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TO: COUNTY EXTENSION DIRECTORS AND AGENTS (VEGETABLE AND HORTICULTURE)

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I. NOTES OF INTEREST

A. Field Day Calendar

April 16 -- 1:00PM, Vegetable Field Day, Hastings ARC, Yelvinton Farm
May 22 -- 9:45PM, Vegetable Field Day, Bradenton AREC
June 3 -- 1:30PM, Watermelon Field Day, Leesburg ARC
June 4 -- 9:00AM, Vegetable Crops Department Field Day, Hort Unit, Gainesville

(Maynard)

B. New Publication


(Maynard)

III. COMMERCIAL VEGETABLE PRODUCTION

A. Growth Patterns and Nitrogen Uptake

Salt injury to tomato and pepper seedlings has been a serious problem this spring, especially when fertilizer was placed deep in the bed during bed forming and pressing operations, a practice not recommended in the full-bed mulch system. With rapid changes in soil moisture it takes very little fertilizer to burn the tender roots of seedlings during the first 8 to 10 days after setting in the field.

How little is very little? Classic studies on nitrogen uptake by F.W. Zink, University of California, show that only 1 to 7% of the total N absorbed by various vegetable crops is taken up during the first quarter of their growth. The nitrogen uptake patterns of several vegetable crops (high yield situations) is shown: (Pounds of N per acre taken up).
If plant growth is measured carefully from seedling stage to maturity and the measurements recorded on a time-growth graph, a growth rate curve would be evident. The slow start, then rapid increase period, and the tapering off of the S-shaped curve is typical of the growth rate of all living things.

A typical plant growth rate, broken down into 10% sections of the total growing season, is as follows:

| Units | Increase | Accum. Incr. | | Units | Increase | Accum. Incr. |
|-------|----------|--------------||-------|----------|--------------|
| 10    | 2.2      | 2.2          | 10    | 2.2      | 2.2          |
| 20    | 8.4      | 10.6         | 60    | 16.9     | 81.5         |
| 30    | 17.4     | 28.0         | 70    | 10.1     | 91.6         |
| 40    | 18.5     | 46.5         | 80    | 4.4      | 96.0         |
| 50    | 18.1     | 64.6         | 90    | 2.0      | 98.0         |
|       |          |              | 100   | 2.0      | 100.0        |
Consideration of the growth pattern and uptake of nutrients should guide us in the development of more efficient fertilizer programs. Someday we may be able to match this supply and demand with greater precision, and move to higher yield levels in less space, time and cost. Drip irrigation, plastic mulch, controlled release inputs and a better understanding of the S-curve may be the production combination of the future.

(Marlowe)

B. Latent Effects of Cold on Cruciferae

Many scattered problems that have arisen in the state this spring on the cruciferous crops can be attributed to the unseasonably cold winter. The latent (hidden) effects of cold temperatures are complicated and here are discussed for the Brassicas specifically and all crucifers in general.

Most of the problems can be attributed to the stimulative effects of low temperature on flowering, a phenomenon known as vernalization. Physiologically the Brassicas are divided into two growth stages, juvenile and adult.

While the plants are in the juvenile stage, the growth is vegetative and they cannot be vernalized (induced to flower). The adult stage is composed of a vegetative growth phase and a generative phase. The generative phase is the budding and flowering phase of development and with the exception of broccoli and cauliflower is undesirable in commercial production. The transition from juvenile to adult is a factor of plant size and age.

Premature Flowering of Brassicas

Bolting of the crucifers seems to be the greatest latent effect seen so far. Low temperature induction of flowering in cabbage is quantitative. An older plant requires less time at the critical temperature than a plant that has just passed into the vegetative phase from the juvenile stage. Unfortunately there is a tremendous range in the juvenility
factor due to variety differences. In some cases, intermediate forms occur between flowering plants and completely vegetative plants. This includes elongated stems, and heads with long cores with internal flower formation or simply primordial flower buds. The plants could be somewhat to severely mishapen or partial cracking might occur. Here again each variety may manifest different propensity for the problems depending on the age of the plants. Similar growth and flowering patterns also occur in semi-heading and non-heading crucifers such as Chinese cabbage and mustard.

**Buttoning of Cauliflower**

A problem that may be found in cauliflower is "buttoning". Buttoned plants have fewer and smaller leaves than normal plants, and make small curds which soon bolt.

Buttoning is caused by premature transition from the juvenile stage to the generative stage. In other words, the plants do not have enough time or growth in the vegetative stage to form proper foliage for curd development. Buttoning is strongly influenced by conditions under which the cauliflower is grown. Slowing or stopping the growth in the vegetative stage by cold, dryness, nitrogen shortage, excessive salt concentrations or severe weed competition can promote buttoned plants. Planting hardened off, old transplants will also promote buttoning.

