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I. NOTES OF INTEREST

A. Vegetable Crops Calendar.


B. Publications

Contact the author for reports.


II. COMMERCIAL VEGETABLES

A. Sustaining vegetable production in Florida in-service training agenda.

April 28-30, 1998-IST#874:
In-Service Training
Seminole County Extension Auditorium
250 W. County Home Rd., Sanford, Florida
407-323-2500 ext. 5554

Agenda
Tuesday, April 28: Organic Vegetable Production in Florida
1:00 pm Introduction & announcements.
Dr. Marion White
1:10 Overview of organic practices, status of farms, marketing, and current regulations.
Gary Brinen
2:00 Nematode management options for organic growers. Dr. Bob McSorley
3:00 Break
3:15 Winter legumes as fertilizer sources and conservation tillage for vegetables in Florida. Dr. Raymond Gallaher
4:15 Break
4:30 Insect control for certified organic growers-what is available and does it work.
Dr. Phil Stansley
5:00 Break
6:30 Dinner and discussion

Wednesday, April 29: Alternative and Sustainable Vegetable Production
8:30 am Introduction & announcements.
Richard Tyson
8:40 The current status of greenhouse vegetable production in Florida. Bob Hochmuth
9:10 Low-tech, non-circulating hydroponics.
Richard Tyson
9:40 Tour of area vegetable greenhouse operations.
11:45 Lunch on your own
1:15 pm Tour continued
2:45 Sandland carrot production.
Dr. Jim Strandberg & Dr. George Hochmuth
3:30 Soil solarization and other alternative approaches for management of soil born pests. Dr. Dan Chellemi

5:00 Break

Thursday, April 30
8:30 am Program planning, administration, and discussion. Dr. Steve Olson & Dr. Ken Pernezny
12:00 Adjourn

(R. V. Tyson, J. M. White, Vegetarian 98-02)

B. Sap test meters ideal for post plant fertilizer management in sandland sweet corn production.

Now that the buyout of the Zellwood muck farms by the St. Johns Water Management District is almost complete, there may be marketing opportunities for sandland corn production in the 1998-99 growing season. Zellwood muck farms grew seven thousand acres of sweet corn during the 1995/96 season.

Recent trials at the Central Florida Research and Education Center in Sanford showed that as nitrogen rates increased, sweet corn yields increased (Table 1). Excessive rain during growing season resulted in the highest yields being obtained at the 225 lb/acre rate which confirms the IFAS rain rule (Additional supplemental sidedress applications of 30 lb N and 20 lb K2O per acre should be applied only after rainfall/irrigation amounts that exceed 3 inches within a 3-day period or 4 inches within a 7-day period).

Cardy meter sap test results showed similar trends compared to the tissue analytical Lab results obtained from the same samples at the University of Florida (Table 2). It only takes about 5 minutes to get Cardy meter sap test results and they can be conducted from the seat of a pickup truck. The Lab results take from 3-4 weeks. For short season vegetable crops the choice is obvious.

Cardy meters can also be used for soil N and K analysis if you order the appropriate accessories. They can be purchased from Spectrum Technologies (800-248-8873), from Crop King (330-769-2002) or from Hydro-Gardens (800-634-6362). Cost is about $320 each.

Table 1. Nitrogen (N) rates and sweet corn yield and several quality measurements at Sanford, FL, spring 1996

<table>
<thead>
<tr>
<th>N lb/acre</th>
<th>Yield</th>
<th>Ear</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Crates/acre</td>
<td>Wt. (lb)</td>
</tr>
<tr>
<td>225</td>
<td>326 a²</td>
<td>0.7 a</td>
</tr>
<tr>
<td>150</td>
<td>252 b</td>
<td>0.7 a</td>
</tr>
<tr>
<td>75</td>
<td>48 c</td>
<td>0.6 b</td>
</tr>
<tr>
<td>0</td>
<td>0 x</td>
<td>0.0</td>
</tr>
</tbody>
</table>

²Expressed as 42-lb crates.

¹Mean separation in columns by Duncan’s Multiple Range Test, 0.05 level.

²Husk cover: 1= protrudes, 5=wrapped tightly, completely covered.

³Tip fill: 1= at least 1 inch unfilled: 5=full at top.

