Contents

I. NOTES OF INTEREST
   A. Vegetable Crops Calendar.

II. COMMERCIAL VEGETABLES
   A. Fall Temperatures Under Plastic.
   B. Nitrogen BMP Bill Senate Bill 2420.
   C. Update on Carrot Yields and P Fertilization.

III. VEGETABLE GARDENING
   A. Book Review: Plant Nutrient Disorders 3 - Vegetable Crops.

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I. NOTES OF INTEREST

A. Vegetable Crops Calendar.


II. COMMERCIAL VEGETABLES

A. Fall Temperatures Under Plastic.

Last fall (1993) Sonoco Products Co. funded a study to compare soil temperatures under various colored plastic mulches at the SW FL Research & Education Center. The mulches tested included white on black (Sonoco - 1.0 mil), white on black (1.41 mil), white on white (1.5 mil), black (0.75 mil), silver on black (painted - 1/2 gal. per 150 ft.), and red (0.8 mil). All mulches were applied without methyl bromide or fertilizer to beds on September 7, 1993. Seepage irrigation was supplied as if a crop were in place to keep the beds moist throughout the study. It should be noted that the coating of silver paint used here would be considered excessive by industry standards. Also without methyl bromide treatment, grass weeds were not controlled under white on white mulch.

Soil temperatures were monitored using standard soil thermometers at a depth of 4 inches on sunny days from early September through late December. Each colored plastic treatment was replicated 4 times and these data represent the mean of those four measurements.

Soil temperatures beneath the black and red plastic mulches ran hotter than those measured under silver, white, or white on black mulches throughout the late summer, fall, and early winter (Fig. 1). Generally, soil temperatures under silver, white, and white on black fell within a few degrees of each other during the study.

Soil temperatures dropped as fall progressed toward winter. However, under all mulches in September and under black and red mulches in October, soil temperatures approached or exceeded 100 degrees in the afternoon. The optimum temperature for tomato root growth is 68-91F, root growth slows in temperatures of 95-104F and practically ceases at temperatures greater than 104F (White, Pl. Phys. 12:771-776, 1937). High soil temperatures may be alleviated as the tomato canopy shades the root zone, but transplants might find root development impaired by such temperatures. These data should not be taken as "gospel", but should aid you in making intelligent decisions on your choice of plastics for fall production.

(Vavrina, Vegetarian 94-07)
B. Nitrogen BMP Bill Senate Bill

The following is a synopsis of Senate Bill 2420, the Nitrogen BMP bill. This bill will open up numerous challenges and opportunities for Extension personnel with regard to fertilization of vegetables. The opportunities involve some possibilities for funding the development and demonstration of IFAS fertilization recommendations. The challenges of course are going to revolve around the area of litigation. IFAS currently has individuals studying that aspect. If you would like a copy of the Bill, call me. The following was provided at a recent meeting of the Fertilizer Technical Council:

1. Overview

This bill authorizes DACS to develop fertilizer BMPs designed to meet nitrate ground water standards with due consideration to economic and technological limitations.

The BMPs are not mandatory.

Two primary benefits are available to growers who elect to implement the BMPs specified by DACS. These benefits take the form of relief from existing water quality standards.

The bill authorizes DACS to impose supplemental fees to fund the program. Fees will increase for fertilizer distribution licenses, product registrations, and for the sale of all nitrogen containing fertilizers.

2. BMP Development

DACS is authorized to contract with IFAS, FAMU, etc. to develop BMPs for nitrogen containing materials.

DACS will develop rules containing commodity specific BMPs based on the above-mentioned research.

DEP is authorized to conduct field monitoring to verify the effectiveness of the implemented BMPs on representative sites for each commodity group.

During the research stage of BMP development, DACS may adopt interim measures by rule to be implemented prior to adoption of BMPs.

3. Liability Waiver

If a grower notifies DACS of his or her intent to implement commodity-specific interim measures and/or BMPs as described in future DACS rules, the landowner or leasee will not be liable under s. 376.307 (5) F.S. for any costs or damages associated with the remediation of drinking water wells contaminated with nitrate from the application of materials containing nitrogen. In order to maintain this waiver once specific interim measures or BMPs are adopted in rule form, the grower must implement the BMPs according to the schedule specified and comply with recordkeeping requirements.

If the grower implements BMPs which have been verified to be effective by DEP and complies with the requirements listed above, the landowner or leasee will not be subject to administrative penalties if nitrate ground water standards are violated.

4. Fees

Two hundred dollars for each license to distribute fertilizer.

