The VEGETARIAN Newsletter

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

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I. COMMERCIAL VEGETABLE PRODUCTION

A. Trickle or Drip Irrigation

These systems are characterized by the application of a small amount of water over a long period of time. Because of this and other characteristics, they are called trickle or drip irrigation systems.

Many growers have already established systems in their operations and are pleased with their results. As of this date, most of those in Florida have been in "permanent" type crops with only a limited number in row crops. Trickle irrigation systems for vegetables are being compared with the standard methods of furrow and overhead irrigation at various locations in Florida by research personnel of the Institute of Food and Agricultural Sciences (IFAS).

There are two general types of trickle systems adapted to row crops: (1) the solid wall types and (2) the porous wall types. Both of these are low pressure (less than 10 psi) systems that require small capacity pumps to service relatively large areas of crop land.

The solid wall systems are thin wall polyethylene hoses. Some are single walled and others are double walled. In the single walled system, holes are punched at intervals to supply water to the plants. In the double wall system, there is a "pipe" within a "pipe." The inner "pipe" or tubing is the main distribution channel which has fairly widely spaced holes that allow water to flow into the outer "pipe" to supply water to the plants. The rate of water flow is regulated by the water pressure and the diameter of the holes in the pipe.

The porous wall systems supply water throughout the entire length of the pipe. The amount of water supplied is regulated by the size of the pores, which is controlled during the manufacturing process.

In general, the two systems are comparable in supplying water to vegetables. In both systems, water is supplied from the pump to a solid wall header pipe. The trickle tubing is attached to the header and aligned as nearly as possible to the plants in the row. A small amount of water is supplied each day and only to a limited area of the row with the trickle system. In contrast with conventional systems a large amount of water is applied over the row area but at less frequent intervals.

Some points to consider regarding the use of trickle irrigation systems are as follows:

Positive

(1) Trickle systems use as little as 30 to 50% as much water as standard irrigation methods.

(2) Much less energy is used to deliver the water to the crop plants since water is supplied at a relatively low pressure.

(3) Only the crop row area or plants themselves are watered.
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(4) The crop foliage is kept dry as compared to overhead irrigation, thus reducing the potential for foliar diseases.

(5) The system can be used to add fertilizer materials as needed with MAXIMUM EFFICIENCY.

(6) Higher production in some situations.

Negative

(1) Water must be carefully filtered to keep algae and other substances from plugging the small openings.

(2) Cost of installation can be prohibitive for low value crops.

(3) The header pipes used in some systems may limit access to the crop for cultivation and/or other cultural practices.

(4) Greater supervision is required to maintain proper operation since plugging of the system can go unnoticed and cause fluctuation in the water supply.

IFAS scientists are striving to adapt these systems to Florida conditions. As information is developed, we anticipate that the use of the method will increase on vegetable crops.

(Kostewicz*)

*Assistance given by Dr. S. J. Locascio, Professor & Horticulturist, in preparation of this article is gratefully appreciated.

B. Crop Rotation in Vegetable Production

This is the second in a series of three articles covering old, simple practices in vegetable production which can be valuable tools when used properly. Crop rotation can be defined simply as scheduling crops so they are not planted on the same land season after season. The primary benefit to be derived from a good crop rotation program is significant reduction in soil pest problems. However, there are other aspects which, even though less spectacular, can affect vegetable production in some way. They include changes in pH, balance of nutrient elements, soil structure and possibly presence or absence of toxic substances. These changes are not easily identified and would vary considerably depending on crops grown, soil type, etc.

Although helpful in the control of insects, nematodes and certain weeds, crop rotation is generally acknowledged to be of greatest benefit in disease control. Growers have known for many decades that land planted to watermelons becomes infested with Fusarium wilt and is not fit to produce watermelons the following year or for that matter, several years. Snap bean growers who try to use the same land season after season are apt to develop similar problems with soil diseases. To a lesser degree, but of great importance, is the situation with insects and nematodes which is quite similar.
A recent problem observed in vegetable production in Florida is the build up of selected weed species through the use of herbicides on land planted to the same crop for two or more seasons. The weeds that develop are usually closely related to the crop grown and like the crop are tolerant to the herbicides used. Under these conditions, a field may soon be covered by only one or two weed species. The herbicide-tolerant weeds often reduce crop yields by competing for plant nutrients, water and sunlight. Even more serious may be the ability of such weeds to harbor insects and diseases destructive to the crop. Closely-related weed plants growing in the field or in border areas can be the primary sources of devastating outbreaks of virus diseases on many vegetable crops.

There are no set rules to follow in setting up a good crop rotation program. There are many factors to be taken into consideration such as crops that are grown, amount of land available, specific problems, etc. Generally speaking, the longer the interval before a crop is replanted on the same land, the better the chance of succeeding with that crop. Crops in a rotation plan should not be closely related. For example, watermelons should not be followed by cantaloupes, cucumbers and squash, but can be followed by corn, the table legumes and other crops not related to the vine-crop family.

