VEGETABLE CROPS DEPARTMENT

The VEGETARIAN Newsletter

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Prepared by Extension Vegetable Crops Specialists

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TO:  COUNTY EXTENSION DIRECTORS AND AGENTS (VEGETABLES AND HORTICULTURE)
AND OTHERS INTERESTED IN VEGETABLE CROPS IN FLORIDA
FROM:  J. M. Stephens, Assistant Vegetable Crops Specialist

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I. COMMERCIAL VEGETABLE PRODUCTION

A. "Target Spot" Disease Control on Cucumbers

The February, 1972 issue of the Vegetarian Newsletter carried a short article on "target spot" disease of cucumbers. The article described the disease as well as the problems growers were having in controlling the disease late last winter and early spring. Dr. James Strandberg, working at the Agricultural Research and Education Center at Sanford, obtained some very promising results last season which we feel to be important enough to pass on to cucumber growers even though the information is preliminary. His study was conducted under moderate to severe disease conditions as indicated by the following statement from his report--"The defoliation resulted in reduced cumulative yields and an early termination to harvesting."

Dr. Strandberg obtained best control with a mixture of Benomyl (Benlate 50W) and Maneb-Zn at 0.5 lb. + 1.5 lbs., respectively. Benomyl alone was equal to the mixture in the foliar disease rating, but slightly lower in yield. Dr. Strandberg emphasized in his report that these results are preliminary and "additional tests are needed to establish minimum rates and spray schedules. It is likely that some materials tested which did not perform well on a seven-day schedule may provide good control when used more frequently." A copy of this report is available from the Vegetable Crops Department.

(Montelaro)

B. Aphid and Looper Control on Cabbage and Potatoes

We now have a new insecticide to add to the list of insecticides which has been approved in recent years for looper control on cabbage. It is called "Monitor." It joins the newer strain of Bacillus thuringiensis, Fundal, Galecron and Lannate. Dr. Ralph Workman has tested Monitor for the past three years at Hastings and has found it to be quite effective against loopers. Similar results were obtained by Dr. D. O. Wolfenbarger at the Homestead Station. Monitor is also effective against aphids on cabbage.

These researchers report about the same results on aphids and worms, including loopers, on potatoes. Monitor is approved for use on potatoes as well as on cabbage. Follow recommendations given on the label for rates and timing.

Dr. Workman has observed that even the best materials will not give appreciable control of aphids on potatoes after a heavy infestation is permitted to develop. On the other hand, he has noted that a good, preventive program on a regular schedule with the recommended materials will result in satisfactory control of aphids on this crop.

(Montelaro)

C. Multi-Purpose Soil Fumigants

The multi-purpose soil fumigants are one means of treating soils to gain some measure of control of several problems which may exist or potentially exist simultaneously in a given situation. The materials have been classified
"multi-purpose" because they exhibit effectiveness in controlling a complex of soil borne diseases, nematodes, certain insects and weed species. No one material can be expected to effect complete control for all of the areas listed, but they generally have effectiveness in several of the areas mentioned, hence the multi-purpose "tag" is given to them.

These materials are generally more expensive than the single purpose materials. Additional expense is involved where tarp materials are used to seal the treated areas for optimum effectiveness. Multi-purpose materials are used in many cases without "tarping" with a degree of success. However, with the increase in use of full-bed mulch covers in field production, some of the uses for these materials might be considered more closely. One of the problems with this type of cultural technique is coping with soil pest problems that occur after the mulch material has been applied. Usually, there is very little that can be easily done. It is in this respect that the use of a multi-purpose soil fumigant as a preplant treatment may be of some merit when used as a preventative measure.

In most instances, a full-bed mulch cover is currently being used in conjunction with preplant nematicides. Where other severe soil pest problems in addition to nematodes are occurring, it may be well to consider using a multi-purpose soil fumigant on a limited scale by the grower for observation. If it is observed that the problems can be controlled and the economic justifications can be handled successfully, a larger scale use can be considered.

