access to key target customers in the region. In addition, we are optimistic about the job opportunities that we can offer the residents of this community,” said Desrochers. Within the next year, the partnership also has tentative plans to add a Western U.S. greenhouse operation.

“As consumers look more and more at sustainability and food miles we need to put the production closer to them,” said Rick Antle, chief executive officer of Tanimura & Antle, Inc.

For more on this story, visit ‘Top News From The Packer - May 14′ at www.thepacker.com and search ‘Mirabel’, or read ‘Overton County Selected as Future Site of Hydroponic Facility’ at http://info.tnanytime.org/tngov/?p=695.

Correction

Last week, the email address given for Dr. Brandon Smith, author of ‘Considering Organic?’ was incorrect. Dr. Smith is a research scientist investigating organic and alternative crop production at the University of Tennessee and his correct email address is: brsmith@mail.ag.utk.edu.
Fertigation: A Good Production Tool When Used Effectively

By Dr. Alvin D. Rutledge

Fertigation, the use of fertilizer and water through the drip irrigation line under plastic, is one of the best vegetable and small fruit production techniques that have come along in several years. For instance, if a grower has the water supply necessary to irrigate the crops, this technique will almost eliminate water as the limiting factor in high yield, high quality production. Of course, it has to be used to provide the water needed. Many growers like to install the system, but either forget to use it or inadequately use it during the growing season. When inadequately used, water will not be provided to the root system of the plant for the uptake and potential movement of any applied fertilizers. Fertigation is also a very good method of enabling the continuous presence of fertilizer in the active root zone of growing plants. When a water-soluble fertilizer is applied in adequate amounts over the productive growth period and kept in the active root zone of the plant, then there will be sufficient moisture present to maintain fertilizer uptake, plant growth and fruit size throughout the season. In addition, a well-managed fertigation system is likely to reduce certain disease and stress problems that affect vegetables or small fruits. When one is growing vegetables or small fruits to sell either at the farm market, at farmers markets, through other local outlets or even wholesale, what are the major things a buyer considers when deciding to purchase your product? In general, buyers look for color, shape, size and freedom from defects. If you have a good understanding of how fertilizer affects all of these, then fertigation provides an opportunity to improve these qualities. As a grower, what are your major concerns in having a crop to sell? You essentially want the same things as a buyer except that you want high yields, as well as good color, shape and size and as much freedom from defects as is possible. If you understand the fertilizer materials that provide for plant growth as well as those that influence appearance, then it is possible to improve on all of those quality parameters just by knowing how to effectively manage your fertigation program.

If you want to stimulate more plant growth so more flowers will be produced to increase yield, which fertilizer materials would you most likely apply? To know when to stimulate new growth, you must know the growth habit of the plant and what growth parameters are considered normal for the growing points. When you know that, then you can make rapid adjustments in your fertigation program. If you desire to reduce grey wall, which material would be the one you would most likely apply? If firmness is the quality parameter you desire to improve, which materials are you most likely to apply? Which of the fertilizer materials contribute to size? In cucurbits, which fertilizer materials contribute to shape? Do the plants send you a message that signals problems are developing? In some situations, they do. If you know the signals, and are in the field on a regular basis, you can pick up on signs of distress from the growing point, or the leaf size, shape or color. A plant growing point will send a message that will tell you water is getting low prior to wilt, or it will send another message that will provide an idea of the fertilizer problem in the root zone just by the growth that occurs. To know if the growth is too little or too much, you must know how much growth should occur over a few days, as well as what the foliage does during that period. Do you know the fertilizer and water problems that normally occur in your crop and the fertilizer practice required to prevent them? If so, will you wait until the problems arise on the plant before trying to correct them, or will you take preventative action before the onslaught of the problems? Is it likely that you could use higher levels of fertilizer safely with fertigation than if the crop was dependent on rainfall alone? Think about that for a minute. When it is dry and fertilizer in the root zone is high, what can and often does happen? Will it result in a reduction of the feeder roots or will it increase feeder roots? It is generally well known that such conditions will result in a reduction of feeder roots and a loss of growth in the plant. What about continuous levels of adequate moisture and fertilizer in the root zone? Will it stimulate growth or will growth be severely stunted? Either can occur (Continued on page 4)
Question of the Week

Q: A Vo-Ag teacher told a producer to put lime pellets and Epsom salts in the tomato hole at planting and that would solve his blossom end rot problem and he wouldn’t have to spray calcium. What do you think? -T.W.

A: Blossom end rot (BER) is a physiological disorder that is caused by a calcium (Ca) deficiency in developing fruit. However, it is rarely caused by low Ca levels in the soil; more often it is caused by extreme changes in soil moisture, drought stress, root damage, or rapid growth due to too much N fertilization. Proper management can help:

1. **Get a soil test**! Do not assume that BER is a sure sign that the soil lacks Ca. But do maintain the soil pH around 6.5. Liming, if needed, will supply Ca to the soil.

2. **Follow your soil test recommendations**! Use a nitrate nitrogen (N) rather than one that releases N in the ammonium form. Excess ammonium ions reduce Ca uptake. Also, be sure not to over-fertilize, especially when fruits are small.

3. **Avoid fluctuations in soil moisture** by using mulches and/or irrigation. Plants need 1” of moisture per week from rain or irrigation for proper growth and development. Fluctuations between wet and dry soil inhibit Ca movement & encourage BER. Keep it moist!

4. **Choose less susceptible varieties**; some are more prone to BER than others.

