The VEGETARIAN Newsletter

May 5, 1975

Prepared by Extension Vegetable Crops Specialists

J. F. Kelly  
Chairman

James Montelaro  
Professor

J. M. Stephens  
Associate Professor

S. R. Kostewicz  
Assistant Professor

James Montelaro  
Professor

J. R. Hicks  
Assistant Professor

R. K. Showalter  
Professor

TO: COUNTY EXTENSION DIRECTORS AND AGENTS (VEGETABLES AND HORTICULTURE) AND OTHERS INTERESTED IN VEGETABLE CROPS IN FLORIDA

FROM: Stephen R. Kostewicz, Extension Vegetable Specialist

VEGETARIAN NEWSLETTER 75-5

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NOTE: Anyone is free to use the information in this newsletter. Whenever possible, please give credit to the authors.
I. NOTES OF INTEREST

A. Vegetarian Newsletter Mailing List Update

We are required by postal regulations to revise our mailing list annually. If you wish to continue receiving the Vegetarian Newsletter, please fill out the enclosed form (last page of this issue) and return it to us promptly. If we do not receive the completed form from you by July 1, 1975, your name will be removed from our mailing list. Please check to see if we have your correct mailing address.

(Montelaro)

B. Community Retail Produce Market Brochure

The Florida Department of Agriculture and Consumer Services recently released a brochure entitled "Developing a Community Retail Produce Market". This is timely information for county extension agents, civic officials and local business leaders considering this type of business enterprise for their areas. Anyone needing assistance in starting or operating a community produce market should contact Doyle Conner, Commissioner, Florida Department of Agriculture and Consumer Services, State Capitol, Tallahassee, Florida, 32304. Copies of this brochure are available from the Commissioner's office also.

(Montelaro)

C. Okra, Eggplant, Sweet Potato and Onion Production Guides Reprinted

These four production guides were reprinted in limited quantities and are available for distribution to county extension offices. Extension agents wanting a supply of these should order them now. Remember since the supply is limited, please order the amount needed for "Commercial Growers Use" only. If you do not receive as many as needed, write the Vegetable Crops Department for additional copies.

(Montelaro and Kostewicz)

D. Semi-Mechanical Tomato Harvester - Processing Tomatoes

Some major modifications have been made on the semi-mechanical tomato harvester in an effort to increase its harvesting capacity. The machine will be used to harvest a 0.7 acre planting of processing tomatoes at ARC, Fort Pierce, some time during the last week in May or the first week in June. The tomatoes to be harvested are from one of the promising breeding lines (processing type) developed at the ARC, Bradenton. The fruit will be processed by one of the Florida tomato canners. Anyone interested in seeing the harvester and/or a promising line of processing tomatoes should contact the ARC, Fort Pierce (305-461-6193) between May 22 and May 26 for a definite date and time.

(Hayslip and Hicks)

E. Reprints of the following publications are available from the Vegetable Crops Department on a limited basis (single copy) as long as they last:


(Hicks)
THE VEGETARIAN NEWSLETTER

II. COMMERCIAL VEGETABLE PRODUCTION

A. Water Quality Considerations in Vegetable Production

Quality of water is a factor which is not receiving sufficient consideration in overall planning for production of vegetables by many of our growers in Florida. This was obvious in our survey of the major production areas this spring. Growers with good quality water generally produced satisfactory crops. Those with poor quality water, however, experienced significant reductions in yields and quality of some of their crops.

Water quality is a general term used to rate the value of water for specific purposes. It is based on the chemical and physical properties of the water. For agricultural purposes, we are interested, primarily, in (1) the total amount of "dissolved salts" in the water, and (2) the chemical components of these salts and other materials in the water.

For simplicity, we use the term total soluble salts (TSS) to designate water quality in our vegetable extension program. Total soluble salts are determined, primarily, by measuring electrical conductivity of the water and converting the measurement to parts per million (ppm). As the TSS increase in concentration, quality of the water for purposes of irrigation drops correspondingly.

Since the chemical composition (i.e. amount of sodium, chlorides, etc.) of the TSS in irrigation water also has a significant effect on water quality, it is not possible to classify water quality with exactness with electrical conductivity readings alone. In spite of this limitation, a TSS measurement can be a valuable tool in managing a vegetable production program. Following is a general classification of water quality which we feel vegetable growers might use with a degree of confidence.