Dr. Don Dickson (Assistant Nematologist, Department of Entomology and Nematology, Gainesville) has directed our attention to the table of multi-purpose soil fumigants given in the Florida Nematode Control Guide. It lists the materials currently cleared for use on all vegetable crops and is reproduced here for your information.

<table>
<thead>
<tr>
<th>Multi-Purpose Soil Fumigants</th>
<th>Overall 3,4</th>
<th>Row 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil Fumigants 2,7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D-D/Pic</td>
<td>28-32</td>
<td>12-14</td>
</tr>
<tr>
<td>Terr-o-cide 15 D</td>
<td>82-94</td>
<td>109-125</td>
</tr>
<tr>
<td>Terr-o-cide 30 D</td>
<td>12-14</td>
<td>109-125</td>
</tr>
<tr>
<td>Telone C</td>
<td>28-32</td>
<td>12-14</td>
</tr>
<tr>
<td>Terr-o-cide 15 6</td>
<td>82-94</td>
<td>109-125</td>
</tr>
<tr>
<td>Terr-o-cide 30 6</td>
<td>15-26</td>
<td>44-76</td>
</tr>
<tr>
<td>Vapam</td>
<td>40-60</td>
<td>120-180</td>
</tr>
<tr>
<td>Vorlex</td>
<td>70-80</td>
<td>7.8-8.9</td>
</tr>
<tr>
<td>Vorlex 201</td>
<td></td>
<td>70-80</td>
</tr>
</tbody>
</table>
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1 Multi-purpose soil fumigants are effective in controlling a complex of soil borne diseases, nematodes and certain insects, and in some cases, weed seeds. See manufacturer's label for specific use, rates and general directions for application.

2 All the materials above, except Telone C, are cleared for use on all vegetable crops. Telone C is cleared on onions, sweet potatoes, potatoes and mint.

3 The overall rate per acre listed above, except Vapam and Vorlex, is based on a 12-inch chisel spacing. Vapam requires a 5-inch chisel spacing; Vorlex requires an 8-inch chisel spacing.

4 For organic (peat and muck) soils, the rates listed above, except Vorlex, should be increased 75-100%. Use Vorlex at the rate of 50 gal/acre. Do not use Telone C on heavy organic soils.

5 These gallonages are given as a guide to determine total amount of chemical needed for a field. Closer row spacing will require more chemical per acre; wider row spacing, less.

6 Do not use on white potatoes.

7 D-D/Pic, Terr-o-cide 15D, Telone C (85% DD, 15% chloropicrin); Vorlex (80% DD, 20% methylisocyanate); Terr-o-cide 30D (70% DD, 30% chloropicrin); Vorlex 201 (68% DD, 17% methylisocyanate, 15% chloropicrin); Terr-o-cide 15 (40% EDB, 15% chloropicrin); Terr-o-cide 30 (36% EDB, 30% chloropicrin); Vapam (32.7% SMDC).

Dr. Dickson emphasizes that the effectiveness of these materials as well as fumigant nematicides depends upon correctly preparing the soil, applying the material and allowing the proper length of time for action and aeration following treatment. A review of the basic points to remember is as follows:

1. Plow or disc thoroughly and allow sufficient time for the organic matter to decompose.

2. Apply fumigants when the soil temperature is 50-80°F at a 6-inch depth and the soil moisture is suitable for seeding.

3. Use recommended application technique and proper rates.

4. Allow sufficient time for the material to act.

5. Allow sufficient aeration to occur before planting to prevent any injury to the crop from occurring.

(Kostewicz)

D. Sweet Potato Weevil

The sweet potato weevil, (Cylas formicarius elegontulus (Sum.)), has been a contributing factor in the decline in sweet potato production in
Florida in the recent past. The weevil, at one time or another, has been a serious pest of sweet potatoes in many of the southeastern states. Federal and State programs have combated this pest by using control measures and quarantines to prevent spread to uninfested areas. The State of Florida has a set of rules entitled "Florida Sweet Potato Weevil Regulations" which is administered by the Division of Plant Industry of the Florida Department of Agriculture. Copies of the regulations can be obtained from that agency.

