VEGETABLE CROPS DEPARTMENT

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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IN THIS ISSUE:

I. COMMERCIAL VEGETABLE PRODUCTION
   A. Reducing Seedling Loss Under Full-Bed Mulch Culture
   B. Urea Versus Natural Organic Nitrogen Sources in Fertilizer
   C. Nozzle Wear in Herbicide Application Equipment
   D. 'Chilton' - A New Cantaloupe Variety Released by Auburn University

II. VEGETABLE GARDENING
   A. Using Crop Knowledge to Help Home Gardeners
   B. Know Your Vegetables - Swiss Chard

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I. COMMERCIAL VEGETABLE PRODUCTION

A. Reducing Seedling Loss Under Full-Bed Mulch Culture

Growers of vegetable crops changing over from open-culture to full-bed mulch culture have been confronted with a serious problem of poor seedling survival. It is observed most often in the hot weather of late summer and early fall. However, it can occur at almost anytime during the growing season in Florida. Seedling loss is most severe on direct-seeded crops, but it can occur in transplanted crops as well.

Poor seedling survival under full-bed mulch culture can be attributed to injury resulting from accumulation of high soluble salts in the root zone. As water is evaporated or transpired by plants, salts are deposited at or near the surface of the soil exposed where the hole is punched in the mulch cover.

Soluble salt injury to seedlings has been discussed in previous issues of the Vegetarian Newsletter. These articles included ways and means of combating the problem. Since then, we have realized that even though the cultural practices recommended are definitely helpful, seedling injury under full-bed mulch culture can still be a serious problem. A solution to the problem recommended by Mr. Norman Hayslip, Horticulturist at the Agricultural Research Center, Fort Pierce, is top watering. Mr. Hayslip is the developer of the plug-mix seeding technique now being used successfully by some growers. After working with the problem for several years, Mr. Hayslip feels that top watering is absolutely essential during hot weather.

Top watering can be done with carts or other equipment which will deliver about 1/3 cup of water per hole. Mr. Hayslip recommends top watering every two days during hot weather. Top watering should be continued until the plants become well established and develop a root system extending beyond the zone of high soluble salts. This may be seven to ten days for containerized transplants to a period of twenty or more days for direct-seeded crops.

Montelaro

B. Urea Versus Natural Organic Nitrogen Sources in Fertilizer

A misunderstanding common among many of our vegetable growers in Florida is the relative merits of the various sources of the so-called "organic nitrogen." Growers often point with pride to the fact that their fertilizer contains 30 percent or more organic nitrogen. Upon checking the fertilizer tag, one is apt to find that the major portion comes from urea (labeled water soluble organic nitrogen) and the balance, if any from plant residues, treated sewage sludge, etc. (labeled water insoluble organic nitrogen). Therein lies the difference between the two.

The pros and cons relative to the use of organic nitrogen have been discussed in past issues of the Vegetarian Newsletter. The purpose in this issue is to discuss the relative merits of the two general types of organic nitrogen so that growers can make a more intelligent decision in the selection of nitrogen sources for their crops.
Urea nitrogen is actually an organic nitrogen by definition and can be so stated by law on the label. However, it is labeled as water-soluble organic nitrogen. It goes into the solution rapidly in the soil, but this does not mean that the plant will absorb and utilize it as such. On the contrary, it must be broken down into ammonia and carbon dioxide before being absorbed by plants. The conversion can take place in a relatively short time in the presence of the appropriate microorganisms. From the standpoint of behavior in the soil, urea reacts more like the inorganic forms of nitrogen than the natural organics.

The natural organics, on the other hand, are broken down slowly. Depending on the source, the process may take weeks. It has been estimated that only about 40 percent of the nitrogen from natural organics are available to the crop for which it was applied. The natural organics may also (1) supply some minor elements to the soil, (2) impart good conditioning properties to a fertilizer mixture, and (3) help to improve the physical, chemical and biological properties of a soil.

In summary, all so-called organic nitrogens do not necessarily react alike in a soil and should, therefore, be given different considerations in the management of the fertilization program.

C. Nozzle Wear in Herbicide Application Equipment

Pesticide application equipment should be calibrated prior to its use and periodically during its operation. Proper calibration of the equipment is essential for safe, economical and effective pest control.