**Blindness in Cauliflower**

Blind plants are those in which the growing point collapsed at an early stage. Blindness is prevalent if plants, after having formed approximately seven leaves, are exposed to temperatures near freezing. When plants are well past the seven leaf stage, low temperatures cause little of this condition.

This disorder is often confused with whiptail, which is caused by molybdenum deficiency. The leaves of blind plants are often thicker and harder than normal, and adventitious shoots may develop which can make a small curd.
Pathological and Other Disorders

Other effects on crucifers after severe cold may show up as pathological or non-parasitic disorders or may be a combination of both.

It has been reported that crucifers may become more susceptible to Fusarium and black rot after a severe cold shock. Alternaria may also attack damaged curds of cauliflower causing a brown rot disease.

Frozen pith may be attacked by several pathogens of which soft rot bacteria would be the most common. Soft rotted stems may not be apparent until lower leaves start to soften and collapse.

Sudden withdrawal of water due to freeze shock, or collapse of the pith by soft rot cause the browning of cauliflower curds and internal disorders of cabbage such as internal tip-burn.

Diseases such as downy mildew and others are not related to cold damage and should not be confused with a disease such as brown rot which may or may not be attacking curds.

In summary, one must take into account the crop variety, age at the cold weather, days subjected and degree of cold, seed bed production techniques, condition of transplants at planting and field production variables when trying to predict if conditions were favorable for a crop to develop latent cold damage symptoms. No mean feat in itself.

(Stall)

IV. HOME VEGETABLE GARDENING

A. State 4-H Horticulture Contest and FFA Vegetable Contest

It won't be long before July is here and it's time for the State 4-H Horticultural Identification and Judging Contest. The event will be held on Tuesday, July 28 at 4-H Congress in Gainesville.
Each county may enter a 4 member team in this event. The contest involves identification of fruits, vegetables and ornamental plants as well as judging 2 classes of products in each commodity area. Judging is done on a consumer quality basis. The Florida contest is one of the most competitive in the nation and has proved to be excellent training for the first place team which goes on to national competition. This year's national meeting will be in Colorado Springs, Colorado.

Interest in 4-H horticultural events has increased in the past few years and that growth should continue. Participation in this event is an excellent way to stimulate interest. Training materials are available on a loan basis to counties in preparing teams.

The State FFA Vegetable Identification and Judging Contest will be held at the University of Florida, on Friday, May 1. Fifty to sixty 4 member teams are expected to enter. Participants are responsible for identification of kinds and varieties of vegetables, insects, diseases, weeds, and seeds and for judging 4 classes of vegetables.

For further information on either of these events contact Susan Gray at (904)392-2134. Please help to encourage interest and participation in these programs.

(Gray)

B. Care of the Garden

Now that most spring garden vegetables are up and growing around the state, it is time to think about taking care of them. Here are some of the more frequently encountered garden care activities.

Thinning

After sowing the seeds, most seedlings emerge much too closely together in the row to allow proper growth and development. Thus, it is necessary to remove surplus plants, leaving the remaining plants properly spaced.
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Thinning is best done by hand while the plants are small and the soil is moist, so they can be pulled out easily without injuring the remaining plants. Surplus turnips, leaf lettuce, beets, and mustard may be pulled when they are 4 to 5 inches tall. At this stage they are usable in salads or as cooking greens. Carrots should be thinned first when 2 to 3 inches tall, so as to stand about 1 inch apart. When harvesting, pull alternate plants, thus leaving room for those remaining to develop.

Some kinds of vegetables may be replanted after thinning, thus allowing empty spaces in the row to filled. The following chart should be helpful in determining which ones may be moved from one point in the garden to another.

Table 1. Response To Transplanting After Thinning

<table>
<thead>
<tr>
<th>Generally Survive Transplanting</th>
<th>Seldom Survive Transplanting</th>
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</thead>
<tbody>
<tr>
<td>Beet</td>
<td>Bean</td>
</tr>
<tr>
<td>Broccoli</td>
<td>Corn</td>
</tr>
<tr>
<td>Brussels sprouts</td>
<td>Cucumber</td>
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<tr>
<td>Cabbage</td>
<td>Okra</td>
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<tr>
<td>Carrot</td>
<td>Lima Bean</td>
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<tr>
<td>Cauliflower</td>
<td>Muskmelon</td>
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<tr>
<td>Celery</td>
<td>Pea, English</td>
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<tr>
<td>Chard</td>
<td>Pea, Southern</td>
</tr>
<tr>
<td>Chinese cabbage</td>
<td>Pumpkin</td>
</tr>
<tr>
<td>Collards</td>
<td>Radish</td>
</tr>
<tr>
<td>Eggplant</td>
<td>Squash</td>
</tr>
<tr>
<td>Endive</td>
<td>Turnip</td>
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<tr>
<td>Kohlrabi</td>
<td>Watermelon</td>
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<tr>
<td>Lettuce</td>
<td></td>
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<tr>
<td>Mustard</td>
<td></td>
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<tr>
<td>Onion</td>
<td></td>
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<tr>
<td>Pepper</td>
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<tr>
<td>Tomato</td>
<td></td>
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</tbody>
</table>
Cultivation and Weed Control

Cultivation is the working of the soil around the plants. Its main purpose in most cases is weed control. A single cultivation will kill most all weeds less than 1 inch tall, but it is difficult to kill them when they reach 4 to 5 inches. Usually, weekly cultivation will be sufficient.

