May 8, 1973

Prepared by Extension Vegetable Crops Specialists

J. F. Kelly  
Chairman  

J. M. Stephens  
Assistant Professor

James Montelaro  
Professor  

S. R. Kostewicz  
Assistant Professor

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

FROM:  
S. R. Kostewicz, Assistant Vegetable Crops Specialist

VEGETARIAN NEWSLETTER 73-5

IN THIS ISSUE:

I. COMMERCIAL VEGETABLE PRODUCTION

A. Minor Element "Prescription Mixes"
B. Seed Corn Maggot Injury on Watermelons
C. Sweet Potato Weevil Control
D. Research with Repeat Low-Dosage Postemergence Herbicide Treatments

II. VEGETABLE GARDENING

A. Weed Control in the Home Garden
B. Spacing Summer Squash
C. Know Your Vegetables - Wax Gourd

NOTE: Anyone is free to use the information in this newsletter. Whenever possible, please give credit to the authors.
THE VEGETARIAN NEWSLETTER

I. COMMERCIAL VEGETABLE PRODUCTION

A. Minor Element "Prescription Mixes"

The use of "prescription-mixed" or "pre-mixed" materials as sources of minor elements has increased significantly in Florida vegetable production over the past few years. Growers apparently like to order the required minor elements for their fertilizer by specifying a certain number of pounds of a prescription-mixed material rather than remembering cumbersome percentage fractions for each of the minor elements. For example, a grower planning to apply 1,000 pounds of fertilizer per acre and wishing to apply a pre-mixed material at the rate of 20 pounds per acre simply specifies addition of 40 pounds of the pre-mixed material per ton of fertilizer. Ordered individually, a grower's request for the same minor elements might read: 0.3% CuO, 0.5% MnO, 0.5% Fe$_2$O$_3$, 0.3% ZnO, 0.2% B$_2$O$_3$ (numbers used as examples and are not recommendations).

The minor elements in pre-mixed forms are suggested for use as a "shotgun treatment" in the absence of more specific information or where no extreme minor element deficiencies or excesses are recognized. In the latter cases, it is best to specify the exact amount of each element required. The most commonly used pre-mixed formula for general treatment contains the following amounts of minor elements:

<table>
<thead>
<tr>
<th>Oxide of the Elements</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>B$_2$O$_3$</td>
<td>9.65%</td>
</tr>
<tr>
<td>CuO</td>
<td>3.75%</td>
</tr>
<tr>
<td>Fe$_2$O$_3$</td>
<td>25.73%</td>
</tr>
<tr>
<td>MnO</td>
<td>9.68%</td>
</tr>
<tr>
<td>ZnO</td>
<td>8.71%</td>
</tr>
<tr>
<td>MoO$_3$</td>
<td>0.30%</td>
</tr>
</tbody>
</table>

The above formula can be purchased under the trade names of: (1) TEM 300 and (2) FTE 503. Other pre-mixed formulas for specific soil and crop requirements are also available from the manufacturers.

Growers are urged to study their minor element needs carefully. The safety margin between too little and too much is quite narrow and a mistake of this type can be disastrous to a crop. To successfully manage the minor element program, consideration must be given to crop, soil type and past history, pH, soil analyses, fungicide programs, sources and rates of minor elements, etc.

(Montelaro)

B. Seed Corn Maggot Injury on Young Watermelons

The seed corn maggot, Hyilemya platura (Meigen), is a common insect pest of corn and many other crops in the midwest. It had never been observed as a pest of commercial crops in Florida until this spring when it was found in a twenty-acre watermelon field in Jackson County. The planting, a total loss, was disked under and reseeded. The seed corn maggot is about one-fourth inch
long when it is full grown. It is legless, pointed at the head and blunt at
the tail. After hatching from eggs laid by adult flies in the soil, the maggot
migrates to the seed, eats the germ out or enters roots and stems. Injury is
usually most severe in cold seasons and in soils high in organic matter.

The seed corn maggot could pose a serious problem to growers in Florida
if it becomes a regular pest. The reason for this according to Freddie Johnson,
Assistant Extension Entomologist of the University of Florida, is that once a
crop is attacked, it is almost impossible to combat effectively with the chemicals
available now. In other words, growers would have to use preplant treatments.

Since this insect is new and a potentially dangerous pest for Florida
crops, we are asking county agents, industry representatives and growers to be
on the lookout for it. If seed corn maggot is suspected, we would like to be
informed immediately so that we can get insect specimens and survey crop damage.
Remember it attacks many crops--beans, peas, cabbage, beets, radish, potatoes,
melons and other crops as well as corn.