One aspect of herbicide application equipment frequently overlooked is that of nozzle wear. Nozzle selection is usually made on the basis of desired pattern, delivery volume and pressure used. Calibration is necessary to keep track of how much material is being applied, and to determine if adjustments are needed. With any given material, nozzle wear causes the most significant change in volume of solution delivered by a sprayer. Herbicides are usually applied in low gallonages at low pressures. Delivery volume is thus very important or excessive herbicide may be applied. One would suppose that for any given material, nozzle wear would be the same over all the nozzles being used. This may or may not be true, depending on the system used. A frequent finding is that one nozzle in the system is delivering a great deal more spray material than others. This often can be traced to the method used to unplug stopped nozzles. Wires, nails, screwdrivers, etc., are not recommended as devices to open plugged nozzles. They tend to enlarge the opening slightly, thus altering the delivery volume. Air pressure or soft items like a toothpick should be used instead.

Wettable powders generally will cause more wear on the nozzles than true solution-forming materials or emulsifiable concentrates. There is also a difference in the wear resistance of the materials used to make nozzles, i.e., brass versus stainless steel. An excellent illustration of this was given in a
previous Vegetarian (No. 91) and is worthy of consideration. A good practice is to replace nozzle tips and screens frequently to prevent potential misapplication. This may also prove economical from the standpoint of reducing quantities of material used.

(Kostewicz)

D. 'Chilton' - A New Cantaloupe Variety Released by Auburn University

New cantaloupe varieties adapted to the Southeastern United States are of great interest to Florida growers. We recently have been informed that a variety developed by Dr. J. D. Norton of Auburn University has been released and is available commercially. An exclusive release of the seed was made to a national company for seed increase and sale to wholesale seedsmen. We have not evaluated the variety under Florida conditions, but growers may want to obtain a small quantity of seed for their own observational trials.

The release leaflet describes the variety as having a high degree of tolerance to gummy stem blight, and tolerance to powdery and downy mildew. The fruit is mostly round, 5 to 6 inches in diameter with an average weight of 2½ pounds. It is slightly ribbed, well covered with a medium net, and matures in 70-75 days. The flesh is thick, deep orange in color and of excellent flavor and aroma, and has a small seed cavity. The fruit is very firm and will soften to an excellent dessert quality in 3 to 4 days. Yields compare favorably with established varieties. It is excellent for shipping and has good eating quality.

A copy of the release leaflet and/or names of seed sources can be obtained by writing the Vegetable Crops Department.

(Kostewicz)
II. VEGETABLE GARDENING

A. Using Crop Knowledge to Help Home Gardeners

Working between the field on the one hand and the home garden on the other, one is surprised at the similarity of the principles involved. Following are a few points which might help in dealing with persons desiring to grow vegetables in gardens.

Adapt field (commercial information to the garden) - Most technical information is developed as a result of research on crops grown on a large commercial scale. It is our job to determine which of this information can be utilized by the home gardener.

Basically, there are several differences along with the similarities of recommendations for the home vegetable gardener as compared with the commercial producer. Because of these differences, we strongly urge that commercial recommendations (and publications containing them) not be given to home gardeners.

The main difference lies in the area of safety. The average gardener is not accustomed to dealing with chemicals which may be dangerous to himself and his neighbors. It may appear to be inconsistent, but we are not willing to give him as good control of his pests as we might since we can't afford to sacrifice safety. Secondly, changes are necessary due to the relatively small plots involved.

Since most gardens are small compared with commercial fields, many production practices can be carried out in the garden that could never be attempted in the field; for example, hand picking of insects and composting.

Promotion of gardens - Another consideration is that we need to promote gardening as a way to supplement incomes, improve nutrition, and to provide a more enjoyable life.

Gardeners more novices - Since gardeners are in general not as well informed about crops and their production as are farmers, we need to be detailed in information we give them, yet keeping in mind our limited time. For example, most farmers know what we mean by the term "sidedress," but such a term must be explained to the gardener.

1. Crop Arrangement (spacing of rows and plants, etc.)

While a commercial grower may have only one crop to plan for in his growing area, the gardener must arrange an assorted array of crops in a limited space.

A. Arrangement - Consider tall growing, slow maturing, etc.

B. Spacing - Space plants and rows to provide maximum use of small plot; fewer machinery considerations than for large farm; just enough room for plants and for caring for them. Refer to Circular 104 for correct spacing.
C. Planting date - Suggest time of planting best for satisfactory growth - no need to consider market angle in most cases. (Circular 104).

2. Varieties

Most varieties suitable for commercial production in Florida are usually suitable for suggesting in the home garden, except for the problem that often such seed is not generally available in garden supply stores in small packets. On the other hand, many varieties may be suggested for the garden that have no place in a commercial operation. Examples - Big Boy tomato, Smith's Perfect cantaloupe.

There are many kinds and varieties that a person can grow in his garden for his own use that he could not readily sell. Example - Kohlrabi.

We have tried to accumulate a list of kinds and varieties in Circular 104 that include the key commercial varieties generally available, plus others not of commercial use, but which may be popular with home gardeners. We try to keep in mind availability of seed, popularity, quality, productivity, and pest resistance.