⁴No marketable yield for 0 N, therefore, no data.
Table 2. Nitrogen (N) rates and leaf-N on three dates for sweet corn, Sanford, FL, spring 1996.

<table>
<thead>
<tr>
<th>Days after planting</th>
<th>Cardy (ppm NO₃-N)</th>
<th>Lab (% TKN)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lb/A</td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>225</td>
<td>4.5 a</td>
</tr>
<tr>
<td>40</td>
<td>150</td>
<td>4.2 a</td>
</tr>
<tr>
<td>49</td>
<td>75</td>
<td>3.4 b</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>1.7 c</td>
</tr>
</tbody>
</table>

Cardy ion specific meter, Spectrum Technologies, Inc., Plainfield, IL
Mean separation in columns by Duncan's Multiple Range Test, 0.05 level.
University of Florida's Analytical Research Laboratory, Gainesville, total Kjeldahl nitrogen.


Developing Premium-Quality Programs for Fresh Fruits and Vegetables
March 9, 1998
University of Florida
282 Reitz Union, Campus

7:45 Registration
8:15 Welcome and Introduction
Dr. Steve Sargent, Institute Coordinator
8:30 Featured Speaker: Ms. Edith Garrett, President, International Fresh-cut Produce Association
"Fresh-cut Produce: Trends and Challenges"

Session 1: Challenges Facing The Produce Industry

9:00 Current Status and the Future of Horticultural Crops
Dr. Dan Cantliffe
Chair, Horticultural Sciences Department, University of Florida

9:25 Current and Future Trends for Fresh Citrus
Mr. Dennis Broadaway, General Manager, Haynes City Citrus Growers Association

9:50 Strawberry Production and Future Challenges
Dr. Chip Hinton
Executive Director, Florida Strawberry Growers Association

10:15 BREAK

Session 2: Premium Quality: What is it and How can it be improved?

10:30 Postharvest Quality: The Physiology of Horticultural Crops
Dr. Greg McCollum, USDA U.S. Research Horticulture Laboratory, Orlando

10:50 Premium Quality Programs for Fruits and Vegetables
Dr. Steve Sargent, Horticultural Sciences Department

11:10 Evaluating Postharvest Flavor
Dr. Elizabeth A. Baldwin, Research Horticulturist, USDA Citrus & Subtropical Products Laboratory, Winter Haven
Evaluating muskmelon as an alternative greenhouse hydroponic crop.

A specialty muskmelon culture evaluation was conducted in a 22 x 60 ft greenhouse covered with two layers of polyethylene. The greenhouse was located at the Suwannee Valley Research and Education Center near Live Oak, FL. Seed of a green-fleshed muskmelon, cultivar, 'Gallicum', was seeded directly into lay-flat bags of perlite on March 21, 1996. Four production bags were seeded with 3 plants per bag and four bags with 2 plants per bag to compare plant spacing. A dilute nutrient solution was used during the first week of growth, after which a complete nutrient solution with 135 ppm N and 230 ppm K was applied. The irrigation system was controlled by a starter tray system providing nutrient solution, as needed, each day.

On April 24, the first female bloom opened and was receptive to pollen. A small artist paint brush was used to move pollen from male to female blooms. Receptive female blooms were checked daily and pollinated. Male blooms were borne on the main stem and the female blooms were borne on a short (6-12 inch) side branch. Each plant was trained up a string to an overhead cable, seven feet above the production bags. Once the plant reached the top of the cable, it was trained along the cable for 8 to 12 inches and then let drop down toward the floor. As the growing point reached the floor, it was pinched out to terminate new growth. Insects were controlled with applications of an insecticidal soap as needed. Observations on diseases were also made during the season.

As fruit grew to the size of a baseball, they were supported in a sling made of either women's hosiery or soft polypropylene row cover material. Fruit were harvested at full slip, counted, weighed, and graded according to quality.
Overall marketable production was 1.8 fruit per plant and cull production was 0.5 fruit per plant. The US No. 1 fruit yield was 1.4 fruit per plant and US No. 2 was 0.4 fruit per plant. Average weight for US No. 1 fruit was 3.7 lbs and US No. 2 was 2.5 lbs.