<table>
<thead>
<tr>
<th>ppm TSS</th>
<th>Ratings and Remarks*</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 500</td>
<td>Excellent--may be used without reservations.</td>
</tr>
<tr>
<td>500-1000</td>
<td>Good--may be used safely with few reservations.</td>
</tr>
<tr>
<td>1000-1500</td>
<td>Fair--may cause plant injury under certain conditions.</td>
</tr>
<tr>
<td>1500-2000</td>
<td>Poor--may cause serious plant injury under certain environmental conditions.</td>
</tr>
<tr>
<td>2000-2500</td>
<td>Very Poor--may cause very serious plant injury except for occasional use.</td>
</tr>
<tr>
<td>2500-3000</td>
<td>Substandard--may cause severe plant injury even with occasional use.</td>
</tr>
<tr>
<td>3000-above</td>
<td>Unacceptable--not recommended for use--source should be abandoned.</td>
</tr>
</tbody>
</table>

*NOTE: Composition should be checked to determine if toxic chemicals are present which can be harmful to plant even in irrigation water low in TSS.

Armed with good information on water quality, growers should be in a better position to manage their total vegetable production program. In the following months, we will discuss in more detail water quality as it affects crop response, fertilization practices, frequency and method of irrigation, alternate water sources, etc.

(Montelaro and Locascio)
B. Leaf Analysis and Florida Vegetable Crops

Soil testing for nutrient elements has been used for many years as a means of evaluating a growing media capability of supporting crop growth. In conjunction with this determination and considering a particular crop's nutrient requirement, a grower plans his lime and fertilizer program for the production season. Soil testing has thus become a basic production tool used by growers across the wide range of crops grown today.

Specialized testing techniques have been developed for particular commodity areas or situations which attempt to give the grower additional information upon which to base his program. Some of these add to the accuracy of the determinations and some may be more rapid or easier to obtain. An example of one of these specialized techniques in Florida is the Intensity and Balance (I & B) method which many vegetable growers utilize. The local county extension person is able to rapidly obtain one part of the test with a minimum of equipment with this test. This method has been discussed in previous articles in this newsletter.

Tissue analysis for nutrient elements has received much attention in some areas as "the" method for precise determination of the plant's nutrient status. It is not the purpose of this article to reflect on the value of this method but to cover briefly its theory and advantages and disadvantages as it relates to Florida vegetables.

Tissue analysis varies very basically from the concept of soil testing. Soil testing tells us what the levels of nutrient elements are in the soil, and we assume that provided there are no soil interactions, fixations, antagonisms, etc., that a certain portion of these elements is available to the crop. A great deal of research and experience with our soil types and other aspects affecting vegetable production in Florida permits accurate interpretation of soil test results. This is based on past correlations and crop responses to a given set of conditions. Tissue analysis approaches the situation from a different viewpoint. This method determines the actual levels in the plant tissue. It does not indicate why, but only that the level in the plant is at a specific point. Based on the same sort of requirements of research, experience, etc., as those for soil test, these values have to be interpreted and recommendations for corrective measures, if any, made.

Advantages

(1) Gives an accurate determination of what actually is in the plant regardless of levels in the growing media.

(2) In conjunction with soil testing, it can help determine soil interaction problems, etc.

(3) If done on a schedule during the crop season, it can give trends in levels which may indicate incipient problems developing and allow changes to be made.

Disadvantages

(1) It is a very expensive test to run from the analytical standpoint. A great deal of preparation and instrumentation is required.

(2) Precise sampling of the leaves (usual sample technique) is required. The size, location and age of the leaves are critical. The natural distribution of the elements in the plant and their movement within the plant are different and
unless the proper sample is taken, the results may be misleading. Different crops may require different sampling techniques.

(3) The time it takes between sampling and receiving the results can be a problem. Most vegetable crops are relatively short term crops (less than 100 days) so that when a problem is noted, and a sample taken, the crop may be beyond help when the analysis returns.

(4) Interpretation of results requires a high degree of proficiency and knowledge of the background of the crop the sample is from.

Tissue testing for vegetables in Florida is not being routinely used because of the disadvantages stated above. Research workers have used this method in some projects and extension has used this technique to a limited degree. However, the use of this technique as a routine diagnostic extension tool is not encouraged at the present time. Sufficient precise standards and background information upon which to base interpretation and recommendations have not been developed for Florida conditions. Presently, the use of the normal soil test in combination with the I & B method offers the extension worker the most valuable tools to cope with nutritional problems that occur with vegetables in the state.