The weevil can live in sweet potato plants in the field, in storage, in plant beds and in certain wild morning glory species which are common to our area. The weevil has four stages in its life cycle. They are 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, however, can live for extended periods of time often as long as 8 months. Most of the damage done by the weevil is caused by the larvae which burrow and feed in the sweet potato root. Most often, the adult lays her eggs in the stem of the plant near the soil surface and the hatched larvae burrow downward into the root.

The Florida Sweet Potato Weevil Regulations are very specific in terms of what must be done to comply with the regulations. A copy of these regulations should be consulted by anyone interested in production and should be on file in county offices for reference use by Extension personnel. Some of the highlights of the regulations are as follows: (NOTE - These highlights are for discussion purposes and are not meant to supplant the actual consultation of the regulations by persons interested in sweet potato production.)

Regulated Area: ALL OF FLORIDA

"1. Weevil-free potatoes may be grown and shipped within the State by following the control recommendations as prescribed."

"2. Any sweet potatoes, plants or parts thereof, leaving the State must be moved in compliance with the regulations of the State to which they are being shipped."

Under the section on Rules and Regulations, there is a portion worthy of quoting entirely since it answers many of the questions that have been repeatedly raised.

"1. Prevention of dissemination of sweet potato weevil within the State -- In order to prevent the further dissemination within the State of Florida of the sweet potato weevil (Cylas formicarius elegantulus (Sum.)), the Division of Plant Industry does declare and give public notice that the transportation of sweet potatoes for propagation, sweet potato vines, plants, cuttings, or slips or slips from within the county where grown is prohibited unless the owner (1) uses approved planting stock, (2) carries out an approved insecticide control program, (3) practices sanitary field and storage measures as may be outlined by a duly authorized inspector, and (4) plants in fields where sweet potatoes have not been grown the season before."

The regulations describe in detail various aspects and also give the control recommendations in detail. A listing of the duly authorized inspectors for each county of Florida is also given along with their addresses.
The point to be considered is that sweet potatoes can be grown and shipped within the State if the proper procedures are utilized for control of the weevil. As was mentioned, the regulations are very specific in terms of what must be done to comply with them and should not be viewed negatively but positively as a means of insuring a quality product that can be depended upon. A high-quality product in any enterprise insures continued success in a competitive market.

(Kostewicz)
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II. VEGETABLE GARDENING

A. Organic Matter in the Garden

Most Florida vegetable gardens will be greatly benefited by the use of abundant quantities of organic material applied to the soil. Usually, the organic matter is in the form of animal manures, cover crops, compost or mixed organic fertilizer. These materials should be incorporated into the garden soil at least three weeks and preferably longer before planting.

1. Benefits from adding organic matter

   a. Improves tilth and condition of soil.
   b. Improves ability of soil to hold water and nutrients.
   c. Improves "buffering" capacity of soil; that is, keeps soil from "over-reacting."
   d. Supports the soil's micro-biological activity (or the life of the soil).
   e. Contributes nutrients, both major and trace.
   f. Releases nutrients slowly.
   g. Releases acids as it decomposes which helps convert the insoluble natural mineral additives into plant usable forms.

2. What happens to organic material applied to the soil?

   Under suitable conditions, the organic material is decomposed by soil micro-organisms such as fungi, bacteria, molds and earthworms. In the process, insoluble and unavailable (to plants) nutrients, such as nitrogen, are gradually changed into simple usable products, such as nitrate. Some of the organic matter may become part of the soil humus.

   The decomposition process occurs best in a soil that is moist, warm, well-aerated and properly limed. Also, the material used must be decomposable.

(Stephens)

B. Composts

NOTE: A discussion on poultry manure was given in an earlier newsletter (see "Vegetarian Newsletter 72-3").

Acceptable manure-like organic fertilizer (artificial manure) may be obtained through a practice called composting. Simply put, compost is made by alternating layers of organic materials, such as leaves and kitchen table refuse, with layers of manure, top soil, limestone, garden fertilizer, water and air, in such a manner that it decomposes, combines and yields artificial manure.

