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**I. NOTES OF INTEREST**

**A. Vegetable Crops Calendar.**

October 10-12, 1992. National Junior Horticultural Association Convention, Radisson Airport Hotel, Columbus, Ohio. (Contact Bob Renner, Marion Co.)


March 4, 5, 1993 Postharvest Horticulture Institute. University Centre Hotel, Gainesville. (Contact Steve Sargent).


**II. COMMERCIAL VEGETABLES**

**A. Further Studies on Detergents Phytotoxicity.**

The use of detergents for the control of Sweetpotato Whitefly (SPWF) in tomato has been heavy since Fall '90/Spring '91. Fall '91 trials indicated detergent sprays slowed plant weight gain and could reduce and delay yield in proportion to concentration and frequency of application. To ease grower fears, the key words here are CONCENTRATION and FREQUENCY.

Detergent concentrations presently used by growers (0.25%) are effective in controlling whiteflies and when applied once weekly should result in virtually no yield loss either overall or in the extra-large grade category. However, delayed plant weight gain as a result of detergent sprays under hot August and September conditions could have differing consequences in different years. Let's review what we saw last fall and add some information gotten from trials run this past spring '92.

**Fall '91 Recap** "New Day" detergent (similar to Tide) concentrations (v/v) of 0.25%, 0.5%, 1% and 2% were applied once or twice weekly, beginning one week after planting (Sept. 27, 1991) and continued through week 10 of the tomato crop. Application volumes ranged from 50 to 150 gallons per acre depending on crop maturity. Application pressures ranged from 150 to 200 psi. Plant dry weight was determined at two week intervals through week 9 of the crop. Yield and grade were assessed as a result of treatment.

Untreated plants had greater plant weights throughout the sampling period, weighing significantly more than all detergent treated plants at week seven. However, by week 9 the untreated plants significantly outweighed only the 1% and 2% detergent-treated plants. Greater plant weight reduction occurred when plants were sprayed twice weekly rather than once.

**First Harvest** The apparent reduction in growth exhibited by the 1% and 2% detergent-treated plants was enough to significantly reduce yield at first harvest. Untreated, 0.25% and 0.5% detergent-treated plants yielded similarly when sprayed once a week, however a general reduction in yield occurred compared to the control when 0.25% or 0.5% detergent was applied twice a week.

The reduction in yield appeared to be a function of fruit size. A significant reduction in extra-large fruit occurred when 0.5% detergent was sprayed twice a week and when 1% or 2% detergent was applied regardless of the number of applications.

**Combined Harvests** Data from all three harvests showed that the untreated
plants and plants treated with 0.25% or 0.5% detergent had similar yields. However, when 1% or 2% detergent was applied, there were significant differences in total yield.

Yield reductions in extra-large tomatoes resulted from 1% and 2% detergent when sprayed once a week. Twice weekly applications of detergent in concentrations of 0.5% or greater significantly reduced the yield of extra-large tomatoes.

It was concluded that 0.25% detergent was a reasonably safe and efficacious spray treatment for SPWF.

**Spring '92** A modified study was undertaken to test three detergent products Tide Liquid (Proctor & Gamble, Cincinnati, Ohio), M-Pede (Mycogen, San Diego, CA), and LQ215 (Zohar Detergent Factory, Kibbutz Dalia, Israel) at 0.25% and 0.5%, applied once and twice a week. The study ran the course of the crop and followed the protocol outlined in the fall study above. Bacterial wilt (*Pseudomonas solanacearum*) infected the crop during development which complicated data accumulation. Furthermore, detergent applications were often followed by rain events which may possibly have negated a potential impact.

The spring trial resulted in no significant differences among treatments with respect to plant dry matter accumulation, total or extra-large grade yield at first harvest, total and extra-large grade yield with combined harvests, or frequency of application. Furthermore, rate response was not consistent, that is the 0.5% treatment did not always result in lower yields compared to the 0.25% rate as expected. Nevertheless production trends overall were similar to the fall trial: a reduction in yield among detergent-sprayed plants (Figs 1 & 2), manifested by a reduction in extra-large tomatoes (Fig. 3), and greater yield reductions when detergent was applied twice weekly (Fig. 4).