(Montelaro)

C. Sweet Potato Weevil Control

The sweet potato weevil is a real problem to production in the State.
Growers must know as much as they can about the insect in order to carry out an
effective control program.

The adult insect is a beetle about 1/4 to 3/8 of an inch long. The middle
part of the body and the legs of the adult are red while the remainder is blue-
black. Most of the damage done by the weevil, however, is caused by the larvae
which burrow and feed in the sweet potato root.

The weevil has four stages in its life cycle--the egg, the larva, the
pupa and the adult. The cycle from egg to adult takes about 4 to 6 weeks under
favorable conditions. The adult can live for extended periods of time, often as
long as 8 months. The adult female punctures the stem of the plant near the
soil surface and deposits its eggs. The eggs hatch and the larvae burrow down-
ward into the root.

The weevil can live and be a problem in sweet potato plants in the field,
in storage and in plant beds. An effective control program must consider all
these facets. One factor contributing to the problem of controlling this insect
is the ability of the weevil to live and survive in wild morning glory species
which are common to our area. Thus, this "wild" population can potentially serve
as a reservoir for infestation of a crop.

Some pointers for establishing an effective control program are as follows.

1. Purchase and use only weevil free bedding stock or plants. Most
states have a certification program for growers supplying sweet
potatoes for these purposes.

2. Where the grower beds roots for his own plant production:
a. Dust beds with 1/4 pound of 2% dieldrin per 80 square feet of bed when scattered plants show color in the stems.

b. Repeat application when all plants are up and after each pulling.

3. Where purchased plants are used or when own plants are set in the production field:

   a. The use of dieldrin is limited to 75 pounds of 2% dust per acre.

   b. A suggested practice may be the use of 35 pounds of the dust within a week of setting followed by 40 pounds of the dust shortly before the vines begin to meet in the middle.

4. Storage and general sanitation.

   The storage and surrounding areas should be kept free of trash and old crop residue. The remains of the crop in the field should be thoroughly disked to permit rapid decomposition. Eliminate all harboring places where the insect can overwinter and serve to infest future crops.

5. Where possible, control populations of wild morning glory. For example, along fence rows, abandoned fields, etc.

   It is important to remember that when using the dust material that it should be applied to the soil. The adult is active in depositing her eggs in the stem at the soil surface and this must be the target area for the dust application.

(Kostewicz)

D. Research with Repeat Low-Dosage Postemergence Herbicide Treatments

Dr. W. T. Scudder of the AREC Sanford recently participated in the Field Day at the ARC Hastings. He presented a summary and description of weed control work he has been doing in direct-seeded and transplanted cabbage at Sanford. He described one usage of herbicides, still experimental, which holds potential for the future--"Repeat low-dosage postemergence treatments."

Several herbicides may be used postemergence or posttransplant on cabbage. Of these, only nitrofen (Tok) is very active postemergence to weeds less than 3/4 to 1 inch tall at the time of application. However, some weeds such as ragweed and certain grasses are very resistant to nitrofen and may not be controlled.

Frequently, with many herbicides, poor weed control can be traced back to factors other than the material itself. For example, too much rain following application can leach the material out of the desired action area or too little
moisture can result in inactivity of the material. Timing is another critical factor. Many herbicides act by preventing or hindering germination of weed seeds. If there is a delay between the planting of the crop and application of such a material, many weed seeds could have germinated and be unaffected by the herbicide subsequently applied. Considering these two facets, it appears that repeat low-dosage application might be effective in controlling weeds which were not controlled previously for one reason or another over a span of time. One might further project that there could be a decreased hazard to the crop because of lowered rates used.

Dr. Scudder stated, "This procedure, using nitrofen at approximately 1/2 pound a.i. per acre at weekly intervals, appears very promising for chemical weed control in both direct-seeded and transplanted cabbage. In several trials, good weed control has been obtained provided the treatments are started no later than one week after planting. Results using this method frequently have been superior to the use of a greater total quantity of the herbicide applied at one time preemergence or early postemergence to the weeds."

We emphasize the point that this is not a recommendation at this time. The manufacturing company is pursuing a label clearance for such a use. Hopefully, we will be able to utilize this procedure in the near future.

(Kostewicz)
II. VEGETABLE GARDENING

A. Weed Control in the Home Garden

Weeds are a problem in home gardens, just as they are in large fields, because they compete with desirable plants for water, soil nutrients, sunlight, and air. They also harbor insects and diseases and provide a hiding place for snakes.

Hand-hoeing is still the best answer for the average gardener. It is inexpensive, quite selective, accurate, effective, and for some even enjoyable. A great deal of emotional satisfaction can come from leaning on a hoe handle while viewing a clean, freshly-hoed row where weeds stood only minutes before. While hoeing, a fair amount of hand pulling is usually necessary close about the base of the plants. A fair amount of damage may occur to vegetables if weeds are allowed to get big before being pulled. Other alternatives are mulching and using herbicides.

