NEWSLETTER 71-12
December 3, 1971

Prepared by Extension Vegetable Crops Specialists
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J. R. Hicks  R. K. Showalter  D. D. Gull

TO: COUNTY EXTENSION DIRECTORS AND AGENTS (VEGETABLE AND HORTICULTURE) AND OTHERS INTERESTED IN VEGETABLE CROPS IN FLORIDA
FROM: James Montelaro, Vegetable Crops Specialist

IN THIS ISSUE:

I. COMMERCIAL VEGETABLE PRODUCTION
   A. Full-bed Mulches in Vegetable Production
   B. Root Injury to Vegetables

II. HARVESTING AND HANDLING
   A. Packages and Packaging Affect Quality

III. VEGETABLE GARDENING
   A. National Junior Horticultural Association Convention
   B. Know Your Vegetables - Jack Bean

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I. COMMERCIAL VEGETABLE PRODUCTION

A. Full-bed Mulches in Vegetable Production

There has been a significant increase in the use of full-bed plastic or paper mulches for vegetable production over the past two or three years in Florida. Until recently, this practice was used on strawberries and on a small acreage of tomatoes. This season it is estimated that three to five thousand acres of tomatoes are being grown with full-bed mulches. With the introduction of biodegradable materials, it is felt that we may see a further increase in the use of this practice.
Many questions are being asked of county agents by growers who are using mulches for the first time. A publication to cover all aspects of this subject is now being written by research and extension workers. However, it will be some time before it is completed and ready for distribution. The following notes were assembled to take care of some of the more important questions that are being asked in the meantime.

1. Mulches - Advantages and Disadvantages

The first question that comes to mind is; why should mulches be used? The question can be best answered by listing possible advantages and disadvantages that are related to the use of full-bed mulches.

a. Advantages

(1) Reduces leaching of fertilizer
(2) Aids in weed control
(3) Maintains uniform soil moisture
(4) Aids in control of soluble salt problems
(5) Improves action of fumigants and prevent recontamination
(6) Prevents bed erosion
(7) Reduces fruit rots
(8) Temperature of soil is increased in winter months

b. Disadvantages

(1) Initial cost is quite high
(2) Additional fertilizer is hard to apply, if needed
(3) Seeding and transplanting are more complicated
(4) Removal is troublesome and costly
(5) Temperature may be too high in warm weather

2. Land - Selection and Preparation

New land has many advantages over old land. However, old land can be used with good success. In selecting land for use of full-bed mulches, try to find land that is level and can be irrigated and drained easily. Good drainage is a must. Pumping and ditching facilities should be available for quick removal of excess rainwater. Flooding in a field with full-bed mulching can result in serious damage to the crop.

All objects which might interfere with mulch application should be removed from the field. This is especially true of newly-cleared land where roots and stumps may be present.

3. Fumigants

Choice of fumigants is quite important. On newly-cleared land a fumigant may not be necessary. On the contrary, fumigation may be absolutely necessary on old land. Choice of a fumigant depends on the problems anticipated. The following is a list of fumigants for tomatoes and the pathogens controlled by each.
THE VEGETARIAN NEWS LETTER

Table 1. Vegetable Pathogens Controlled in Sandy Soil by Various Fumigants

<table>
<thead>
<tr>
<th>Fumigants</th>
<th>Rate gal/A.</th>
<th>Fus.</th>
<th>Vert.</th>
<th>Pythium</th>
<th>S. rolfsii</th>
<th>Nematodes</th>
<th>Phoma</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chloropicrin</td>
<td>30</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chloropicrin + D-D</td>
<td>30 + 25</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chloropicrin + EDB</td>
<td>30 + 6</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D-D</td>
<td>25</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>EDB</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vorlex</td>
<td>35</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Vorlex-201</td>
<td>35</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
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</tbody>
</table>

4. Final Preparation

After the land has been selected, cleared, levelled, ditched, etc., final preparations which should be carried out are as follows. These can be modified, but care should be taken to see that mistakes are not made. They cannot be corrected very easily after the mulch is laid.