3. Organic Matter

While the farmer can do little to improve the organic matter in his soil, and does quite well without such improvements, the gardener has the time and means to do so. And, it is often quite advantageous to the gardener. Composting is one of the best ways to build up valuable organic matter in soils.

4. Liming

We may be too general here, but what we try to do is give the gardener one pH range to shoot at for all his crops in the same plot. In general where the soil pH is a little low (pH 5.5 to 5.8), 2-3 pounds of dolomite will be sufficient. On very acid soils (below 5.0), more lime is needed up to 10 or 12 pounds per 100 square feet.

5. Fertilizing

I'm sure we are too general here for best results with all crops; however, when we suggest 2-5 pounds per 100 square feet, we are considering first, several vegetables and their needs and second, various soil types having different previous fertilizer practices.

In general, if a soil test is adequate in potash and phosphorus, I would still suggest the rate of 2-5 pounds of 6-8-8 per 100 square feet. This is equivalent to only about 1/2 to 1 ton per acre. It might not be needed, but economy is not always a main consideration with gardeners as it is with the commercial grower. Although we suggest 6-8-8, any common analysis such as 4-7-5, 6-6-6, 6-8-8, 8-8-8 or 10-10-10 may be used in the garden. Liquid fertilizers containing the major elements are suitable for soil application, but in general, the cost per unit of plant food is higher with solutions.
6. Weed Control

We are presently suggesting mostly conventional methods of weed control in the garden. Most plots are small enough that weeds can be controlled by cultivation with hoes, wheelhoes, power cultivators, hand pulling or mulching.

We have not suggested the use of chemical weed control for several reasons. (We suggest fallow treatments for problem weeds such as nutgrass.)

A. Conventional means usually satisfactory.
B. Several types of vegetables growing in plot to be treated and no herbicide works on all crops.
C. Gardener probably not skilled enough to apply herbicide.
D. Damage to vegetables and other plants possible if misused.

7. Insect Control

Of course, this is the area where we have to be most cautious in making suggestions. Here, I would like to caution anyone who gives out commercial material to a home gardener, for it may not be safe for the average gardener to use.

A garden insecticide should be general as possible (controlling several pests and usable on several crops at once), and safe as possible to applicator and consumer.

In Circular 104, we have listed most of the insects commonly found in home gardens, and the materials to control them.

In the interest of a clean environment, I think all of us should emphasize the restrained use of insecticides (to be used only when needed).

8. Fungicides

Most fungicides suggested for commercial use may be suggested also for the home gardener. Formulations may be the same or different, but suggest a measurement such as tablespoons per 1 gallon of water instead of pounds per 100 gallons.

In most cases, zineb, maneb, captan, or copper dusts or sprays are general and sufficient enough for a wide range of vegetables, if used on a preventive basis.

Farmers usually know the disease on their crop, but gardeners usually do not. We need to help gardeners learn to distinguish between diseases so they will not expect easy control of these such as viruses.
9. **Nematodes.**

Since cost is not as great a factor with many gardeners as with farmers, we should encourage gardeners to fumigate their soil prior to starting their garden each season. In-the-row fumigation with D-D, EDB, Nemagon, Vapam, or Vorlex may be suggested for most crops. Methyl bromide is no longer cleared for use by home gardeners.

**Explanation of Practices** - We must be ready to explain such things as mulching, composting, pruning, staking, pollination, blossom-drop, physiological disorders, etc. Gardeners are inquisitive and generally demand more explanation than most farmers.

(Stephens)

B. **Know Your Vegetables - Swiss Chard**

Swiss chard belongs to the Goosefoot family--Chenopodiaceae. It is Beta vulgaris var. cicla. Swiss chard, also known as chard, leaf beet, or spinach beet, lacks the fleshy root of the garden beet. Its large, glossy, dark-green leaves are borne on white, fleshy leaf stalks. Chard is commonly found in gardens throughout Florida both as a winter vegetable, since it is a cool-season crop, and as a summer cooking green, since it tolerates heat very well also.

Chard may be seeded directly in the garden or transplanted from a seedbed or from one point in the row to another. Plants are spaced about 6 to 12 inches apart. It is easy to grow. Some even grow it as a border plant around buildings.

The succulent, dark-green leaves, which are usually crinkled or savoyed, are eaten as cooking greens. Sometimes, the fleshy white leaf midribs are separated from the leaf blade and prepared much like celery or asparagus. Chard is ready to eat about 60 days or less from seeding.

Favorite varieties are Lucullus, Fordhook Giant, and the red-leaved variety Rhubarb Swiss Chard.

(Stephens)