(Kostewicz)

C. Bees for Vine Crops--Availability and Cost Problems

Vine crop growers in Florida have reported a significant increase in rental cost for bees used during pollination period. Not only did rental costs rise, but the supply of beehives was not adequate to meet demands for this crop in a few instances. Honey producers, according to Extension Entomologist Fred Johnson, are reluctant to rent out their bees because (1) high honey prices over the past two years made rental less attractive than in the past, and (2) the harmful effects of low nectar and insecticide lower the general condition and productivity of the bees. In addition, we have noted a significant increase in the use of bees in vine crop fields. Growers have learned that bees are absolutely necessary for large yields of well-shaped watermelons, cucumbers, cantaloupes and squash.

The problem may become more serious with each passing year. Alternatives to use of rental bees may have to be found by some vine crop growers in the future. One large cucumber grower decided to buy his own beehives last fall. He feels that initial cost of the hives was amortized by the end of the second crop.

Ownership of bees by vine crop growers poses many problems. It means that they will have to (1) develop a minimal expertise in beekeeping, or (2) find a professional beekeeper who will maintain his hives for a fee, for the honey produced, or for some other sort of compensation.

The bee shortage and increased rental cost add a new dimension for vine crop growers to consider for future crops. They would be wise to contract now for beehives for the next season. By doing so, they may avert a critical situation during the pollination period when little can be done on short notice.

(Montelaro)
A. Some Detrimental Effects of Ethylene

The use of ethylene gas in tomato ripening rooms has received considerable publicity in recent years. Although ethylene is a natural product of metabolism, fruits and vegetables vary greatly in the amount of ethylene they produce and also in their reaction to this volatile gas. As a general rule, fruits and melons (apples, pears, peaches, tomatoes, cantaloupes, honeydews, etc.) which undergo rather dramatic changes during ripening are the most prolific producers of ethylene. In fact, ripening is actually induced by the gas whether it is produced naturally or is applied in ripening rooms.

Increased ethylene production is also a wound response. In most cases when a fruit or vegetable is damaged either mechanically or by pathogens, there is an immediate increase in ethylene production. Quite often a tomato (particularly an immature fruit that is not ready to ripen) will develop red color in a bruised or damaged area prior to any color development on the blossom end. Some pathogens produce relatively large amounts of ethylene on their own. In addition, ethylene is produced by internal combustion engines (fork-lifts, cars, etc.) and is often present in the atmosphere—particularly in metropolitan areas.

One reaction triggered by ethylene is the degradation of chlorophyll—which is the basis for commercial degreening of citrus. While this is a beneficial reaction in fruits which are to be ripened (including tomatoes), it can have damaging effects on commodities where the retention of green color is desirable. Some examples of detrimental effects of ethylene are:

(1) Loss of green color - cucumbers (and other green vegetables) exposed to ethylene may lose chlorophyll and become yellow.

(2) Undesirable taste - ethylene acts as a catalyst for the production of a bitter tasting compound (isocoumarin) in carrots.

(3) Physiological disorders - ethylene may cause russet spotting of lettuce.

Ethylene may be beneficial or detrimental depending on the particular commodity involved. In order to avoid detrimental effects on sensitive commodities, care should be exercised in grading and packing to avoid damage to the produce, and care should be taken to avoid storing (or shipping) high ethylene-producing items with those that are sensitive.

(Hicks)

IV. VEGETABLE GARDENING

A. Timely Gardening Topics

These questions and answers are provided for your use in developing periodic (weekly) radio or newspaper briefs. They are based on letters of inquiry received from Florida gardeners.

(1) Timely Topic for week of May 18-24.

Question

I would like to grow some cucumbers especially for pickling. How are they grown compared with regular cucumbers?
Reply

If you have experienced good luck growing our slicing types under Florida conditions, you should be able to grow picklers. The main difference is not in cultural techniques, but in variety selection. Many homeowners make excellent pickles utilizing the slicing varieties harvested either immature or mature as desired. Since the smaller sizes of fruit less than 1 1/2 inches in diameter are often desired, special pickling varieties give best results.