Mulching controls weeds by keeping light away from seedlings and providing a mechanical barrier to emergence. It works best against weeds that come up from seed each year. Weeds that do come through the mulch are easily spotted for removal and are easily pulled from the moist soil.

Good mulching materials include straw, leaves, hay, sawdust, wood shavings, bark, paper and plastic sheeting. One and one-half mil black polyethylene film is the most popular synthetic material in present use. Clear plastic is unsatisfactory since it allows light to enter which encourages weed growth.

Care should be taken with all mulches, and particularly with plastic sheeting, to have the soil moist before applying. While straw and leaves may be raked back in order to feed and water the plants, plastic sheeting is more or less permanent once applied. Usually, it is best to apply most of the fertilizer required by the plants before the mulch is applied. Some gardeners do roll back the plastic from the edge of the beds toward the row center in order to supply additional fertilizer and water.

Raw, unrotted sawdust has a tendency to cause nitrogen deficiency in plants growing through it. Microorganisms involved in the process of decaying the sawdust utilize soil nitrogen, thus reducing the amount available to nearby plants, although the rate of decay of mulched sawdust is less than that for incorporated sawdust. Applications of additional nitrogen fertilizer can help overcome this problem when utilizing sawdust as a mulch and subsequent soil conditioner. In general, sawdust is not toxic to plants.

Mulching material may either be removed or incorporated into the soil for conditioning benefits.

At present, herbicides have limited value in home vegetable gardens. While such chemicals work well in single-crop situations, it is more difficult to employ them where a wide assortment of vegetables is occupying a small space. Perhaps the best use of an herbicide would be a preplanting treatment with such all-purpose chemicals as vapam and vorlex. These can be safely applied to rid soils...
of nematodes and fungi, as well as some weeds. These two chemicals are usually most effective when covered with a plastic sheeting soon after application. A waiting period of about two weeks is usually necessary from time of application to time of planting.

Herbicides applied at time of planting or after vegetables have emerged are more difficult to employ, and probably should not be suggested for the average home gardener. Such herbicides may work well with some crops, but may damage more sensitive ones. Application methods must be followed carefully, and only the correct amounts should be used. Although it is possible to utilize herbicides in the garden by grouping vegetables for tolerance to certain chemicals, and diligently following all label precautions, chemical weed control for gardens is still perhaps too sophisticated for the average vegetable gardener to safely use.

B. Spacing Summer Squash

Recent investigations at the University of Florida, Vegetable Crops Department, have shown that yields per given area of yellow crookneck summer squash were about the same when spaced closely as when widely spaced. Yields were acceptable, without reducing quality or grade, when the squash was spaced in the row as close as 6 inches or as far as 42 inches. At the closer spacings, bush vegetation became entangled making harvest slower and more complicated. Probably the best spacing for summer squash would be 12 inches to 24 inches in the row, with 36 inches allowed between rows. This closer spacing between rows would allow the gardener to conserve space while still getting a good return from his plants.

C. Know Your Vegetables - Wax Gourd

The wax gourd, Benincasa hispida, has been reported on by Julia Morton (FSHS Proceedings, Volume 84, 1971). This is a brief summary of that report.

Wax gourd is also known as white gourd, white pumpkin, tallow gourd, ash gourd, gourd melon, winter melon, Chinese watermelon, or Chinese preserving melon.

Description - The pumpkin-like annual vine has thick furrowed stems with coarse hairs, tendrils, and roughly triangular, irregularly lobed leaves up to 10 inches long. Flowers are golden-yellow, 2\(\frac{1}{2}\) to 3\(\frac{1}{2}\) inches wide. Female flowers are borne on 3/4 to 1\(\frac{1}{2}\) inch-long hairy stalks, while stalks bearing male flowers are 2 to 6 inches long.

Fruits, hairy when young, range from oblong to round and may reach 4 feet in length and 2 feet in diameter (30-40 pounds). The thin, tough, green skin is coated with a layer of white chalky wax. In some varieties, pale gray, minute hairs are present even on full-grown fruit. The thick flesh is white, crisp, juicy and mild. Seeds are oval, flat, light brown, to 1/2 inch long.

Culture - Grown like watermelons. Seeds may be planted to produce three crops annually in south Florida (seeded in July, December and March) or two crops rest of Florida (planted March and July).

Use - Much preferred as cooked vegetable, either boiled alone, with meat, or in a variety of dishes. Also used raw like sliced cucumbers. Wax gourds keep for 2 to 6 months or more if stored cool and dry.

(Stephens)