5. **Choose a site with good drainage**. Excess water smothers roots leading to reduced Ca uptake.

6. **Avoid severe pruning**. Severely pruned tomato plants are more prone to BER than unpruned plants.

7. **Do not cultivate too deeply**. Deep cultivation can damage roots and reduce Ca uptake.

8. **Foliar applications of calcium**? This management tool gets mixed reviews. Some say sprays are of little value because of poor Ca absorption and movement to fruit where it is needed. Others believe sprays have a benefit. Soil treatments and prevention by cultural practices are preferred.

For more information, read the UT Extension publication on BER by Dr. Steve Bost, at: [http://www.utextension.utk.edu/publications/spfiles/SP277-Y.pdf](http://www.utextension.utk.edu/publications/spfiles/SP277-Y.pdf).

Weather Report

While the good conditions for planting will continue, this means that the conditions for growing will remain dry for the next week. Temperatures will cool down a bit, with high’s in the mid-70’s to low 80’s across much of the state. As we are still operating at a moisture deficit for the year, make sure you have an irrigation and moisture retention plan (mulch) in place. As mentioned above, plants require about an inch of water a week throughout the growing season. If plants are water stressed, this leads to problems with nutrient uptake and growth, as well as making the plants more vulnerable to pest attack. All of these make it harder to produce a high yielding crop that will pay back what you’ve put into it. A little water now could pay off later.

Crop Report

The Farmers’ Markets are all opening for the season, and planting continues across the state. With planting, and as we’ve talked about a lot in this issue, comes the need for proper fertility management. Dr. Warncke, Michigan State University Professor of Soil and Crop Sciences, addressed this issue and provided tips to minimize loss and maximize nutrient uptake in a recent MSU Vegetable Crop Advisory Team Alert.

“During the first 4-5 weeks after seeding or transplanting, the requirement for N of vegetable crops is relatively low,” he says. “Where possible, apply N, P and some K in a band near the transplant or seeded row. This will increase early utilization of these nutrients compared to broadcast incorporation. By banding fertilizer the early N rate may be reduced by 25%, e.g. 30 versus 40 lbs N/acre. Then, make subsequent top or sidedress N applications as needed.”

This follows the same principle that Dr. Rutledge mentioned in his fertigation article - provide the N at the time the crop needs it to increase plant uptake and minimize the potential for loss by leaching or denitrification.

For the rest of this story, ‘Holding the line on fertilizer costs’, visit: [http://www.ipm.msu.edu/cat07veg/v04-18-07.htm](http://www.ipm.msu.edu/cat07veg/v04-18-07.htm).
Fertigation (Continued from page 2)

depending on the grower’s knowledge and ability to read the messages the plant sends and to assess the fertilizer and moisture levels needed in the root zone.

You may ask if it is necessary to soil test when using a fertigation system. The answer is a resounding “yes.” To get plants off to a good start, you must know the residual fertility levels in the soil. Once you know those, then you have a good starting point to begin your fertility program. This will enable you to get starter fertilizer worked into the soil prior to installing the plastic and driplines. If all of the nutrients necessary to produce a crop with good yield, color, shape, size and as much freedom from nutrient/water defects as possible are present from the beginning, then it is no problem to maintain a good fertigation program for growth during the season. Hopefully, these thoughts will cause growers to become more observant of their crops throughout the growing season. Maybe they will learn to be more observant of the subtle messages that plant foliage, growing tips or colors provide as growth occurs during the season. If growers have a good idea of the indicators provided by the plant, then it becomes easier to know how to manage and use the fertigation system.

Dr. Alvin D. Rutledge is the president of Superior Horticultural Consultants, Inc. and a Professor Emeritus in Extension Plant Sciences at the University of Tennessee.

Upcoming Events

North Carolina Potato Association Annual Meeting, May 21, 2007, Elizabeth City, NC
For details, email Tommy.Fleetwood@ncmail.net.

Tennessee Agritourism Association Meeting, June 11, 2007, Amazin’ Acres, Sparta, TN
Contact Vera Ann Myers for more information at verann@xtn.net.

Blooms Days Garden Festival and Marketplace, June 23-24, 2007, East Tennessee Research and Education Center, Knoxville, TN

Tobacco, Beef and More, June 28, 2007, Highland Rim Research and Education Center, Springfield, TN

Summer Celebration, July 12, 2007, West Tennessee Research and Education Center, Jackson, TN

National Association of County Agriculture Agents Annual Meeting/Professional Improvement Conference, July 15-19, 2007, Grand Rapids, MI

2007 Annual Small Farm Expo/Small farmer Recognition Program, August 2, 2007, Tennessee State University Research and Demonstration Farm, Ashland City, TN
For more information and registration, contact Hilda Gooch at 615.963.5530 or agooch@tnstate.edu.

Steak and Potatoes Field Day, August 7, 2007, Plateau Research and Education Center, Crossville, TN

Potato Association of America 91st Annual Meeting, August 12-16, 2007, Idaho Falls, ID
For details visit www.conferences.uidaho.edu/PAA.

International Irrigation Show, December 9-11, 2007, San Diego, CA
For details, call 703.536.7080 or visit http://www.irrigation.org.

Tennessee Fruit and Vegetable Association Convention, December 9-11, 2007, Nashville Airport Marriott, Nashville, TN

Programs in agriculture and natural resources, 4-H youth development, family and consumer sciences and resource development. University of Tennessee Institute of Agriculture, United States Department of Agriculture and county governments cooperating. UT Extension provides equal opportunities in programs and employment.