Vegetarian 90-10
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I. NOTES OF INTEREST

A. Vegetable Crops Calendar


November 13, 1990. Southwest Florida Research and Education Center Immokalee. Vegetable Field Day and Trade Show.

November 27-29, 1990. Commercial vegetable program planning meeting for County faculty. West Palm Beach.


B. New Publications


II. COMMERCIAL VEGETABLES

A. Evaluation of the Potential for Garlic Production.

Garlic, *Allium sativum* L., is a bulbous plant related to onion, chive, and leek. Garlic bulbs are somewhat smaller and more angular than those of onion. The mature bulb is made up of several segments, called cloves, that are encased in a common scale which accounts for the angular bulb shape. The cloves are used for propagation as well as for food. Although the size and growth habit of garlic and onion are similar, garlic leaf blades are thin and solid whereas onion leaves are tubular. Because of its strong flavor and pungent odor, garlic is used as a seasoning for other foods rather than as a primary vegetable.

Garlic is an important world crop. In 1988, production occurred on 1,127,000 acres, average yields were about 56 cwt/acre, and the total crop exceeded 3 million tons. The leading garlic producing countries were China, Republic of Korea, India, Spain, and Egypt. U.S. production, mostly in California, was on over 12,000 acres, with average yields of about 134 cwt/acre, and a total production of 77,000 tons. In the 1979-81 period, the last year that USDA data were available, the California crop was valued at $32.5 million annually.

There is no commercial garlic production in Florida, however, inquiries frequently are received from prospective growers on the feasibility of garlic production here. The purpose of this evaluation was to make a preliminary assessment of crop management practices and cultivars.

'California Early' (CE) and 'California Late' (CL) garlic was obtained from California for propagating stock. The
bulbs were divided into individual cloves and planted 4 inches apart in double rows on raised beds in mid-November. The beds had been fertilized with 2.5-2.2-2.6 lb N-P2O5-K2O per 100 linear bed feet from soluble and slow release fertilizer. The fertilizer was incorporated in the bed before final pressing, and the crop was seep irrigated.

The aerial portion of the crop appeared normal and vigorous throughout. The 'CE' garlic was harvested in early May when most of the tops were dead. The 'CL' garlic was harvested in late June even though the tops were still green. The tops were clipped and the garlic was dried in a well-ventilated greenhouse. Total yields of 'CE' were about 5000 lbs/A and only about 700 lbs/A from 'CL'. Marketable yields were less than 2000 lbs/A for 'CE' and nil for 'CL'.

Yields in California averaged 128 cwt/A during the 1979-81 period compared to the 19 cwt/A obtained in this trial from 'CE'. Even the total yield of 53 cwt/A in this trial did not approach the yields obtained in California. One cause of the low yields may have been because of inadequate plant populations. In California, beds are on 40-in. centers and plants are spaced 1 to 3 inches apart in double rows on the bed. Accordingly, plant populations in California range from about 105,000 to 314,000 plants per acre whereas plant population in this experiment was only about 52,000 plants per acre.

The low percentage of marketable 'CE' bulbs and total lack of marketable 'CL' bulbs may have been related to storage temperature used for the propagating stock. Research has shown that garlic bulbs stored at 52 to 41°F produced bulbs that were not fully encased in an external scale, and this was typical of bulbs from the 'CE' planting stock which had been intended for market. Planting stock stored at 59 to 68°F produced plants that failed to produce bulbs and whose tops remained green, and this response was typical of the 'CL' garlic in this experiment.

Additional research will be required to address the questions raised in this study, and to determine the feasibility of commercial garlic production in Florida. Commercial production cannot be recommended from the results obtained in this experiment.

(Maynard - Vegetarian 90-10)


This is a brief summary of evaluations on the following kinds of cucurbits: cantaloupes, honeydews, summer squash, winter squash, seeded and seedless watermelons. Results of only the replicated trials are included, and only those varieties are listed with highest total marketable yields.

**Cantaloupe, green flesh/honeydew (Replicated)**

Highest marketable yields: Red Ace, Cruger, Volga, Tenkei, Emerald Pearl.

**Cantaloupe, netted, orange flesh (Replicated)**


**Summer squash, green (Replicated)**

Highest marketable yields: Seneca Zucchini, NUN 6661, Congress, Sunre 9715, XPH 1630, Senator.

**Summer squash, yellow (Replicated)**

Highest marketable yields: Sunbar, 835233, Dixie, Precious, SF28-6, Goldie.
Winter squash, acorn (Replicated)

Highest marketable yields: Seneca Autumn Queen, Cream of the Crop.