Two hundred dollars for each of the first five specialty fertilizer registrations and fifty dollars for each additional registration.

An additional fifty cents per ton (in addition to the existing 75 cent inspection fee) for all fertilizer containing nitrogen sold in the state.

5. Time Line

DACS implements new fee schedule by July 1, 1994.
DACS publishes by rule the Notice of Intent To Comply with Interim Measures of or BMPs.

Growers submitting the "Notice" will not be liable for nitrate remediation costs associated with contaminated drinking water wells.

DACS contracts with the appropriate institution to begin BMP research on prioritized commodities and regions where nitrate contamination of groundwater is a documented problem.

Interim nitrate measures are specified in DACS rules for implementation prior to formal adoption of BMPs.

BMPs and recordkeeping requirements are formally adopted by DACS and published in DACS rules.

Published BMPs are implemented by growers according to the schedule in DACS rules.

DEP verifies the effectiveness of adopted and implemented BMPs at representative sites.

(Hochmuth, Vegetarian 94-07)

C. Update on Carrot Yields and P Fertilization.

As a part of the Lake Apopka Hydrologic Unit Project (LAHUAP), five carrot demonstration trials with various rates of phosphorus (P) fertilizer were conducted from 1992-1994. Three grower sites were involved, with repeated crops of carrots grown on two sights. The objectives of the demonstrations were to use predictive soil testing for managing P fertilization and to determine if a starter application of nitrogen (N) and P would result in a yield benefit. Soil samples were taken from each site before planting and P rates were based upon the results as well as the P rate the grower used in the remainder of the field. The variety "Apache" was grown in each demonstration trial. Total amounts of applied N ranged from 0 to 51; \( P_2O_5 \) from 0 to 225; and \( K_2O \) from 0 to 120 lb/acre. A liquid starter fertilizer was applied at either 8.8-30-0 or 51-75-0 lb/acre of N-P_2O_5-K_2O. In four of the five tests, there were no significant differences in marketable yield among any of the fertilizer rates. The liquid starter treatment did not demonstrate a marketable yield benefit over no fertilizer applied when the soil test indicated adequate nutrients (P_2O_5 and K_2O). In one test, an application rate of 0-0-60 lb/acre of N-P_2O_5-K_2O resulted in a significantly lower marketable yield than treatments of 0-0-0; 8.8-30-0; and 15-30-60 lb/acre. At harvest, this site had more culls due to disease, more weeds than the average field, and had been in the ground longer than a normal carrot crop. These factors may account for the yield difference.

Overall, soil tests results indicated there was no need for P fertilization on carrots for the five demonstration sites selected. Yield results verified that adding P when soil tests indicated none was required did not increase yields. The liquid starter fertilizer did not improve carrot yields when the soil test indicated no additional P or K was needed.

This is a brief summary of cooperative work by C. A. Neal, E. A. Hanlon, G. S. Crnko, J. M. White, A. Ferrer, and personnel from Soil Conservation Service (S. Cox) and Agricultural Stabilization and Conservation Service (P. Salminan) conducted in the Zellwood drainage basin area.

(White, Vegetarian, 94-07)

III. VEGETABLE GARDENING

A. Book Review: Plant Nutrient Disorders 3 - Vegetable Crops.

Because it has been such a long time since I've seen forthcoming a text on nutritional disorders of vegetables similar to the old classical "Hunger Signs in Crops", I was struck by a recent notice of such a book.

Allen Barker, Dept. of Plant and Soil Science, University of Massachusetts, reviewed

According to Barker's review, the fact that the text was written in Australia rather than on this continent detracts little if any from its authoritative nature. Of course references to Australian conditions are a bit distracting, but only to a limited extent.

The book is a short course in plant nutrition, summarizing the nutritional needs of vegetables and what the plants look like when deficient.

Techniques for distinguishing nutritional disorders from disorders caused by infectious diseases, environmental stresses, mechanical injury, and chemical injury are described.

Stepwise procedures for identifying a disorder and its underlying cause are outlined. These steps involve gathering background facts about contributing factors, assessing visible symptoms, confirming the diagnosis, correcting the problems, and following up on the overall process. The book contains several tables and insets for quick reference and guides to these procedures. This book will be valuable to Extension agents and Master Gardeners. It is 105 pages, 170 color illustrations, and sells for around $35.00. Distributor: Florida Science Source, PO Box 927, Lake Alfred, FL 33850-0927.

(Stephens, Vegetarian 94-07)

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