Nothing in these results contradicts what was learned in fall '91, nor changes the conclusions drawn from those studies. However, the phenomenon of detergent induced reductions in plant weight gain and yield loss appear to require further analysis. This work and other studies designed to determine the effects of detergents on tomatoes are ongoing at the SWFREC in Immokalee.

(Vavrina & Stansly, Vegetarian 92-09)
FIGURE 1. DETERGENT YIELDS, SPRING '92
(FIRST HARVEST - TOTAL YIELD)

LBS/Plot*

CONTROL TIDE LQ215 M-PEDE

0.25% 0.5% CONTROL

• PLOT • 8 TOMATO PLANTS, ALL DATA NS

FIGURE 2. DETERGENT YIELDS, SPRING '92
(COMBINED HARVEST - TOTAL YIELD)

LBS/Plot*

CONTROL TIDE LQ215 M-PEDE

0.25% 0.5% CONTROL

• PLOT • 8 TOMATO PLANTS, ALL DATA NS

FIGURE 3. DETERGENT YIELDS, SPRING '92
(COMBINED HARVEST - X-LG YIELD)

LBS/Plot*

CONTROL TIDE LQ215 M-PEDE

0.25% 0.5% CONTROL

• PLOT • 8 TOMATO PLANTS, ALL DATA NS

FIGURE 4. DETERGENT YIELDS, SPRING '92
(YIELD BY ONCE OR TWICE A WEEK)

LBS/Plot*

0.25% 0.5% CONTROL

• PLOT • 8 TOMATO PLANTS, ALL DATA NS

The concept of a fertilization recommendation is to provide growers and homeowners with guidelines for the proper management of nutrients. These guidelines are based on research/experience with the various commodities under Florida environmental conditions. Fertilization recommendations must be based on interpretation of scientific research with a sensitivity for economic and environmental concerns.

Recommendations result from a process designed to ensure that the guidelines are appropriate for a wide variety of cultural situations. The recommendations are not intended for unrealistic growing conditions, inadequate crop management, or grossly inefficient water management.

Recommendations begin from a gathering of research data which provide information on prefertilization soil testing, plant tissue analysis, water management, and crop response. From the available research information, the crop nutrient requirement (CNR) is determined. The CNR is the rate of fertilizer used when the soil tests low for a specific nutrient and plant nutrition must be supplied mostly from fertilizer. Once the CNR is determined, a calibration curve can be developed from crop response to fertilization on sites reflecting a range in soil test values.

In addition to the fertilizer amount, a recommendation also contains information on proper fertilizer management. If data are available, recommendations concerning fertilizer placement and timing are formulated. Choices of placement should favor the management technique that results in more efficient fertilizer use.

Once recommendations are formulated by Extension specialists, then guidelines with supporting documentation undergo peer review by other Extension and research personnel. Upon final administrative approval, the recommendations are published and available for dissemination to the IFAS clientele. Recommendations are incorporated into the Standardized Fertilization Recommendation System for use in soil testing reports.

The process described here ensures that the IFAS recommendations represent the research accurately. Recommendations that have not gone through this process must be considered opinions and could lead to a lack of credibility.

(G. Hochmuth and E. Hanlon, Vegetarian 92-09)

C. Scotch Bonnet Pepper.

Most cultivated peppers are classified as Capsicum annuum; exceptions are tabasco pepper (Capsicum frutescens) and ’Scotch Bonnet’ pepper (Capsicum chinense). The specific epithet suggests Chinese origin, but like other Capsicums, it is of New World origin. Other peppers in this group are ’Habanero’ and ’Bahamian’.

The varieties in this group have several similar characteristics: fruit size is approximately 1 to 1 1/2 inch x 1 to 1 1/2 inch, the fruit wall is thin, and is very pungent (hot). On the Scoville scale, a subjective measurement of pungency, they have 200,000 Scoville heat units compared with 0 for bell peppers and about 2,000 for jalapeno. Mature fruit color may be yellow, orange, or red.