The grower, knowing his operation best, is the only person who can determine the most efficient crop rotation system for his farm. Wisely used, crop rotation can pay handsome dividends over the years to vegetable growers in Florida.

(C. Soil Insect Control in Vegetable Crops)

Any vegetable crop planted in the State of Florida is subject to attack from soil-inhabiting insects. Damage may range from the obvious uprooting or cutting of young seedlings by mole crickets and cutworms, respectively, to less obvious injury to roots, stems, tubers, etc. Growers of root and tuber crops are all too familiar with the problem of grade-outs resulting from attack by wireworms and some of the other soil inhabiting insects. Readily recognized is the damage inflicted to young seedlings by mole crickets and cutworms. However, injury to plant roots is not readily evident to the casual observer. The crop, in such cases, may lack uniformity in plant size and may show a slower-than-desired rate of growth.

Even if a grower takes prompt measures to control mole crickets and cutworms after the initial damage to seedlings is noted, the full potential of the crop may not be realized. It is next to impossible to control some of the other soil insects after seedlings have emerged. On occasions, injury may be severe enough to warrant plowing the crop up and replanting.

Protection against the destructive attack of soil insects can be prevented or reduced in severity by a good, preplant application of a soil insecticide according to Mr. F. A. Johnson, Assistant Extension Entomologist of the University of Florida. He suggests use of a broad spectrum insecticide for general soil insect control. The broad spectrum insecticides approved for many vegetable crops are aldrin, parathion, chlordane and diazinon. Others are approved for specific insect problems on certain crops. Growers are advised to always check the label for information on rates, timing, methods of application, crops approved, etc.
Mr. Johnson does not recommend indiscriminate use of pesticides. He has proposed the following criteria in an effort to assist growers in making the decision to treat or not to treat:

1. A crop of high monetary value is to be planted;
2. If the crop is one that cannot tolerate reasonable damage and grow out of it;
3. If there has been a history of multiple soil insect attacks in the area at a given time; and
4. If the grower has examined the area and established the fact that he has found several of the expected pests in anticipated planting areas.

Preplant treatment of soil with a good insecticide for insect control is not very expensive or overly time-consuming to carry out. It can be considered as inexpensive insurance against partial or total crop failure.

(Montelaro)

II. HARVESTING AND HANDLING

A. Peppers

Peppers should be harvested when they are best marketable size and color for highest yield and market preference. Sweet pepper varieties are usually sized before packing and larger sizes grade higher than smaller sizes. The U. S. Fancy grade requires that each pepper shall be a minimum of 3 inches in diameter and green in color. A similar grade, U. S. Fancy Red, is established for peppers which meet all the requirements of the green pods except that 90 percent of the pods must be red.

Losses during marketing of Florida peppers in New York City were recently found to result mostly from mechanical injuries, soft rot and water loss. They should be handled carefully during harvesting and cleaning with water or revolving brushes to avoid bruising and skin breaks. If peppers are washed, water should be chlorinated and sprayed over the pods to prevent entry into the pepper cavity. Field scars, abrasions and punctures increase moisture loss and allow easy access for disease organisms. Lined crates or cartons, not overfilled, are suitable shipping containers, whereas much mechanical damage results from packing in bushel baskets. Baskets are not well adapted to palletized handling and unitized shipments. Protective packaging and high relative humidity (90 to 95 percent) should be used to retard water loss and severe softening of peppers during marketing.

Removal of field heat and suitable refrigeration during marketing are practices which will help to maintain quality. Peppers can be precooled by forced air or placing the packed containers in a refrigerated room with adequate air movement. Temperatures above 50°F result in increased decay and ripening, and temperatures below 45°F cause chilling injury. Peppers may be seriously injured at nonfreezing temperatures, either before or after harvest, by chilling. This injury is cumulative and characterized by water-soaked spots, pitting and increased
susceptibility to decay, particularly Alternaria. Chilling injury occurs primarily
during winter months and during warm weather when peppers in mixed loads are top-
iced. Peppers should not be mixed with produce requiring lower temperatures and
top-icing during shipping.

(Showalter)

III. VEGETABLE GARDENING

A. Vegetable Gardening Survey in Florida

A "Sources of Food for Home Consumption" survey in the form of a questionnaire
was sent to Florida County Extension workers in the spring of 1974. The vegetable
gardening results of that survey are summarized here.

According to agents, home vegetable gardens are on the increase over years
past. This confirms reports from seed companies who have indicated sales of garden
seeds far beyond any expectations, resulting in seed shortages. Agents estimated
a low of 200 gardens in sparsely populated Dixie County to a high of 70,000 in Duval.
As anticipated, the trend seems to be that the more populated counties have more
home gardens.