a. Soil Moisture

(1) Maintain seedbed moisture during preparation of the field
(2) Purpose
  (a) encourage rotting of crop debris
  (b) encourage hatching of nematode and insect eggs, germination of weed seeds, and spores of disease organisms

b. Cultivation

(1) Rotovate, disk or plow the field repeatedly for at least one month before planting
(2) Purpose
  (a) destroy previous crop debris
  (b) destroy weeds
  (c) clean fallow to starve out soil pests

c. Soil Amendments

(1) Mix 500 lbs./A dolomite broadcast during cultivation and 500 lbs./A superphosphate + 20 lbs./A FH503 fritted trace elements in the beds. Use more lime, if needed.
(2) Purpose
  (a) liming materials and phosphates must be thoroughly mixed in the plow layer

d. Soil Fumigation

(1) Apply a soil fumigant in prepared beds or as the beds are being constructed
(2) Method
   (a) 3 streams 6 inches below the final bed surface
   (b) distance between streams varies with chemical (8-12 inches)
   (c) compact the treated bed immediately with a press, eliminate chisel crevice

e. Fertilization (Immediately)
   (1) Place 1500-2000 lbs./A 18-0-25-2 in 2 narrow bands on outer edge of bed surface
   (2) Broadcast 300 lbs./A 6-10-10 between the bands

f. Mulch (Immediately)
   (1) Seal mulch over fumigated and fertilized bed
   (2) 7 days after fumigation cut the plant holes in mulch
   (3) 14 days after fumigation set tomato transplants

These suggested were, in the main, prepared by Mrs. Overman, Dr. Jones and Dr. Geraldson of the AREC at Bradenton. The author expanded the information to answer questions asked often by county agents. NOTE: The information presented here is for tomatoes. It can be used for other crops with only slight modifications.

(Montelaro)

B. Root Injury to Vegetables

In recent visits to vegetable operations in the state, the author noted at least two serious cases of root injury to crops in advanced stages of development. Both cases involved fertilizer applications.

In the first, the growers applied a solid sidedressing material and felt it had to be incorporated with the soil for best results. The equipment used was set too deeply and the resulting root damaged more than negated the potential benefits of the sidedressing material.

In the second case, a liquid sidedressing material was injected in bands to each side of the crop. The injections were too close and too deep. To add to this, the injection slit was left open to dry out--further increasing injury to the root system.

There is no easy way to spell out to growers how to sidedress crops properly. A rule of thumb can be given which should be of considerable help in determining how it should be done for a given crop at a given time. Study the root system by digging around a plant or two to determine the extent of the root system. Inject the fertilizer ahead of the root tips. Never cut roots to perform this operation. It is better to place and leave the sidedressing material on the surface rather than taking a chance of injuring the roots. A damaged root system will certainly reduce the potential yield of a crop even though it may never be apparent to the eye.

(Montelaro)
II. HARVESTING AND HANDLING

A. Packages and Packaging Affect Quality

Higher quality produce would be available to consumers in retail stores if the quality at harvest could be maintained through the marketing system. Shipping containers and other packaging are essential for moving vegetables and fruits from widely dispersed production areas to points of consumption. When we spend a dollar for food, about one-third of it goes to the grower, transportation gets 10 percent, and 40 percent goes for packaging and other marketing costs. Perishables are packaged in so many different types of containers that some of the purposes and objectives of packaging need to be reviewed.

An essential function of a container is to protect its contents from mechanical damage. Vegetables vary in susceptibility to different kinds of damage. Cuts caused by sharp edges result in serious quality losses from subsequent decay and leakage. Bruising injury from impacts and compression is a major problem in marketing fresh vegetables. Mechanical harvesting and packaging operations with emphasis on speed and volume often cause excessive bruising. The obscurity of internal bruising of tomatoes and watermelons has tended to conceal the importance of this damage. Compression injury can result from the bulge in an over-packed container just as vibration or rubbing injury can develop from slow turning of produce in a loosely packed or non-lidded container. The ideal pack consists of a tight-fill without a bulge in a lidded container having sufficient stacking strength to protect the contents under all handling conditions.

