Vegetarian 84-4

April 17, 1984

Contents

I. NOTE OF INTEREST
   A. New Faculty
   B. Vegetable Crops Calendar
   C. Vegetable Crops Department Open House
      and Field Day

II. PESTICIDE UPDATE
   A. Section 18 for Bayleton on Squash, Cucumbers,
      and Cantaloupes

III. COMMERCIAL VEGETABLE PRODUCTION
   A. Selecting an Irrigation System for a Vegetable
      Crop in Florida: Part I, Water and Supply
      Systems

IV. HOME GARDENING
   A. Summary - First Five Years (and current status)
      of the Florida Master Gardener Program
      (1979-1983)

NOTE:

Anyone is free to use the information in this newsletter.
Whenever possible, please give credit to the authors.

The use of trade names in this publication is solely for
the purpose of providing information and does not neces­
sarily constitute a recommendation of the product.
I. NOTES OF INTEREST

A. New Faculty

On March 23 Kathleen Delate joined the staff of the Vegetable Crops Department, as Visiting Extension Agent. While working toward her degree of Master of Science in agriculture, Kathleen will be assisting Jim Stephens in the coordination of the Florida Master Gardener program and in various youth projects relating to vegetables. For the past five years Kathleen has been a plant inspector with the Division of Plant Industry, FDACS, at Naples. Welcome aboard, Kathleen.

B. Vegetable Crops Calendar

1. April 10-11 - Florida Weed Tour.
3. April 18 - Vegetable Field Day. 1:00 pm, ARC, Immokalee, FL.
4. April 24 - Hastings ARC, Vegetable Field Day, 1:30 p.m.
5. April 26 - Belle Glade AREC Vegetable Field Day.
6. May 1 - Cucumber/Squash Field Day. 4:00-7:00 pm, AREC, Leesburg, FL.
7. May 9 - Vegetable Field Day, 9:00 am, Vegetable Crops Department, Gainesville, FL.
8. May 25 - Vegetable Gardening Field Day. FAMU, Tallahassee, FL.
10. June 6 - Watermelon Field Day, 1:30-5:00 pm, AREC, Leesburg, FL.
11. June 18-22 - 4-H Horticultural Institute, Cloverleaf, FL.
13. July 24 - State 4-H Horticultural Judging and Demonstration Contests. 4-H Congress.
C. Vegetable Crops Department Open House and Field Day

The Vegetable Crops Department will be holding an Open House and Field Day, May 9, 1984. The Open House will start at 9:00 a.m. with presentations of work in the various areas that are being accomplished in the department. A tour of the facilities will take place directly after the presentations.

A Dutch-treat Barbeque will be held at the Horticultural Unit at noon with a tour of the field plots ending the afternoon.

A listing of the program follows:

Vegetable Crops Open House

9:00 a.m. Registration and coffee - 1304 HS/PP
  Work Area Presentations - D. N. Maynard
9:15 a.m. Opening Remarks - Dr. A. F. Wood
9:30 a.m. Vegetable Breeding and Genetics - M. J. Bassett
9:45 a.m. Vegetable Production - S. J. Locascio
10:00 a.m. Vegetable Physiology - D. J. Cantliffe
10:15 a.m. Postharvest Physiology - D. D. Gull
10:30 a.m. Extension - J. M. Stephens
10:45 a.m. Teaching - M. B. Lazio
11:00 - 12:00 Tour of Vegetable Crops Facilities

Field Day

12:00 - 12:30 p.m. Travel to Horticultural Unit
12:30 - 1:30 p.m. Barbeque
1:30 - 3:00 p.m. Tour of Field Plots

II. PESTICIDE UPDATE

A. Section 18 for Bayleton on Squash, Cucumbers and Cantaloupes.

A section 18 specific exemption for the use of Bayleton to control powdery mildew on squash, cucumbers, and cantaloupes has been granted by the EPA. The exemption is in effect until December 20, 1984. A maximum of 2 ounces of active ingredient per acre per application may be used. A maximum of 8 ounces a.i. per acre may be applied per season. There is a 3 day preharvest interval.

Protective clothing (including gloves) must be worn during all mixing, loading, and applications.

Please read the label for all restrictions and instructions.

(Stall - Veg. 84-4)
III. COMMERCIAL VEGETABLE PRODUCTION


Introduction

In order to attain maximum yields, one of the most important production inputs is an optimum level of soil moisture. At times during the growing season, rainfall distribution and quantity may not be sufficient to maintain an optimum level of soil moisture. During periods of inadequate rainfall, supplemental irrigation is required during part or all of the growing season.

