Vegetarian 85-4

April 10, 1985

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Note:

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I. NOTES OF INTEREST

A. Vegetable Crops Calendar

May 2-3, 1985. Florida Weed Tour. For more information, contact Dr. Stall.

May 7, 1985. Leesburg AREC. Cucumber and Squash Variety Demonstration. 4-7 P.M.

May 16, 1985. Gulf Coast REC Field Day, Bradenton. Registration at 8:45 A.M.

May 20, 1985. Master Gardener Field Day, Ft. Lauderdale Research Center and Mounts Learning Center, West Palm Beach. 8:30 A.M. - 4:30 P.M.


May 30, 1985. Master Gardener Field Day, Apopka area. 9:30 A.M. - 4:00 P.M.

September 5-7, 1985. Tenth annual Joint Tomato Conference. Mariott's Marco Beach Resort, Marco Island. Tomato Institute will be held on September 5.

B. New Personnel: Dr. Eduardo Vallejos

Dr. Eduardo Vallejos recently joined the faculty of the Vegetable Crops Department. Dr. Vallejos, a native of Peru, completed his graduate studies at the University of California in Davis where he specialized in vegetable physiology. Afterwards, he worked in three postdoctoral positions at the University of California-Davis, Carnegie Institute, and New Mexico State University respectively. Dr. Vallejos' research program will focus on the study of tomato plant responses to environmental stresses including temperature, water and salt stress.

II. COMMERCIAL VEGETABLES

A. Value of Florida Vegetables Exceeds One Billion Dollars - Again

According to the Florida Crop and Livestock Reporting Service, the farm value of Florida vegetables exceeded one billion dollars in the 1983-84 season. The value was set at $1.058 billion, off slightly from the record $1.092 billion in 1982-83.

Harvested acreage increased from 403,890 in 1982-83 to 416,090 in 1983-84. On the other hand, yields of many crops were lower than the previous year. The Christmas 1983 freeze is at least partly responsible for the restricted yield.
As always, prices varied for some commodities in the two years — bean, lettuce, pepper, squash, tomato, watermelon and strawberry average prices were down, whereas cabbage, carrot and celery average prices increased in 1983-84.

Some of the reasons why the 1983-84 value of certain crops deviated (Table 1) widely from 1982-83 follow:

**TABLE 1**

Value of Florida Vegetable Crops

1982-83 & 1983-84

<table>
<thead>
<tr>
<th>Crop</th>
<th>1982-82</th>
<th>1983-84</th>
<th>Change (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Snap Bean, Fresh Processing</td>
<td>44,041</td>
<td>38,824</td>
<td>-12</td>
</tr>
<tr>
<td>Cabbage</td>
<td>22,687</td>
<td>40,736</td>
<td>+ 80</td>
</tr>
<tr>
<td>Carrot</td>
<td>11,550</td>
<td>10,658</td>
<td>-8</td>
</tr>
<tr>
<td>Celery</td>
<td>54,880</td>
<td>64,546</td>
<td>+ 18</td>
</tr>
<tr>
<td>Sweet corn</td>
<td>64,745</td>
<td>61,016</td>
<td>-6</td>
</tr>
<tr>
<td>Cucumber</td>
<td>36,851</td>
<td>33,971</td>
<td>-8</td>
</tr>
<tr>
<td>Eggplant</td>
<td>8,429</td>
<td>8,713</td>
<td>+3</td>
</tr>
<tr>
<td>Escarole</td>
<td>15,039</td>
<td>14,136</td>
<td>-6</td>
</tr>
<tr>
<td>Lettuce</td>
<td>46,151</td>
<td>39,210</td>
<td>-15</td>
</tr>
<tr>
<td>Pepper</td>
<td>89,687</td>
<td>74,833</td>
<td>-17</td>
</tr>
<tr>
<td>Potato</td>
<td>55,748</td>
<td>70,195</td>
<td>+ 26</td>
</tr>
<tr>
<td>Radish</td>
<td>27,877</td>
<td>22,989</td>
<td>-18</td>
</tr>
<tr>
<td>Squash</td>
<td>31,949</td>
<td>30,173</td>
<td>-6</td>
</tr>
<tr>
<td>Strawberry</td>
<td>52,931</td>
<td>38,842</td>
<td>-26</td>
</tr>
<tr>
<td>Tomato, Fresh</td>
<td>389,262</td>
<td>366,678</td>
<td>-6</td>
</tr>
<tr>
<td>Processing</td>
<td>1,350</td>
<td>1,277</td>
<td>-5</td>
</tr>
<tr>
<td>Watermelon</td>
<td>58,212</td>
<td>62,124</td>
<td>+7</td>
</tr>
<tr>
<td>Other vegetables</td>
<td>81,639</td>
<td>78,620</td>
<td>-4</td>
</tr>
<tr>
<td>TOTAL</td>
<td>1,092,808</td>
<td>1,058,666</td>
<td>-0.3</td>
</tr>
</tbody>
</table>

**Cabbage** - Farm income increased more than $18 million in 1983-84 because of extraordinarily high prices following heavy crop losses in the Christmas freeze. Even with 3700 fewer harvested acres; an increased season average price from $3.52 to $8.75 per crate resulted in an 80% increase in farm value in 1983-84.