Winter squash, Buttercup (Replicated)

Highest marketable yields: Toughman No. 12, Toughman No. 13, Sweet Delight.

Winter squash, Butternut (Replicated)

Highest marketable yields: Ultra, Early Butternut, Zenith, Butterbush.

Mini-pumpkin (only one tried - Jack-Be-Little)

Watermelon, Icebox (Replicated)


Watermelon, seeded (Replicated)


Watermelon, seedless (Replicated)

Highest marketable yields: HMX 7924, Crimson Trio, CFREC 89-11, CFREC 90-2, Supersweet 5032.

Editor's note: These were the top performers in the variety trials planted or transplanted in March, 1990, at the Central Florida Research and Education Center, Leesburg as reported by Gary Elmstrom and Annette Chandler in Leesburg CFREC Research Report LBG 90-15, Cucurbit Variety Evaluation. More complete information is in this report, available from the authors.

(Stephens, Vegetarian 90-10)

C. Vegetable Transplant Plug pH ... Some Thoughts.

Prompted by a question from a Pennsylvania Extension Service vegetable specialist about whether a Florida vegetable transplant plug pH of 8.2 was unusual, we quickly surveyed 4 conventionally-irrigated transplant houses and 1 ebb-and-flow house in southwest Florida. The average pH of a "finished" (6 weeks) tomato transplant plug was 7.8 (range 7.4 - 8.0). One would think such a plug pH could hamper the uptake of some elements such as P and micronutrients. Iron chlorosis has in fact been documented in one case within the last year. But, by and large, the plants seem to do quite well in this soil environment.

What is the reason for this pH rise? In general, three factors are at work. First, most well water in Florida is high in bicarbonates, both calcium and magnesium. As relatively insoluble products, these materials can build-up in the soilless plug as nutrients and water are withdrawn via evapotranspiration. The subsequent build-up leads to a higher pH.

Second, the uptake of nitrate results in an alkaline medium, and in the small volumes associated with a vegetable transplant plug this factor also contributes to the problem.

Third, most transplant houses use a fertilizer blend that is at least partially urea-based. The reduction of urea to ammonia can lead to an increase in pH. Urea combines with water to form ammonium carbonate \((NH_4)_2CO_3\) which further reacts with calcium to form calcium carbonate and ammonium. Calcium carbonate is immediately recognized as a base (ie. increases pH).

Acid-forming fertilizers should not be relied upon to reduce transplant plug pH should you see a problem. The best
way to neutralize excess bicarbonates in irrigation water is through acidification. Kidder and Hanlon provide a thorough treatise on the acidification process and management in Notes in Soil Science #18, 1985.

Some transplant houses regularly acidify (usually phosphoric acid) the water to reduce a high pH and also to help clean the lines. However, research at the SWFREC has shown soilless mixes with a beginning pH of 6.2 - 6.5 even when watered with well water acidified to pH 5.5, can rise, over a period of 4 - 6 weeks, to 7.2 or greater. Should no problems arise, the acid will render such elements as Fe, Mn, and Zn more available for uptake by the plant.

While a plug pH above 7.5 may concern the receiver it has its advantages also. According to J. P. Jones, Plant Pathologist in Bradenton, such plug pH’s will insure the Fusarium Crown Rot organism will not be present in the transplants!

(Vavrina, Vegetarian 90-10)

III. VEGETABLE GARDENING

A. Manual of Minor Vegetables - let’s sell it.

The publication SP-40, "Manual of Minor Vegetables" is one of the very first publications IFAS has offered "for-sale" to the public. In the 2 years since its release (Oct. 1988) several hundred copies have been sold in every Florida county and every state in the U.S. Even so, sales have started to slow down, and we need to start them moving again.

Why are sales important? If IFAS expands its "for-sale" publications, obviously the publications must sell in order to regenerate funds for additional publications.

So, what about Manual of Minor Vegetables? I’m convinced it has information well worth the $3.00 asking price. You agents refer to it all the time answering questions about little known vegetables. But no county office that I have seen is displaying the publication for the public to see and purchase a copy.

Therefore, I’m asking that each Extension office display an office copy and the promotional sheet that was prepared for the publication. Then when someone asks about buying a copy, the office staff can give them a copy of the order blank.

Also, when you run a copy of one of the pages in response to a question, I suggest you accompany it with a copy of the order blank.

Each county office was provided a copy of the publication when it first came out. It may be that we need to get your front office another copy for display. If you need help on this, please contact me. We sure appreciate your help in getting this publication to the people, and in return, getting back some of the cost so we can complete the "Vegetable Gardening in Florida" for-sale publication currently under development.