’Scotch Bonnet’ is distinguished from others in the group by fruit shape and color. The fruit is depressed at the blossom end to form a bonnet, whereas fruit shape is conical or irregularly conical in the others. Mature fruit color is always yellow in ’Scotch Bonnet’ pepper.

Commercial production of ’Scotch Bonnet’ is primarily in Jamaica where it is used widely in local cuisine, as well as being exported to the U.S., U.K. and
elsewhere where there are West Indian populations.

In the spring of 1992, a small trial was conducted at GCREC-Bradenton to assess the potential for production in Florida as part of the continuing program of specialty vegetable evaluation. Seeds, obtained from Jamaica, were planted in peat-lite mix in 1 1/2 inch cells on 10 February and were transplanted in the field on 25 March. Seedlings and young plants grow very slowly compared to bell peppers so that about 4 weeks extra plant growing and establishment time should be provided. Plants were spaced 4.5 ft apart in double rows 1 ft apart on a 32 inch bed. A single plant row would be preferable to a double row because the plants, once established, grow vigorously and are at maturity several times larger than a bell pepper plant.

Fruit were harvested on 2, 8 and 13 July. Each plant produced an average of 41 marketable fruit having an average weight of 0.32 oz for a total yield of 0.81 lb/plant. At 1936 plants per acre this would equal 1568 lbs of marketable fruit per acre. Additional trials to develop cultural guidelines for 'Scotch Bonnet' pepper are planned.

(Maynard, Vegetarian 92-09)

D. Update on Introduction of Standard Shipping Carton for Peppers.

The Florida pepper industry continues full-speed ahead for the adoption of the new MUM pepper carton (see article in the August "Vegetarian"). Shippers are ordering the new carton design from their carton suppliers in two configurations, the regular-slotted container (RSC - folded top/bottom) and the two-piece carton (similar to the current tomato carton). Many companies are also planning to use this carton to ship other vegetables, such as cucumbers, eggplant and squash. This carton hopefully will become a standard vegetable carton for Florida, thus facilitating handling and marketing.

I attended a meeting of the Produce Pallet Working Group in San Francisco in August. This group consists of representatives of major U.S. and Canadian produce organizations, including the United Fresh Fruit & Vegetable Assoc., the Produce Marketing Assoc., the Florida Fruit & Vegetable Assoc. and various commodity and industry groups. There was considerable discussion as to the merits of the produce industry adopting standard, reusable pallets. At the end of the discussion, the group unanimously voted to recommend that the industry adopt the 40x48-inch reusable pallet. Reggie Brown (Membership Director of the FFVA) presented the concept of the new pepper carton to the group as well as to several industry groups throughout the U.S. and has had a very positive response. It appears that the national movement for more efficient handling of produce is growing, with our Florida vegetable industry in the forefront.

(Sargent, Vegetarian 92-09)

III. PESTICIDE UPDATE

A. IR-4 Future Thrusts.

The IR-4 will hold a cooperators meeting in St. Louis the first week in October. The objectives of the meeting are several, but two objectives are to recommend future thrusts of IR-4 and to introduce new pesticide clearance needs and review and prioritize registration and reregistration needs. I will be attending the meetings and participating in the prioritization of herbicide needs in minor crops.

Some of the projects that have or are being run in Florida in 1992 are: Clomazone (Command) and Metolachlor (Dual) on watermelon, paraquat (post-directed) in watermelon (reregistration); Metolachlor (Dual) on bok choy, Chinese
broccoli, collard, Chinese mustard, and pigeon pea; Napropamide (Devrinol) on leek, daikon and Chinese mustard; Oxyfluorfen (Goal) on cabbage (reregistration); Paraquat on collard, head lettuce, okra, summer squash and turnip greens; Pendimethalin (Prowl) on leek; Sethoxydim (Poast) on daikon; and Thiobencarb (Bolero) on broccoli, cabbage and carrots.

I am soliciting those who have herbicide needs on specific crops to contact me so I may either introduce those needs or help prioritize those needs higher in the order. The prioritization process will determine the national and southern region projects for the coming 2 years.

