March 1, 2008

**Commercial Horticulture:**
Future Cooperative Extension Programs, Business Planning and Crop Production Issues & Alternative Crops

This newsletter is intended for people interested in commercial fruit and vegetable production, business planning and North Carolina Cooperative Extension Service meetings throughout North Carolina. For back issues of this newsletter please go to the Jones County Extension website and click on the **Commercial Horticulture, Nursery & Turf** menu option on the left side of the website. The website address is: http://jones.ces.ncsu.edu

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**Upcoming Workshops, Tours & Meetings**

March 6, 2008. **Fruit Tree Pruning Demonstration / Workshop.** 10 AM – 11:30 AM. Pender County Cooperative Extension. Dr. Mike Parker – guest speaker, pruning expert. Charlotte Glenn – host. Contact Charlotte at the Pender County Extension office at (910) 259-1235 for more information.

March 12, 2008. **CEFS Seasons of Sustainable Agriculture Workshop Series, Twilight Tour: Season Extension.** Contact Lisa M. Forehand (919) 515-5373, for more information


March 20, 2008. **Jones County Pesticide Disposal Day.** Contact the Jones County Cooperative Extension office for location and time.

April 10-11, 2008. **SPANISH PESTICIDE SCHOOL.** 8:00 AM - 5:00 PM each day, Smithfield, NC. Pesticide School, TAUGHT ONLY IN SPANISH, Johnston County Agricultural Center, Smithfield, NC. Pre-Registration is required by calling Johana Furr with NCDA&CS Pesticide Section at (919) 733-3556.

April 10, 2008. **Basic Procedures with Small Farm Equipment.** Center for Environmental Farming Systems, Goldsboro, NC. 9:00 AM - 3:00 PM. Leader: Grace Summers (NCA&T State University) Workshop Registration Fee: $20 (includes lunch). Call (919) 513-0954.

This workshop will provide and introduction issues relating to small farm equipment use by beginning farmers, and those just thinking about it. We will cover the basics of starting and handling a small garden tractor, rototiller and other equipment. Safety questions related to PTO’s, pressure and gasoline engine equipment.


Participants will be introduced to food safety and safe food handling as they relate to Good Agricultural Practices. Topics will be addressed with modules being developed for
training of growers and others selling into the local food market.

**Business Planning & Management:**

“Quality in a product or service is not what the supplier puts in. It is what the customer gets out and is willing to pay for. A product is not quality because it is hard to make and costs a lot of money, as manufacturers typically believe. This is incompetence. Customers pay only for what is of use to them and gives them value. Nothing else constitutes quality.”

*Peter Drucker, American (Austrian born) management writer (1909-2005)*

**Quality Produce**

I am obviously NOT Peter Drucker, and I will never claim to be as knowledgeable about business management as someone like Mr. Drucker. I have never run my own business, and I certainly do not have the reputation or insight as a business guru that he has – nor would I infer that – but as many CEO’s in the world say Peter Drucker’s words speak volumes. This passage speaks volumes to me so I thought I would share my thoughts on it with you.

I want to try to put a horticultural spin on Mr. Drucker’s quote. The ‘spin’ on this is a twist on a question you have heard from me, and others inside and out of Cooperative Extension, numerous times. “What does your customer want?” It could also be equated to that age-old question, “Where are you going to sell the product, even if you can grow it?”

None of these questions are easy to ask or get answered, but in today’s world, it is imperative that you as a manager ask the right questions to get the answers. Whether you are running a farm, a roadside market, a farmers market or a widget factory, you need to know who is buying your products and why. You need to take time to ask your customers questions such as:

“What do you like about my tomatoes?”

“How do you use my sweet potatoes?”

“How often do you shop at my farm or roadside market?”

“What brought you to the market today?”

“Is there something about the produce you bought today that made you come here instead of going someplace else?”

In the hustle and bustle of the day we all forget to solicit feedback from our clients, and yet Mr. Drucker’s view is that the product you are selling is not your product – your customer is your product. You as a manager have to take time to understand how to improve your relationship with your customer, and understand their needs before you can make the sale.

Remember Peter Drucker’s line from above, “Customers pay only for what is of use to them and gives them value. Nothing else constitutes quality.”

That said, we all know quality sells. There is obviously a fine line between selling a value-added product and selling a commodity. In many places, selling a value-added product has evolved beyond the jar of jelly or jam or soy candles. Selling a value-added product in today’s world means you are selling an experience at your farm; selling the opportunity for people to get back to their farming roots, even if it is for only a few hours; and selling the memories of spending time outdoors.

Selling quality products and developing quality customers is a time consuming, challenging and expensive job, but done correctly, it can lead to long term profits. Keep this in mind as you go into the 2008 season. Are you as a producer and marketer? Are you ready to ask questions? More importantly are you ready to hear the answers and do something about them?

**Crop Production**

**History Lesson: Growth Factors for Crops**

There are a number of external and internal factors that affect crop growth each year. Drought / moisture stress is one of the most prevalent facing us going into 2008. That said, I want to offer a quick history lesson on some of the basic research that is the basis for the crop production management decisions many use today.

There are some basic laws and/or theories of science that govern a lot of what you manage and understand. None of them are new, but they laid the foundation for a lot of
research over the last century. While understanding these laws will not guarantee success, I hope it will help you better understand what is happening in your fields and help you figure out ways to minimize crop losses and/or increase crop yield.

Justus von Liebig (1862) introduced the *Law of the Minimum*. This law says, “A deficiency or absence of one necessary constituent [nutrients], all others being present, renders the soil barren for crops for which that nutrient is needed.”