(Stephens, Vegetarian 90-10)

B. ClandoSan as a nematicide.

A lot of you agents may have missed an article by Bob Dunn, our Extension Nematologist, on the status of ClandoSan. I want to bring this report to your attention due to the lively interest gardeners have shown in this product as a possible nematicide.

"One of the subjects about which Master Gardeners ask me most frequently is whether ClandoSan and similar products are truly effective as nematicides. Since it was patented in 1987, ClandoSan\textsuperscript{R} has been widely publicized as a nematicide that can be used on any crop without danger to the user or the environment. It was registered by the U.S. EPA and 49 of 50 states with unprecedented speed because of its lack of toxicity. It is also registered in Florida as a fertilizer because of its substantial nitrogen content. Many other products offered as "non-toxic" nematicides by various vendors of products for organic gardeners are the same preparation with a different name on it. If a product contains the same ingredients, it is almost certainly ClandoSan by another name.

THE PRODUCT. ClandoSan 618 is a mixture of processed chitin-rich material (e.g., shrimp or crab shell), urea, and an organic carrier and diluent (generally soybean meal). It was developed at Auburn University tests as an alternative to soil fumigation for home vegetable gardeners. At least two modes of action are hypothesized but not yet proven. First, natural degradation of each of the three components is believed to generate metabolites that are toxic to nematodes. Second, each component is believed to act as a "selective medium" that encourages growth and proliferation of microorganisms that are natural enemies of nematodes. It is interesting to note that the product contains approximately 10.4% nitrogen: about 4.6% is readily available as urea; the remaining 5.8% mostly slowly available, comes from the chitin and grain components.

ClandoSan 618 came to commercial production because of favorable results in tests against root-knot nematodes in vegetables and ornamentals in pots in a greenhouse and in small field "microplots". Those results were obtained from situations in which the product was physically mixed into the soil (before potting, in greenhouse tests; applied to surface and tilled into the root-zone for microplot tests). Incorporation maximizes the opportunity for the soil microflora to reach and utilize the material. There has been little formal study of these products for nematode control in Florida's sandy soils, but they may offer some relief from root-knot nematodes if applied as suggested by the manufacturer and uniformly mixed with the soil at least a week before planting the crop.

Although the company had no data to indicate that the product would effectively control nematodes in turf by a surface application, they did encourage its use for that purpose. Unfortunately, there was little or no nematode control from surface application of ClandoSan to turf in five experiments conducted on St. Augustinegrass, bermudagrass, centipedegrass, and zoysiagrass during the 1988 growing season. Strong growth responses seen at first on all four turf species faded quickly after 4-8 weeks, and could be attributed entirely to the nitrogen fertilizer content of the product. Serious bright chlorosis (yellowing) was often seen in bermudagrass and centipedegrass that had been treated with ClandoSan, as soon as the readily-available nitrogen was gone.

In essence, then, ClandoSan and similar products may provide some nematode control by encouraging growth of beneficial microorganisms in the soil when they are incorporated uniformly into the soil before planting. They afford no protection to turf (or, presumably, any other crops) when applied to the surface without physical incorporation; the only component that can be "watered in" is the urea, which can be obtained much more cheaply. The amount of nitrogen that is applied is far above that which is recommended for good plant (turf or vegetable) growth, and may be enough to become a serious environmental pollutant. Most gardeners have
available to them many good free or very inexpensive sources of organic soil amendment materials that will do about what these expensive products are supposed to do. Using locally-available organic soil amendments also enables gardeners to avoid the environmentally objectionable over-use of nitrogen fertilizer. Gardeners should also keep in mind that, although it is not a traditional pesticide, ClandoSan hardly fits anyone's definition of an "organic" gardening material: it contains a substantial amount of urea, which is manufactured from petroleum or natural gas."

(Stephens, Vegetarian 90-10)

C. Garden Soil Testing Changes.

This is to call your attention to the letter each county director received from Ed Hanlon about new costs and forms for the Extension Soil Testing Lab (ESTL). The new Vegetable Garden Information Form is IFAS Form 2674 (Revised Aug. 90). Beginning October '90, Ed’s lab will be accepting only the revised form and the new charges. The ESTL will call clients and delay sample results if the correct payment does not accompany the samples. The new charges are as follows:

Standard Fertility Test (for pH, lime, P, K, Ca, Mg) - $5.00.

Soil pH and lime test - $2.00.

Remember that the code for a vegetable garden is 90. For other test charges, such as water and salts, be sure to check Ed’s letter.

(Stephens, Vegetarian 90-10)

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