1. How is the compost pile made?

   The compost pile is made of convenient size, usually not less than 10 feet square (100 square feet) and 3 to 5 feet high. The top should be left flat or with a slight depression in the center to catch rain or added water. Too much water eliminates air and slows the decay process.
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One way suggested in building the pile is to make a layer of leaves, straw, grass clippings, and other such organic materials 1 foot deep, wet down and pack. Spread a layer of manure 4 to 6 inches deep over this layer of wet material. Then spread up to 3 pounds of superphosphate and 1 pound of ground limestone or dolomite per 100 square feet.

Instead of the superphosphate, 5 pounds of a complete garden fertilizer such as 6-6-6 may be applied every 100 square feet. Also, a layer of top soil is sometimes used.

Repeat the layering procedure until the pile has reached 3 to 5 feet high. Compost will begin to heat after 2 or 3 days. Keep it moist, but not too wet, and do not disturb for awhile.

After 3 or 4 weeks, fork it over, mixing the parts to obtain uniformity. Most anything organic could be used in the compost pile, but the most popular materials are natural materials such as straw, leaves, pine needles, grass clippings, shrub clippings, garbage, fish scraps, water hyacinths, pea vines, etc.

2. Use of compost in the garden

Compost for the garden should be ready from 2 months to 1 year, depending on the time of year, type of materials utilized, and the skill of the composter. When the compost is broken down into a homogenous mixture, with very little if any undecomposed leaves or other material evident, it is ready for use.

Since compost is artificial manure, it should be used much as you would manure. Broadcast it over the entire garden three weeks or more before planting. Or, if you have only a small quantity of compost, it may be mixed into the soil at each hill site or along the planting furrow. In all cases, a suggested rate to start with is about 25 pounds per 100 square feet or 1/4 pound per square foot, which is equivalent to about 5 tons per acre.

For more information on composting and the use of organic materials in the garden, get a copy of Circular 375, "Organic Vegetable Gardening," available from the Florida Cooperative Extension Service. (Stephens)

C. List of Seed and Plant Companies

Accompanying this issue of the "Vegetarian Newsletter" is a list of Seed and Plant Companies which deal in vegetable seeds, plants and related supplies. An attempt has been made to categorize the merchandise as to whether it is available in small lots for gardeners (G), larger lots for commercial growers (C), or both (GC). Furthermore, wherever it could be determined that a company places special emphasis on any one item offered for sale, this item has been denoted as the Specialty for that company. Other items might also be available from that particular company, as well.

Please note that this list is not intended to be all inclusive, and there probably are errors in the categorizing of materials offered for sale.
However, we hope it will be considered an honest effort, and perhaps those who feel offended will let us know how we can correct it for a later issue.

We suggest Extension Agents keep the list handy (maybe even place a binder around it) for ready reference.

(Stephens)

D. Know Your Vegetables - Jerusalem Artichoke

The Jerusalem artichoke (Helianthus tuberosus L.) is a tuberous, perennial vegetable better adapted to the northern parts of the country than to Florida. Various American Indians grew it for centuries as a staple food. They referred to it as "girasole," while the French prefer to call it "topinambour." Do not confuse with the globe artichoke of which the edible bud is a gourmet's delight.

Although the Jerusalem artichoke is not as well adapted to Florida as to other parts of the country, it is grown to a small extent in home gardens around the State. Planting stock is difficult to maintain through our warm winters. Since they require 130 days or more to mature, growth extends into the hot summer, presenting some difficult problems.

1. Description - The plant tops are tall (up to 10 feet), quite bushy, and produce yellow flowers similar to their relative the sunflower. The tubers resemble knobby, new Irish potatoes in appearance and size. They are white, red, or purple skinned and range in size up to 3 or 4 inches long and half as thick. Several tubers are borne in the ground at the base of each stem.

2. Culture - Although a perennial crop by nature, it is grown as an annual. Propagation is very similar to that for Irish potatoes.

3. Uses - Again, the tubers are used very much like potatoes. The flavor is somewhat sweeter and more nutty than potatoes. Since they contain inulin, which yields fructose on hydrolysis (Rutgers University Bulletin 828, 1971), diabetic patients have sought them as a health food; however, this should not be interpreted as a recommendation by the Florida Cooperative Extension Service.

(Stephens)