Today's better pickling varieties are called "gynoecious" due to their habit of producing mostly female flowers. Such varieties have a pollinating variety included with the seed. Gardeners might try the varieties 'Southern Cross', 'Premier' and 'Carolina', along with such standard pickling varieties as 'Pixie' and 'Wisconsin SMR 18'.

(2) Timely Topic for week of May 25-31.

Question

I have heard of electroculture, and am wondering what effects it might have on growing vegetables in my garden.

Reply

Simply put, electroculture is the use of electricity to stimulate plant growth. The controlled application of electromagnetic energy has been claimed to produce larger harvests and increased plant growth. Such treatments include securing wire netting over a planting bed, inserting metal objects in the soil around growing plants, and sinking tin cans into the soil along the row. The idea seems to be to attract atmospheric electricity through these metal conductors to the vicinity of the plants.

While efforts to stimulate plant growth with some form of electricity have resulted in some observable effects by amateur experimenters, strictly scientific tests have not been too successful to date.

(3) Timely Topic for week of June 1-7.

Question

Some of my potato plants have fruits that look like small tomatoes. Are these "topatoes" as I have heard?

Reply

Keep in mind that the potato, like the tomato, is a member of the solanum or nightshade family. The edible part is the swollen underground stem called a tuber. The top produces flowers and forms a small green fruit just as other members of the family. These fruits should not be eaten due to a relatively high content of a toxic substance called solanine.

(4) Timely Topic for week of June 8-14.

Question

According to my neighbor, my vegetable garden plot is infested with nematodes. What can I do to rid the soil of them without using poison chemicals?
Reply

Keep in mind that all control measures should take place before planting rather than while the garden is growing. Although the use of a chemical nematicide is the most satisfactory means of control, there are several cultural practices which can help with the nematode problem if used properly.

Some of these are (1) flooding, (2) fallowing, (3) rotation, (4) cover-cropping, (5) mulching, and (6) using tolerant varieties.

Flooding is not generally practical in most home gardens, as the soil surface must be completely covered with water for a period of several weeks, or alternately covered for two weeks wet, two weeks dry, then two weeks wet.

Fallowing means leaving the garden soil clean with no growth for a period of 6 to 8 weeks. This can be effective, but does not help to improve soil condition. Thus, cover-cropping with nematode resistant plants such as marigolds and Crotalaria spectabilis is more beneficial, for these plants can be turned under to improve the soil while at the same time reducing nematode population. If the plot is badly infested with rootknot, planting with pangolagrass for a year for control has been suggested.

Mulching does not kill the nematodes, but improves the growing conditions in the root zone to such an extent that the plants can better tolerate the nematode injury. Finally, some varieties of vegetables seem to tolerate nematodes better than others. Where such varieties can be identified, these should be planted in infested soils.

(Stephens)

B. Know Your Vegetables - Hyacinth Bean

The Hyacinth Bean (Dolichos lablab L.) is also called Lablab, Bonavist, Chinese Flowering, Egyptian, Pharao, Shink, Val and Wild Field.

It is not much cultivated in Florida, nor in the rest of the U.S. Where it is grown in Florida, it is mainly for ornamental purposes. In some areas of the U.S., it has been used as a forage crop. It is widely grown in Southern Asia and Africa where the ripe seeds and the green pods are used for food. The hyacinth bean is similar to the southern pea, but the vines are longer and tougher. When the plant is supported, it often has a vine 20 to 25 feet long. Leaves are broad, oval and pointed. The pods are small, 2 to 3 inches long, flat smooth, and slightly sickle shaped. The 4 to 6-inch long sweet scented flowers vary in color, being white, pink or purple.

Those wishing to try the bean should use similar cultural techniques to the pole bean. The ripe seeds are less nutritious than the southern pea and they produce a somewhat disagreeable odor upon cooking.

(Stephens)
VEGETARIAN MAILING LIST UPDATE FORM

All subscribers of the Vegetarian Newsletter (Please complete form.)

(1) I wish to continue receiving the Vegetarian Newsletter.
   Yes ☐    No ☐

(2) My address (including zip code) is correct.
   Yes ☐    No ☐

(If not, please indicate changes to be made for our files.)

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RETURN TO: Dr. James Montelaro
           Professor (Extension Vegetable Spec.)
           3026 McCarty Hall
           University of Florida, IFAS
           Gainesville, Florida 32611