**Celery** - An average price per crate increase of $1.67 caused an 18% increase in farm value.
Lettuce - Lower prices and yields resulted in a 15% decrease in farm value.

Pepper - Despite 1000 additional harvested acres, restricted yields and lower prices resulted in a 17% decrease in farm value.

Potato - Increased harvested acreage, yield and average price all contributed to the 26% increase in potato value recorded in 1983-84.

Radish - Yields and prices were lower in 1983-84 which caused an 18% reduction in farm value.

Strawberry - Lower acreage, yields and prices all contributed to a 26% decline in farm value in 1983-84 (see Vegetarian 84-10 for additional information).

The 1983-84 vegetable season in Florida can be best described as mixed. The biggest factor influencing the industry was the December 1983 freeze. Many growers were severely impacted whereas others were able to capitalize on the increased prices resulting from restricted supplies. A similar freeze situation occurred in early 1985 and continued pressure from Mexican imports is expected during the spring.

(Maynard, Veg. 85-4)

B. Vegetable Crops Library

From time-to-time county extension faculty, growers, and industry representatives ask about the availability of books relating to vegetables. The following list includes many books that are useful references to those interested in vegetables.


(Maynard, Veg. 85-4)
C. Fertigation Equipment and Safety

As noted in a previous Vegetarian (85-2), there are many advantages to the application of fertilizers through the overhead irrigation system. However, before attempting fertigation it is imperative that the proper application and safety equipment be installed.

Basic Fertigation Equipment. The minimum equipment requirements include the irrigation system, injection pump, water and fertilizer materials. However, certain properly installed and carefully maintained safety equipment are required by Florida law.

The most effective irrigation systems for fertigation are the continuously moving types such as the center pivots or traveling guns but solid sets and movable pipes also can be used. If possible, it is a good practice to flush the system with water following the fertilizer application. This is easy to do with the solid set or movable pipe system. With the center pivot or gun, it can be done at the end of a run providing the amount of flushing water is not so high as to leach previously applied fertilizer from the ground.

Several types of fertilizer injection pumps and systems are available. For fertilizer injection, the pumps must be made of non-corrosive material and should be flushed after each use. For a complete discussion of injection pumps see the Florida Cooperative Extension Circular 2768. Safety requirements pertaining to the injection pump are discussed later.

Also needed for fertigation is a non-corrosive fertilizer storage tank the size of which depends on whether concentrated or diluted fertilizer solutions will be injected. The tank should be positioned for easy access by the injection suction line and for easy filling with fertilizer materials. In-line straining screens (80 mesh) should be used to filter all fertilizer materials prior to the injection pump.

Safety Requirements. When properly outfitted with certain safety equipment and when managed carefully, fertigation can actually result in less liability risk to the user than other more traditional fertilizer application methods. There are two main potential sources of groundwater contamination with overhead fertigation. The first is the application of too much fertilizer with too much water. This problem is easily solved by proper management of the system especially by supplying small amounts of fertilizer in minimum amounts of water only when the crop requires the nutrients. The second source of pollution comes from the backflow of fertilizers into the water source (surface pond or well). This potential problem is alleviated by the installation of the required safety equipment. Florida State law requires all irrigation systems used for application of agricultural chemicals to be equipped with safety (antisyphon) devices to prevent the backflow of chemicals into the water supply. All new irrigation systems (those installed after July 1, 1984) are required...
to have the safety devices before injections can be made. Previously existing systems have until December 31, 1985 to be retrofitted with the required safety equipment. The safety equipment is not required on systems which will not be used to inject chemicals. The following is the text of rule 5E-2.30 of chapter 84-338 of the Florida Statutes. Certain portions of the rule apply depending on whether toxic or non-toxic chemicals are being injected. For fertigation only, the grower needs those safety devices for nontoxic chemicals mentioned in the rule.