One of the future thrusts of IR-4 may be in developing data for registration of environmentally friendly or reduced-risk pesticides that can be incorporated into IPM strategies. The EPA has published an article, seeking public comment, entitled "Incentives for Development and Registration of Reduced Risk Pesticides."

I am interested in any ideas on possible projects that may be of great benefit to Florida in reduced-risk pesticides, and ideas in other possible thrusts that IR-4 may undertake.

The time is getting short so call any comments to me. 904-392-7913.

(Stall, Vegetarian 92-09)

IV. VEGETABLE GARDENING

A. Oak Leaves as a Soil Amendment.

Throughout the years in Florida I have visited some very nice vegetable gardens, some of which were amended only with oak leaves raked from the property (yard). It just never seemed realistic that vegetable plants could receive sufficient nutrients from this lowly source to produce the fine gardens that I saw.

When we started the Organic Gardening Research and Education Park at Fifield Hall, one of the first trials I wanted to run was with oak leaves as a soil amendment. So in the summer of 1990, the first year, we filled a 5x10' grow-box with oak leaves just as they came from curbside collection. The leaves were not analyzed for nutrient composition, but we estimated their N content at .5% or less.

The unshredded leaves were piled 3 to 4 inches deep in the box and then mixed with the soil during the summer (about May, 1990). No fertilizer or lime was added. In September when we planted other boxes amended with other types of soil organic materials, we planted the oak-filled box with two varieties of tomato ('Cherry' and 'Better Boy'), and 'Georgia' collards. We harvested in November and recorded our results.

Fall (1990) results: Growth of both the tomato varieties and the collard greens was poor. When we cut the collards and weighed the leaves, we got only 3 lbs. of leaves from the 10 ft-row as compared with 10 lbs of leaves cut from boxes with animal manures.

Conclusion: This was about what was expected. The leaves, being rather woody, had not rotted sufficiently to overcome the nitrogen depletion associated with decomposition. Thus, crop growth and yields were low.

Spring 1991

We decided to help accelerate the decomposition process along by shredding some of the leaves. One-half of the box (westside) received 2 lbs/sq ft shredded leaves, whereas the other side received whole (unshredded) leaves at 2 lb/sq ft. All leaves were incorporated in March, 91 and the boxes planted the same week with 'Better Boy' tomato.

Results: This season produced a much better crop of tomatoes, particularly on the shredded side of the box. We rated the shredded side good, out of a rating scheme
of: poor, fair, good, and excellent. We harvested 1 pound per plant more on the shredded side than on the unshredded side.

Conclusion: Obviously, with time the decomposition process was beginning to yield dividends in terms of nutrient release. A surplus of nitrogen for crop use over microorganism needs was taking place. The shredding helped in this regard, speeding the decomposition process. Still, other boxes containing manures were outstripping this box of oak leaves, but not by too much. The main point was that this box containing the oak leaves was producing a crop of somewhat satisfactory proportions. The check box (nothing added) was far behind.

Fall 1991

With no further additions, but with more time to decompose the leaves, we planted two varieties of southern peas in September, 1991.

Results: Yields were poor, with high incidence of root knot nematodes.

Conclusions: Even the best treatments (of organic amendments) suffered from nematode damage, thus affecting yields. Thus, the nutritional effects of the oak leaves could not be evaluated.

Spring 1992

Additional oak leaves were placed in the box containing the now well-rotten leaves from the previous two years. One-half was shredded while the other half was whole leaves (the rate was 1 lb./sq ft).

We planted 'Better Boy' tomato and 'Jupiter' pepper in March, 1992.

Results: Both the tomato plants and the pepper plants amended with shredded leaves yielded in the top three treatments of the trial. Other treatments included animal manures, organic fertilizers, and composts.

Conclusion: After three years, we were shown that oak leaves of the sort we were using would provide adequate yields of some vegetables. Time for decomposition was required, and would be helped by first shredding the leaves.

Also, one could still expect nematode damage even when organic fertilizers were incorporated.

(Stephens, Vegetarian 92-09)