F.F. Blackman introduced the theory of *Optima and Limiting Factors* (1905). It states, “When a process is conditioned as to its rapidity by a number of separate factors, the rate of the process is limited by the pace of the slowest factor.” In other words if one nutrient is limited in its availability, the overall growth of the plant will suffer despite the abundance of the other nutrients.

E.A. Mitscherlich (1909) developed the equation that identified the *Law of Diminishing Returns*. This law says, “When plants had adequate amounts of all but one limiting element the growth response was proportional to the limiting element.”

And P. Macy (1936) proposed a theory called *Critical Percentages*. This theory says, “There is a relationship between the sufficiency of nutrients and plant response in terms of both yield and nutrient concentration of plant tissues.” In other words if there is an adequate amount of a given nutrient in a plant, then you should be able to expect a positive response in growth.

These theories lay the foundation for much of the plant nutrition information NC State and other universities researchers provide. However, there are also reasons as to why these are not hard and fast laws that you can ‘take to the bank’.

1. Biological conditions are complicated and have an amazing capacity to find ways to compensate for nutrient deficiency by utilizing a slightly less suitable nutrient.

2. In some plant species, the preferred chemical might not be available and a less suitable chemical might be absorbed in its place.

3. Some factors modify others, such as the presence of excess phosphorus decreases zinc uptake and excess potassium in soils decreases magnesium uptake.

4. Plant growth factors affect plant growth, which in turn affects the growth of other plants, i.e., if plant populations are too high, there is too much competition for sunlight, nutrients and water for all plants to survive or be the highest yielder.

5. More than one of these factors may occur at the same time.

If you think about how plants grow and how these factors affect growth, finding the right balance is the management challenge you face. It is the critical part of growing a profitable crop. Applying too much fertilizer can lead to salt injury or reduces the uptake of vital nutrients. Overlooking these problems leads to crop loss and ultimately lost income.

Regardless of the problems you face, I hoped to give you a sense of the foundation these scientists laid for today’s researchers. The laboratories and methods used in the late 1800s and early 1900s might not meet today’s standards, but they provided the fundamental research-based knowledge that helped our industry grow to where it is today.

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### 2008 Vegetable Crop Handbook

The 2008 Vegetable Crop Handbook is now available. I have 15 copies in my office for vegetable producers in Jones, Craven, Lenoir and Onslow County. This handbook is an excellent resource for calculating fertilizer rates, calibrating spray equipment, and provides planting recommendations, and giving product recommendations for herbicides, fungicides and insecticides for a multitude of vegetable crops. If you need a copy of the 2008 Vegetable Crop Handbook, please call or email me at the Jones County Extension office, and I try to get you a copy.

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### Irrigation

The drought of 2007 continues for the most part into 2008. Recent rains have helped alleviate the immediate need for water but as you know our water levels are still a long way from being full.

Vegetables are 80%-90% water, making irrigation a critical management tool for your farm. Irrigation helps crop yield by increasing plant health and vigor, increasing the size of

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the fruit and by helping prevent defects like poor pod fill or kernel set from occurring.

The drawback to irrigation is that no one can control the amount of water Mother Nature delivers. An intense rain event that drops three inches of rain in two hours can overwhelm fruit like cantaloupe and watermelon – causing them to burst due to excess water pressure in the shell of the fruit.

Many vegetable crops have critical periods in their life cycles that affect how well they will respond to irrigation or natural rainfall.

The following information is from the 2008 Vegetable Crop Handbook. A complete list of crops and their critical periods can be found in the 2008 Vegetable Crops Handbook on page 13, Table 8.

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<th>Crop</th>
<th>Critical Period</th>
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<td>Asparagus刷</td>
<td>Head development</td>
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<tr>
<td>Lettuce</td>
<td>Head development</td>
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<tr>
<td>Potatoes, Irish</td>
<td>Tuber set and tuber enlargement</td>
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<tr>
<td>Tomatoes set</td>
<td>Early flowering, fruit and enlargement</td>
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These crop stages are important, but there are other factors involved in using irrigation effectively. Soil type plays a significant role in how irrigation water must be managed. Soils vary greatly in their ability to hold or drain water. Soils with higher organic matter levels hold water better than soils – usually sand – with low organic matter.

Irrigation must also be managed effectively by monitoring soil water holding capacity (WHC). WHC can be measured by using soil tensiometers. These gauges measure the osmotic pressure – the amount of physical force that pulls water from an area of high concentration to an area of low concentration. In a tensiometer the ceramic tip acts the same way the cell walls do in plant roots. If the soils are dry, the amount of ‘pull’ plant roots exert on water in the soil increases. If the soil is saturated, the amount of ‘pull’ on the water in the soil is much less. The ebb and flow of soil moisture impacts plant vigor and yield and is what makes irrigation so critical.

New research suggests frequent irrigation events that keep soil moisture levels in a narrow range – between 75%-90% WHC, maximizes crop growth. Infrequent watering not only increases the stress on the crop but can also lead to leaching of plant nutrients out of or below the root zone if left unattended.

Keep this in mind as we go into 2008. If the drought continues producers should consider, if they have not already done so, investing in an irrigation system. There are financial risks involved in buying this equipment, but the rewards can pay back many times over.

If you have questions about any of the information, upcoming meetings, business strategies, or crop production management issues, please call me at the Jones County Extension Center at (252) 448-9621. I can also be reached by email at: Mark_Seitz@ncsu.edu