Production per plant was similar for plant populations of three vs. two plants per bag. Populations of three plants per bag produced 2.17 fruits per plant versus 2.38 fruits per plant for two plants per bag. Average fruit weight was also similar between the two populations. Average fruit weight was 3.16 lbs for three plants per bag and 3.29 lbs for two plants per bag. Therefore, populations of three plants per bag will result in higher yields for the space without sacrificing fruit size.

Fruits were graded as a cull for two reasons: (1) a slick, poorly netted fruit, or (2) fruit rot from gummy stem blight (Didymella bryoniae). Poorly netted fruit had very poor taste and low soluble solids. Plants in this trial were highly susceptible to gummy stem blight. In addition to fruit lesions and infection, several stem lesions per plant were found. Due to the lack of effective fungicides labeled for greenhouse muskmelon, gummy stem blight could be a serious threat to successful production. A second disease concern was powdery mildew, (Oidium sp.). Powdery mildew seemed less important than gummy stem blight, however, both were a concern.

Primary insects pests included silverleaf whitefly (Bemisia argentifolii) and several species of aphids. A high population of the parasitic wasp (Diaeretiella rapae) naturally developed in the greenhouse and maintained the aphid population at a manageable level. In addition to concerns of gummy stem blight, the overall quality of the fruit was somewhat poorer than typical field production. Greenhouse-grown fruit was not as well netted, and lower in soluble solids than field-produced fruit.

(Robert Hochmuth, Vegetarian 98-02)

III. PESTICIDE UPDATE

A. Florida Weed Science Society

Florida Weed Science Society’s twenty-first annual meeting will be held Thursday and Friday, February 26 and 27, 1998. The meeting will be held at the Elks’ Lodge, just west of Highway 441 in Eustis, Florida. Registration is $20 and includes dinner.

The Thursday morning session is a workshop on application technology. Topics include: Computer controlled sprayers, nozzle choices, drift reduction, calibration and monitoring techniques for commercial and research sprayers. There will be 3.5 total CEU’s Restricted Use Pesticide License (RUPL) and 2.5 IPM CEU’s for Certified Crop Advisors (CCA).

The Thursday afternoon session will be talks on various topics such as the CCA program, WPS, Food Quality Protection Act, invasive plants and weed management topics. CEU’s will be 4.5 total for RUPL and 3.5 for CCA.

Friday morning the sessions will continue with more topics on herbicide technology, and weed management techniques. The topics will be more for the right-of-way and ornamental and turf area and 4.0 CEU’s will be given for right-of-way, ornamental and turf and demo/research in the RUPL. 3.5 CCA will be given for IMP and crop protection. For more information contact Bob Stamps. Preregistration is until February 16th or you may register at the door, Eustis Elks’ Lodge, 2540 Dora Avenue, Tavares.

(Stall, Vegetarian, 98-02)

B. Weed Interference: A major problem in sustainable and organic production systems.

Studies around the country as well as in Canada and Australia have shown that weeds are the most difficult management problem in sustainable and organic production systems. An eight year study was carried out in California by the Sustainable Agricultural Farming Systems (SAFS) project on corn and tomatoes. In these studies conventional or Best Management
Practices was compared along with low-input (sustainable) production and organic production. SAFS scientists found that weeds were the pest variable directly associated with reduced yields. In corn, weed competition reduced yields in both the low input and the organic systems, and weed management accounted for the bulk of pest management costs in all three tomato systems.

The low-input weed control methods used in the California studies were the use of cover crops and reduced herbicides. Teasdale (USDA-ARS, Weed Science Lab, MD) has pointed out that in a cover crop-weed management system, weed control is species specific in relation to the cover crop used and weed species to be suppressed. Also in a cover crop or a living mulch system weed control is usually incomplete.

The use of cover crops has distinct advantages, such as building organic material in the soil, suppressing soil borne insect, nematode and/or disease pests, reducing wind or water erosion along with numerous others. Cover crop usage to suppress weeds, and reduce weed seed bank build up should be used more in Florida vegetable fields. A great deal more work needs to be done to identify cover crop type to weed species suppressed, however. An interesting observation by Jim Fletcher in Madison County illustrates this point. One of his growers plants rye between the mulched beds of tomato and pepper. The rye is allowed to grow to the height of 6-8 inches before it is killed. The primary use is to keep the soil in the middles from blowing and damaging the crop during the high spring winds. Jim noticed that many weeds did not emerge through the rye stubble until much later in the season than normal. This fact has reduced the row-middle herbicide use by the grower at least in half.