A second essential function of packaging is prevention of water loss. Many lots of leafy vegetables, snap beans, peppers, and celery in retail displays are wilted and discolored. Dehydration is a very significant factor in market quality because it affects not only texture, but also appearance and salability.

New packages and improved packaging materials are being developed from wood, fiberboard, paper and plastic to meet changing industry demands. Many factors contribute to the large losses of produce that occur during marketing. The main causes are rough handling, deficiencies in shipping containers and transport equipment, and improper use of transport equipment. Shipping containers may not be strong enough, or they may absorb too much moisture and collapse from overhead weight. Recent developments include wide scale use of wax-saturated corrugated board for commodities exposed to water, high humidity or top ice.

Packaging requirements vary widely depending on what is to be packaged and the conditions which the produce will undergo from the packager to the consumer. During the 1960's, there was a slight increase in prepackaging of produce at the shipping point instead of at the retail store. About one-half of the 55 billion pounds of fresh fruits and vegetables marketed annually is now prepackaged before delivery to the stores.

Putting a number of individual crates and cartons on pallets and handling them through the marketing system like single containers is one way to reduce the number of times the produce is handled. Containerization is another technique to reduce loss and damage of produce on long distance shipments. Individual containers are placed in a large van container or trailer, 20 to 40 feet long, and moved from shipping point to destination in a single temperature and humidity controlled unit. Growers and shippers could improve the quality of vegetables on distant markets if they used better packaging materials and methods.

(Showalter and Hicks)
III. VEGETABLE GARDENING

A. National Junior Horticultural Association Convention - Miami Beach, December 5-9, 1971.

Florida is hosting the 37th Annual Convention of the N.J.H.A. at the Sheraton Beach Hotel, Miami Beach, December 5-9, 1971. This organization is composed of 4-H, FFA, and other young people interested in horticultural projects and activities. About 500 youngsters, leaders, and coaches from 30-35 states will attend.

Convention Arrangements Committee: J. M. Stephens, Chairman, IFAS Extension Vegetable Crops; B. J. Allen, IFAS 4-H; Nolan Durre, IFAS Dade County Extension; Don Adams, Florida Power and Light Company; Wayne Hawkins, Florida Fruit and Vegetable Association; Bob Croft, FFA; Tim Anderson, Fairchild Gardens; and Clyde Wolfe, St. Johns County 4-H member and regional officer of N.J.H.A.

Convention Program

Sunday through Thursday, December 5-9

Registration - Convention Hall
Press Room - Convention Hall
Committee Meeting - Villa I (Bayside)
Courtesy Counter Exhibit - Convention Hall
Newsletter Room - Collins Exec. Room

Sunday - December 5th

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<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>8:00 p.m. - 9:00 p.m.</td>
<td>Vesper Service - C. H. Auditorium</td>
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<td>Barri Cannon - N.J.H.A. Director, Leader</td>
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<tr>
<td>9:00 p.m. - 11:00 p.m.</td>
<td>Get-Together Party - C. H. Auditorium</td>
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<td>Rodd Moesel - N.J.H.A. Director, Leader</td>
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Monday - December 6th

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>7:00 a.m. - 8:30 a.m.</td>
<td>Get-Acquainted Breakfast - C. H. Auditorium</td>
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<tr>
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<td>Welcome--The Honorable Steven P. Clark,</td>
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<td></td>
<td>Mayor of Dade County</td>
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<td></td>
<td>Convention Announcements--Charles Delancey,</td>
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<td></td>
<td>N.J.H.A. President</td>
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<td>Breakfast--Courtesy of the Campbell Soup</td>
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<td>Company, Camden, New Jersey</td>
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<tr>
<td>8:45 a.m. - 5:30 p.m.</td>
<td>Tour of Dade County including large fruit</td>
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<td></td>
<td>and vegetable production areas and the Plant</td>
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<td></td>
<td>Introduction Center</td>
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<tr>
<td>12:00 Noon</td>
<td>Barbecue beef luncheon - Homestead Agricultural Center</td>
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THE VEGETARIAN NEWSLETTER