At present, most home gardens are individual family plots rather than group
or community projects. Agents in general were not too enthusiastic about the
prospects for community gardening projects; however, in some few retirement oriented
counties, this approach to raising a home food supply was reported as promising.

With the increase in gardening activity throughout Florida, agents were asked
if county staffs had sufficient resources to provide the necessary educational
guidance and respond to the increasing demand for gardening information. The survey
showed most counties do have adequately trained staff to handle inquiries and to
conduct programs on vegetable production in gardens. But, they also felt that
further additions to their arsenal of resources were needed in the way of gardening
publications and training aids for use with large audiences.

Publications expressly called for by a vast majority of agents could be
characterized as follows: (a) simply written, (b) concise, (c) free to the user,
(d) up-to-date, (e) in abundant supply, (f) assortment of subjects, ranging from
individual crops (as "Tomatoes in the Home Garden") to insect control, disease con-
trol, harvesting tips, etc. Many agents expressed a need for a more detailed
booklet (including pictures, charts, and graphs) on vegetable gardening, similar
to the Florida Department of Agriculture "Vegetable Gardening in Florida."

Suggested training aids for conducting group presentations were slide loan
sets and films on gardening. Printed material for use in newspaper gardening
columns, radio and television was listed as needed by agents for county programs.

In summary, Florida County Extension Agents are feeling a new pressure on
their time and resources. It comes from an ever-increasing number of home vegetable
gardeners trying to do something about the ever-rising cost of living. To meet this
demand for their assistance, agents are calling upon State Extension Specialists to
provide the printed literature and training aids in abundance and in a form most
usable by home gardeners.

(Stephens)
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B. Timely Gardening Topics

These questions and answers may be useful as material for weekly newspaper or radio shorts. They are based on letters of inquiry from gardeners around the State.

(1) Timely Topic for week of May 12-18.

Question

My tomato plants are dark green, vigorous and healthy; however, the flowers are not forming any fruits. What is the reason?

Reply

Several conditions can cause such a problem. Too much nitrogen fertilizer, high (over 70° F) nighttime temperatures, low (below 50° F) nighttime temperatures, irregular watering, and insects such as flower thrips are the more common causes. Any one of these by itself could cause poor fruit-set, but combinations are even more damaging. Also, be sure you have planted a variety adapted to Florida's climatic conditions.

(2) Timely Topic for week of May 19-25.

Question

I have planted several varieties of squash in my garden. Do I need to worry about cross-pollination and resulting off-type squash?

Reply

Not unless you save seed from the fruits. Crossing may occur between closely-related squash varieties, but the results of this crossing will not show up until the seeds from the fruit are planted.

(3) Timely Topic for week of May 26-June 1.

Question

I have noticed squash flowers with tiny, miniature squash fruits attached to the petals, and some flowers without. Should I pinch off the unproductive flowers to allow the little squash fruits to grow better?

Reply

Squash has both male and female flowers on each plant. The so-called "unproductive" flowers are male flowers which are essential for pollination, so do not remove them. Each female flower has what looks like a tiny squash attached to the petals. It will enlarge into a squash only if pollination and fertilization have taken place.
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(4) Timely Topic for week of June 2-8.

Question

My neighbor advised me to prune my tomato plants. What is pruning, should I do it, and if so, how?

Reply

Pruning a tomato plant means to remove each "sucker" (small leaf-like branch) that arises in the junction of each leaf and the main stem. Whether you should remove them or not depends on the type of tomato plant you have. Tall growing indeterminate staking varieties should be pruned. Removing "suckers" reduces the number of fruits per plant, enabling remaining fruits to become larger and of better quality. To prune, merely pinch, snip or cut out all "suckers" when they are less than 2 inches long. Leave one or two of the lower suckers on the plant to provide additional foliage and fruit.


Question

What could be causing my radish roots to fail to enlarge properly?

Reply

First, make sure you plant a variety adapted to Florida's climate. Radish varieties respond differently to temperature. Some produce large tops and small roots in the warmer months. Second, too much nitrogen fertilizer can cause spindly roots. Other contributing causes are too much shade, and too close spacing of the plants.

C. Know Your Vegetables - Mustard Collards

Mustard collards (Brassica carinata) is a green leafy (somewhat stemy) vegetable which, as the name implies, is a near relative of collards and mustard. The flavor of the cooked, canned or frozen greens is somewhat milder than collards and without the pungency of mustard greens. It is under observation in the U. S. as a possible new garden and farm vegetable.

The plant was imported in 1957 from Ethiopia where it is grown in small fields near villages. The seed is not commonly available in Florida and the U. S. as yet. In Europe, it is sold under the trade name of Ethiopian rapeseed.