We are gaining more knowledge on crop-weed interactions that are needed to develop sustainable weed management techniques. A case in point is open bed watermelon production in Florida. A study by Ernie Terry has shown that smooth amaranth (pigweed) must be controlled from 5 days after watermelon emergence until approximately the time when the watermelon vines run off the bed (3 to 4 weeks) to eliminate yield loss. After 4 weeks, smooth amaranth emerging in the field will not reduce yield. Another study showed that, two cultivations (hand hoeing in the bed) is just as effective in reducing yield loss from broadleaf weeds as pre plus postemergence herbicide usage. The hoeing, however, must be early enough to control the weeds the first week.

Grasses must be controlled from 4-6 weeks after watermelon emergence to eliminate yield losses. Early grass weed emergence will not reduce yields as soon as broadleaf weeds will.

The problem occurs with yellow nutsedge competition in watermelon. Preliminary work in Gainesville and Quincy indicates that 50 nutsedge per square meter (5/ft²) will eliminate marketable yield of spring watermelon. Cultivation or hand hoeing is not effective in eliminating the weed in the bed. Unfortunately also there is no herbicide to control nutsedge in watermelon at the present time.

Work is underway at the University of Florida and at other Southern Universities to establish the critical period of weed-crop interference so that control methods, will reduce or eliminate yield loss. Correct timing of control, whether it is chemical (herbicides), mechanical or cultural, is essential to eliminate yield losses in conventional, sustainable and organic production systems.

(Stall, Vegetarian 98-02)

IV VEGETABLE GARDENING

A. Planting Spring potatoes? First, amend the soil!

Organic wastes should be used liberally in vegetable gardens for at least three very good reasons: 1) they contribute valuable benefits as soil amendments and fertilizers; 2) they serve well as mulching material; and 3) the gardening use of these wastes helps solve a disposal problem for society. Amending garden soils has shown to be one excellent way to recycle these waste products effectively. Previous trials at the Organic Gardening Research and Education Park have strongly indicated that 20 to 40 tons/acre of yard waste compost, supplemented with organic
fertilizer or animal manure and incorporated annually, resulted in very satisfactory production of several garden vegetables. One dozen 5x10 ft "grow-boxes" were amended annually with a variety of organic materials. The purpose was to determine and demonstrate optimum amounts of these amendments as a source of fertility for growing garden vegetables.

The spring 1997 study with potatoes constitutes the subject of this article. The most recent amendment applications were made in the spring of 1996 in a trial with 'Celebrity' tomato and 'Jupiter' pepper. None was applied in 1997. Therefore, the objective of the 1997 study was to observe the residual effects of previously applied amendments on the yield of two potato varieties: 'Kennebec' (white) and 'Red LaSoda'.

Over the course of the seven-year period from 1990-1996, the following amendments were applied at both a low and a high rate: oak leaves, yard waste compost (YWC); YWC plus organic fertilizer (Fertrell 3-2-3); organic fertilizer (Fertrell 3-2-3); chicken manure; composted chicken manure (Red Rooster 2-3-2 and 3-5-3); and combined amendments (sheep manure+RR+YWC).

Potatoes were dug 14 May 1997 and the yield results were recorded as number and weight of tubers per plant. Top yields of both varieties came from the mixed-amendments box, which had received approximately 560 tons/acre (28 lb/sq ft) of organic amendments over the 7-year period. This box has been tops with all crops grown in previous years. The box receiving the higher rate of Red Rooster (4.70 lb/sq ft) gave a relatively good yield of 'Red LaSoda' tubers, but only fair yield of 'Kennebec'. Other amendments (residual) gave fair to poor results. Surprisingly, yields from the box receiving oak leaves alone (6-12 lb/sq ft) were as substantial as those from all but the two highest yielding treatments mentioned.

One might conclude from this study that many organic soil amendments, even oak leaves that are woody and low in N, when applied seasonally and liberally, tend to provide residual benefits for a crop like potato and perhaps others.

(Stephens, Vegetarian 98-02)