This is the first of a three part series of articles dealing with the parameters involved in the planning and selection of an appropriate irrigation system for a particular vegetable farming operation. An inventory of the resources available to the farm is necessary to determine the production potential of a crop under irrigation, and the physical and operational constraints of various irrigation systems. The first two articles discuss the physical resources (water supply, soils, topography and climate), while the third is concerned with other resources such as available labor and energy, marketing potentials, economic conditions, a grower's preference, and his financial condition during this selection process.

Farm Irrigation Systems

1. Drip (Trickle)
2. Subsurface
3. Sprinkler
   a. Permanent/solid-set
   b. Mechanical-move
      1. Center pivot
      2. Cable-tow Traveler
      3. Hose-drag Traveler
      4. Truck Mounted Travelling Gun

Physical Factors that Influence the Selection of an Irrigation System

1. Farm Water Supply
   a. Source (Surface or Subsurface)

   When wells are used the well yield, height of lift and friction loss to the irrigated area, and the reliability of the ground water source on a long-term basis must be determined.
b. Water Quantity

Any limiting physical conditions such as the discharge capacity of the well, low flow periods, limited volumes stored in ponds, and/or any legal restrictions on water withdrawals may hamper either the flow rates, or the seasonal volume of water available for irrigation. The available flow rate from the water source needs to be adequate to supply the water needed for the proposed crops during their peak consumptive use period.

c. Water Quality

Water quality is important due to its effect on plants in regards to salinity, permeability of the soil, and toxicity (sodium, chloride, and boron). Water quality is also important in terms of its affect on the irrigation system. Some chemical constituents in the water can cause corrosion problems with certain types of metals in the irrigation systems. The sediment load in the water can affect the system design, especially increased filtration for drip systems. Also, water with sediment will increase wear and reduce the life of pump impellers and sprinkler nozzles.

The best index for deciding the advisability of using irrigation water is the water's total dissolved solids. These solids are determined by measuring the water's specific conductance.

The following critical maximum values are for total dissolved solids (TDS) for water used in various types of irrigation systems:

<table>
<thead>
<tr>
<th>Type of Irrigation</th>
<th>Total Dissolved Solids (TDS) (ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permanent Overhead</td>
<td>800-1,000</td>
</tr>
<tr>
<td>Travelling Gun</td>
<td>1,200-1,500</td>
</tr>
<tr>
<td>Trickle</td>
<td>1,500-2,000</td>
</tr>
<tr>
<td>Subsurface</td>
<td>2,000</td>
</tr>
</tbody>
</table>

Vegetable tolerance to water containing 700-2,100 ppm TDS is considered good to injurious, with 2,000 ppm TDS being injurious to unsatisfactory for vegetable production. Water with more than 2,000 ppm should not be used even for subsurface irrigation.
The following chemical factors are important in regards to clogging hazard of drip systems with the buildup of bacterial slimes:

<table>
<thead>
<tr>
<th>Chemical Factor</th>
<th>Slight</th>
<th>Moderate</th>
<th>Severe</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>&lt;7.0</td>
<td>7.0-8.0</td>
<td>&gt;8.0</td>
</tr>
<tr>
<td>Iron (ppm)</td>
<td>&lt;0.1</td>
<td>0.1-1.5</td>
<td>&gt;1.5</td>
</tr>
<tr>
<td>Hydrogen Sulfide (ppm)</td>
<td>&lt;0.5</td>
<td>0.5-2.0</td>
<td>&gt;2.0</td>
</tr>
</tbody>
</table>

d. Layout (Shape) of the Irrigated Area

The following table gives the appropriate shape of field for various irrigation systems:

<table>
<thead>
<tr>
<th>Type of System</th>
<th>Shape of Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sprinkler Center Pivot</td>
<td>Circular, Square or Rectangular</td>
</tr>
<tr>
<td>Permanent and Solid-set</td>
<td>Any Shape</td>
</tr>
<tr>
<td>Cable-tow</td>
<td>Rectangular</td>
</tr>
<tr>
<td>Hose-drag</td>
<td>Rectangular</td>
</tr>
<tr>
<td>Drip</td>
<td>Any shape</td>
</tr>
</tbody>
</table>

e. Uses of the Irrigation System Other than for Irrigation

Consideration must be given to uses of various irrigation systems other than for irrigation:

<table>
<thead>
<tr>
<th>Type of System</th>
<th>Other Uses for the System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sprinkler, Permanent &amp; Solid-set</td>
<td>Cooling &amp; Frost Protection Chemical &amp; Fertilizer Application Liquid Animal Waste Distribution</td>
</tr>
<tr>
<td>Center Pivot</td>
<td>Chemical &amp; Fertilizer Application Liquid Animal Waste Distribution</td>
</tr>
<tr>
<td>Cable-tow</td>
<td>Same as Center Pivot</td>
</tr>
<tr>
<td>Hose-drag</td>
<td>Same as Center Pivot</td>
</tr>
<tr>
<td>Drip</td>
<td>Chemical &amp; Fertilizer Application</td>
</tr>
</tbody>
</table>

-Kovach (Vegetarian 4-84)-
IV. HOME GARDENING

A. Summary - First Five Years (and current status) of the Florida Master Gardener Program (1979-1983)

Florida Master Gardeners are adult volunteers recruited and trained at the county level by Cooperative Extension Service personnel. After 48 hours of intensive instruction on various horticultural subjects, the unpaid volunteers become certified MGs qualified to return 50 hours of service to their community through assistance with Extension home horticulture activities and projects.