Shallow cultivation is best, for it is less injurious to crop roots than deep cultivation, and is just as efficient in killing weeds. A well-sharpened common garden hoe is still the best tool for cultivating the average garden.

In addition to weed control, some garden soils such as heavy clays gain other benefits from cultivation such as better aeration and water absorption.

While cultivating, it is beneficial to pull soil up around the base of plants where wind and water erosion has exposed the roots. With the Irish potato, it is advisable to mound up the soil around the stems of the leaves when the stems have reached 6 to 8 inches in length. Allow only the top 2 to 3 inches of leaf-canopy to stick out of the bed. This mounding causes more tubers to set on a stronger plant with a longer underground stem than if left unmounded.

Mulching

A good mulch controls weeds, conserves moisture and fertilizer, and provides a clean surface for supporting tender fruiting vegetables. Mulches may be applied before planting, or they may be placed around the base of vegetables after the plants are sufficiently large enough to avoid covering.

Common mulching materials are black plastic film, paper, leaves, hay, pinestraw, peanut hulls, sawdust and wood shavings.
Staking and Pruning

Some of the taller growing plants and vine crops will need a support to hold them erect.

There are many acceptable ways to support pole beans and other similar plants. One method is to set 6-foot posts every 12-15 feet in the row. Stretch wire or cord between the posts at the top and bottom. Weave string between the top and bottom wires (or cord) to form a trellis. Shorter plants such as peas can be supported in the same way using shorter 3 to 4 foot stakes. Cut-brush or bamboo may stuck in the ground and arranged in a tee-pee fashion above the vining plants.

Indeterminate tomato plants need to be staked due to their extremely vining growth habit. Determinate and semi-determinate varieties may also benefit from staking and trellising for the purposes of easier cultivation and care.

Indeterminate varieties of tomatoes should also be pruned. Removal of side branches (suckers) produces a more manageable plant with fewer, but larger fruits than if un-pruned. Generally it is not advisable to prune determinate varieties.

Watering

A short period of dry weather may reduce the yield and lower the quality of vegetables, and a long period without water can result in a total failure of the garden. Usually about 1/2 to 1 inch of water per week is necessary to maintain the garden. Water the garden as often as is necessary to keep a proper moisture level in the root zone. It is best to water deeply and less frequently than shallow and often.

Examine the garden regularly to observe the first signs of insect or disease invasion. Some pests need to be controlled early before they multiply to hazardous proportions. Others may not be cause for alarm even though some damage is evident. Ordinarily, diseases must be controlled on a
preventive basis, whereas insects can be monitored for threshold levels beyond which control steps must be taken. Gardeners should become aware of the integrated pest and crop management concept.

(Stephens)

C. Know Your Minor Vegetables – Armenian Cucumber

Armenian cucumber (Cucumis melo L. Flexuosus group) is known by several other names such as: Japanese cucumber, snake melon, snake cucumber, and uri. It should not be confused with the snake gourd or club gourd which is Trichosanthes anguina.

Armenian cucumber is closely related and is similar to a muskmelon, however, a very long one. The fruit is very long and slender, usually about 3 feet long and 3 inches in diameter, almost always bent and twisted. It is dark green, marked with paler longitudinal furrows, and is thicker at the blossom end. The fruit changes to a yellow color when ripe, at which time it has a strong muskmelon odor.

The annual vine is creeping, with slender roundish to angular stems covered with short hairs. The leaves are rounded, almost kidney shaped with 5 angles (lobes). Both male and female flowers on the vine are small, pale yellow, with 5 rounded divisions. Seeds are more like those of a muskmelon than a cucumber.

Individual plants may be found which bear at the same time fruits which are long and twisted and fruits which are broad and oval in shape. Sometimes even the same fruit will be thin and snake-like near the stem-end, but swollen at the other end similar to a melon.

In Florida, as in most parts of the country, the Armenian cucumber is grown only as a curiosity. It is used for pickling.
It is a warm-season crop, so should be planted from seed in the early spring in all areas of Florida except south Florida where it may be seeded in October through February. Follow the cultural suggestions for cucumber or cantaloupes. Be on the alert for powdery and downy mildew, two common diseases of cucumbers and cantaloupes.

(Stephens)