DESCRIPTION OF SPECIFIC BACKFLOW PREVENTION EQUIPMENT
REQUIRED FOR FLORIDA IRRIGATION SYSTEMS

5E-2.30 Antisyphon Requirements for Irrigation Systems
(1) Definitions

(a) The term "antisyphon device" means a safety device used to prevent backflow of a mixture of water and chemicals into the water supply.

(b) "Toxic Chemical" means any pesticide whose label bears the signal word "Danger" or "Poison".

(2) Antisyphon Device Systems, General. Any irrigation system designed or used for the application of chemicals shall be equipped with the following components:

(a) Functional check valve on the irrigation pipe. This valve shall be located in the irrigation supply line between the irrigation pump and the point of injection of chemicals. This valve, when installed, shall be on a horizontal plane and level. A deviation of not more than 10 degrees from the horizontal shall be set.

(b) Low pressure drain. Such drain shall have an orifice size of at least 3/4 inch diameter. It shall be located on the bottom of the horizontal pipe between the functional check valve and the irrigation pump. It must be level and must not extend beyond the inside surface of the bottom of the pipe as shown. (Example, Diagram 3). The outside opening of the drain shall be at least two (2) inches above grade.

(c) Vacuum breaker. A vacuum breaker shall be installed on the top of the horizontal pipe between the functional check valve and the irrigation pump and opposite to the low pressure drain. The vacuum breaker shall have an orifice size of at least 3/4 inch diameter.
(d) Functional check valves on the chemical injection line. A check valve shall be installed on the chemical injection line. If injector pumps are used, they shall be installed so that when water flow ceases, the injector pumps will not operate. A method shall be provided for positive shut off of the chemical supply when the injection system is not in use.

(3) Antisyphon Systems, Specific:

(a) A single antisyphon device assembly (Example, Diagram 1) shall be used for those systems where nontoxic chemicals such as fertilizers will be injected.

(b) A double antisyphon device assembly as shown (Example, Diagram 2) shall be used for those systems where toxic chemicals will be injected. The functioning of each device in the double assembly system must be capable of being checked independently of each other to insure effectiveness of the system.

(4) Chemical Storage Tanks. Tanks shall be constructed and maintained in a manner to insure containment of the chemical and to prevent contamination.

(5) Variances.

(a) None of the antisyphon device components shall be altered in any manner which would render the antisyphon system inoperative or ineffective.

(b) An irrigation system where only fertilizer is injected into the irrigation pipes and where surface water is the only water source, and where both a check valve on the output side of the pump and a foot valve at water intake is present, will be approved as a variance to the rule.

(c) Specific variances of equipment not covered by this rule but which may be in compliance with this rule shall be considered on a case by case basis by the department.

(6) Maintenance. All check valves, low pressure drains and vacuum breaker shall be maintained free of corrosion or other build-up and operative at all times during operation of the system. Cleaning agents used exclusively to maintain or clean an irrigation system shall not be subject to the regulations provided for herein.

(7) Diagrams shown are for illustrative purposes only. Other individual systems that meet the criteria established may be approved.

(8) Penalty. Any person who shall use any irrigation system for the application of chemicals, without the required antisyphon device installed or without the antisyphon device in operating condition, shall be subject to an administrative fine not to exceed $1,000 for each violation.
Diagram 1:
SINGLE ANTI-SYPHON DEVICE ASSEMBLY

Diagram 2:
DOUBLE ANTI-SYPHON DEVICE ASSEMBLY

Diagram 3:
INSTALLATION OF LOW PRESSURE DRAIN

Incorrect

Grade

Level

Minimum 2 inches above grade

Correct
III. VEGETABLE GARDENING

A. Master Gardener Field Days

A new concept in the Florida Master Gardener program has been initiated this month - Regional Field Days. On April 20, Master Gardeners can visit the Fort Lauderdale Research and Education Center for their Open House and tours of the facility. Reports on their current research projects with ornamental plants will be given from 9:00 A.M. to noon. At 1:30 P.M. MG's will tour the Mounts Learning Center botanical gardens at the Palm Beach County Extension office in West Palm in the afternoon.

On Tuesday, April 30, MG's are invited to tour several nurseries and the Agricultural Research and Education Center in Apopka. There will be bus transportation at a cost of $3.50 per person. We will also visit the Zellwood Vegetable production area to round out our horticulture exposure in central Florida.

Additional field days are anticipated in several areas throughout the state. With the increasing demand for pertinent horticultural information from Master Gardeners, the Field Days will serve as a vehicle for interaction between MG's, the horticultural industry and IFAS field personnel. For additional information, please contact the Gainesville office.

(Kathleen Delate, Veg. 85-4)
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