Florida began the program in 1979, basing it upon the MG program of Washington, the state where the concept originated in 1972. The history of the program development in Florida began in the pilot counties of Brevard, Dade, and Manatee. Since then 26 counties had trained and graduated at least one class of MGs by the end of 1983, totalling 868 MGs who promised to serve 45,350 hours with the Extension Service (Table 1).

Counties have kept incomplete records of the amount of time the volunteers have spent in actual service to their communities. However, records that are available indicate most MGs either served their committed time or exceeded, some three or four-fold.

After serving one year, a third or more of the MGs re-enlisted for additional one-year terms of service. Again, no firm figures are available to document this additional service to the program.

Most of the counties (96%) utilized MGs in the office, answering the phone (92%), talking to walk-ins with gardening problems, or doing clerical tasks (77%). Plant clinics were staffed by MGs in many counties (81%). Other popular ways the MGs assisted Extension were: conducting or helping to conduct meetings (69%), demonstrations (58%), and exhibits (50%). Various other activities rounded out the service record in other counties.

1984 and the Future

The fast, furious pace of the Florida Master Gardener program's growth and activity continues into the sixth year, 1984. Highlands County became the 27th county, graduating its first class which actually began training in December, 1983. Other first time counties which started training this spring are Escambia, Collier, and Flagler. A total of 16 counties will have classes in training during the spring of 1984. In addition to those just mentioned, the others are Brevard, Dade, Charlotte, Lee, Hillsborough, Manatee, Pinellas, Leon, Osceola, Martin, St. Lucie, and Palm Beach. Several other counties have expressed an intent to begin the program sometime later this year. Currently, there are approximately 600 MGs active statewide. Nationally 33 states have the program.
New State Coordinators

Jim Stephens, IFAS Extension Vegetable Specialist, Department of Vegetable Crops, who compiled this report, assumed the role of State Coordinator in September 1984. He will be assisted in this endeavor by Kathleen Delate who will work concurrently toward a graduate degree.

Conclusion

Certainly no other program has contributed more significantly to the overall productivity of Extension within the broad area of home horticulture in the past 25 years than the Florida Master Gardener Program. Its benefits to the urban and suburban sector are beyond accurate calculation. MGs are ambassadors of good will for Extension and IFAS. They make friends for us all at all levels of community life. Yet, the greatest benefit perhaps is due to the more subtle manner in which these lay volunteers enable more of our horticultural educational thrust to focus on the more crucial and key target audience—our commercial producers of horticultural products and those that consume them.

Table 1. Florida Master Gardener First Five Year Status, 1979-1983.

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. Counties Graduating at Least One Class</td>
<td>26</td>
</tr>
<tr>
<td>No. County-Classes Trained</td>
<td>48</td>
</tr>
<tr>
<td>No. County-Classes Trained Alone</td>
<td>27</td>
</tr>
<tr>
<td>No. County-Classes Trained with Other Counties</td>
<td>21</td>
</tr>
<tr>
<td>No. Training Sessions Held</td>
<td>33</td>
</tr>
<tr>
<td>No. Single-County Training Sessions</td>
<td>27</td>
</tr>
<tr>
<td>No. Multi-County Training Sessions</td>
<td>6</td>
</tr>
<tr>
<td>No. Counties Training With Others at Least Once</td>
<td>18</td>
</tr>
<tr>
<td>No. MGs Trained</td>
<td>868</td>
</tr>
<tr>
<td>No. Service Hours Contracted By New MGs</td>
<td>45,350</td>
</tr>
<tr>
<td>No. MGs Re-enlisting for Subsequent Terms (Insufficient data)</td>
<td></td>
</tr>
<tr>
<td>No. Hours Served (Insufficient data)</td>
<td></td>
</tr>
</tbody>
</table>

- Stephens (Vegetarian 84-4) -

Prepared by Extension Vegetable Crops Specialists

D. N. Maynard  
Chairman

S. P. Kovach  
Assistant Professor

G. A. Marlowe  
Professor

S. M. Olson  
Assistant Professor

M. Sherman  
Assistant Professor

W. M. Stall  
Associate Professor

J. M. Stephens  
Associate Professor