7:00 p.m. - 8:00 p.m.  Adult Leaders Meeting - Collins Room
7:00 p.m. - 8:00 p.m.  Junior Leaders Meeting - Bar Room
7:30 p.m. - 11:00 p.m. Entertainment - Poolside

Susan Wall, Florida Assistant 4-H Club Leader In Charge

Tuesday - December 7th

8:30 a.m. - 5:30 p.m.  29th Annual Demonstration Contest
Hubert Wetzel, Illinois In Charge
All sections will be located in the Convention Hall Auditorium

11:00 a.m. - 12:00 Noon
Review of Judging, Information and Identification Contest - Collins Room
Dr. Lee Taylor, Michigan, Committee Chairman

1:00 p.m. - 5:00 p.m.
Annual Meeting of the N.J.H.A. Foundation Board of Trustees - Grist Mill

2:00 p.m. - 4:00 p.m.
Horticultural Workshops - C. H. Auditorium
Developing a New Variety - Dr. Mark J. Bassett, IFAS, Vegetable Crops
The Use of Fruits and Vegetables - Mrs. Beth Walsh, IFAS, Home Economics
Landscape Architecture - Mr. Tim Anderson, Fairchild Gardens

7:00 p.m. - 8:00 p.m.
Adult Leaders Meeting - Collins Room

7:30 p.m. - 11:00 p.m.
Entertainment - Poolside
Susan Wall, Florida Assistant 4-H Club Leader In Charge

Wednesday - December 8th

8:00 a.m. - 12:00 Noon
The 37th Annual Judging, Information and Identification Contest - C. H. Auditorium
Careers in Horticulture Luncheon - C. H. Auditorium

12:30 p.m. - 3:00 p.m.
Carmen Sutton--N.J.H.A. Vice Chairman--M.C.
Dr. J. C. Raulston--Pictorial Presentation of Careers in the Field of Horticulture (IFAS, Bradenton, Florida)
Alumni Comments--Dr. Walter Scudder (IFAS, Sanford, Florida)
Marjorie Ann (Ball) Moesel

3:15 p.m. - 4:30 p.m.
Annual N.J.H.A. Business Meeting - Collins Room
State Group Dinners

5:00 p.m. - 7:00 p.m.
Entertainment - Poolside
Weiner Roast--Calipso Band--Courtesy of the Sheraton Beach Hotel

7:30 p.m. - 11:00 p.m.
Rodd Moesel--N.J.H.A. Director In Charge
Thursday - December 9th

8:30 a.m. - 5:00 p.m.
Tour to include a boat trip and tour to East Ft. Lauderdale, the Aquaglades, the Flamingo Orange Groves plus many historical points on the tour route--DeArmand Hull, Palm Beach Extension Agent, Guide

6:30 p.m.
The 37th Annual Awards and Recognition Banquet-Convention Hall Auditorium
Charles DeLancey, N.J.H.A. President--Toast Master
Guest-of-Honor--Dr. Charles Browning, Dean of Agriculture, University of Florida
Presentation of Awards for Projects Sponsored by N.J.H.A.

B. Know Your Vegetables - Jack Bean

The jack bean (Canavalia ensiformis L.) will grow throughout Florida in frost-free periods. Other names sometimes given it are Chickasaw Lima Bean, Brazilian Broad Bean, Coffee Bean, Ensiform Bean, Horse Bean, and Watanka. The jack bean is not a commercial crop in the United States, but is found in home gardens.

Along about July each year our office in Gainesville usually gets a few seed or pod specimens sent in for identification. The seeds are large, 1/2 to 3/4 inch long, and almost as broad. They are creamy white with a dark, almost black, hilum (seed scar). The plant itself is a large, spreading, vining bush. The pods reach 10 to 14 inches in length, but are harvested at about half that size.

I planted a seed in my garden last March, and by June, the plant had just about covered the entire garden. It continued to grow throughout the summer.

Reports indicate the young pods can be used as snap beans. The young pods are sliced and boiled, and the tender seeds may be peeled and used as broad beans.
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