Prepared by Extension Vegetable Crops Specialists

J. F. Kelly  James Montelaro  J. M. Stephens
Chairman  Professor  Associate Professor
Professor  Professor

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

VEGETARIAN NEWSLETTER 76-7

IN THIS ISSUE:

I. NOTES OF INTEREST
   A. Personnel Change
   B. Errata
   C. Qualified Vegetable Crops Graduates Available

II. COMMERCIAL VEGETABLE PRODUCTION
   A. Fruit Set in Watermelons
   B. Plant Food Removal by Various Vegetable Crops

III. VEGETABLE GARDENING
   A. Timely Gardening Topics
   B. Know Your Vegetables - Rape

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

I. NOTES OF INTEREST

A. Personnel Change

Dr. Steve Kostewicz has served as Vegetable Extension Specialist since 1972. Since 1975, he has been primarily responsible for rural development and weed control extension as well as commercial vegetable production in 26 counties of north and west Florida. Steve has now been transferred to a teaching-research position and will no longer be involved directly in our extension programs in vegetables. We are in the process of recruiting a replacement for him. In the meantime, Jim Montelaro and George Marlowe will cover Steve's areas of responsibility.

We are continuing to recruit for a specialist in the area of harvesting and handling. In the meantime, Bob Showalter will be covering this area.

(Kelly)

B. Errata

For those of you keeping a file of the "Know Your Vegetable" items, you may wish to correct a slight error made in the 76-6 (last month's issue) "Kale" article, second paragraph. Change "1969" to read "1669".

(Stephens)

C. Qualified Vegetable Crops Graduates Available

For many years, it was difficult for the various parts of the vegetable industry to hire college graduates with specialized training in Vegetable Crops. In the last few years, young (and not-so-young) people have rediscovered this exciting and rewarding area of horticultural science. In the Fall of 1972, the Vegetable Crops Department had two (by the end of the quarter only one) undergraduate majors. Next Fall we expect to have about 20.

The faculty has recently revised the curriculum to give undergraduate majors choices from among seven courses on vegetables. Students are also encouraged to participate in a work/study program whereby credit is earned for supervised new practical experience in industry. In addition to this coursework in their major, Vegetable Crops students are trained in Plant Pathology, Entomology and Nematology, Weed Control, Economics, Fruit Crops and other supporting or related areas.

The 1975 report Agricultural Growth in an Urban Age cited the increasing need for effective management in overcoming the cost/price squeeze facing our industry and in meeting the challenges of a growing industry. Employers of several of our recent grads have seen the potential and real values of our well-trained and highly motivated students. We anticipate having a steady supply of graduates for the next few years at least. We are maintaining a file of resumes for distribution to potential employers with an eye to their future management development.

To receive current resumes or to inquire about participation in the work/study program, please contact the Chairman, Vegetable Crops Department, 3026 McCarty Hall, University of Florida, IFAS, Gainesville, Florida, 32611.

(Kelly)
A. Fruit Set in Watermelons

The 1976 watermelon season may go into the records as one of the worst in years. Not only were growers plagued generally with glutted markets, but they experienced very poor growing conditions most of the season from one end of Florida to the other. It was too cool and dry in the beginning and too wet and hot in the end. Gummy stem and downy mildew diseases took their toll early in watermelon fields.

To top it off, we noted more problems with fruit set than ever before. Fortunately, the problem was not general in any area even though it existed throughout the state. This, in itself, made diagnosis of the problem rather simple. In almost every case, it was found to be caused by use of too much nitrogen or, to put it otherwise, too little potassium. A watermelon crop receiving a ratio of one or more pounds of nitrogen for every pound of K₂O was subject to fruit set problems this season. Almost without fail, application of sufficient potash corrected the problem. We suggest a ratio of 1.25 to 1.5 pounds of K₂O for every pound of nitrogen used. This ratio has been found to be the most satisfactory for overall production of watermelons in most areas of the state.

Growers should realize that poor fruit set may not necessarily be caused by nitrogen-potassium imbalance. Lack of bees, lack of female flowers and bees not working watermelon flowers are some of the other causes responsible for unsatisfactory fruit set from time to time. Growers noting this problem in watermelon should attempt to determine the cause and to take corrective measures as early as possible. The problem can be corrected often with not much more than a slight delay in date of first harvest. (Montelaro)

B. Plant Food Removal by Various Vegetable Crops

The amount of plant food removed per acre of high yielding vegetable crops can be a valuable component of the fertilizer recommendation method. Plant food removal provides a quantitative guide which may be considered with fertilizer recovery rates, soil test values, fertilizer research data, and yield projections to help develop a sound fertilizer program.

A survey of the literature reflects a wide variation in the amount of plant food removed by vegetable crops. Averaged removal figures from various sources help to offset luxury consumption readings and extreme lows and highs. In the following text-table, the number of sources used for these mean values is presented.

<table>
<thead>
<tr>
<th>Vegetable Crop</th>
<th>Av. Yield, FW*</th>
<th>N</th>
<th>P₂O₅</th>
<th>K₂O</th>
<th>CaO</th>
<th>MgO</th>
<th>No. of Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beans, Snap</td>
<td>17,500</td>
<td>132</td>
<td>12</td>
<td>56</td>
<td>23</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Cabbage</td>
<td>23,411</td>
<td>101</td>
<td>16</td>
<td>66</td>
<td>19</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>Carrots</td>
<td>48,000</td>
<td>138</td>
<td>77</td>
<td>217</td>
<td>199</td>
<td>17</td>
<td>5</td>
</tr>
<tr>
<td>Celery</td>
<td>36,000</td>
<td>97</td>
<td>63</td>
<td>239</td>
<td>47</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>Corn, Sweet</td>
<td>13,833</td>
<td>93</td>
<td>35</td>
<td>69</td>
<td>5</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Cucumber</td>
<td>17,561</td>
<td>35</td>
<td>24</td>
<td>62</td>
<td>31</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>Onions</td>
<td>29,760</td>
<td>76</td>
<td>31</td>
<td>79</td>
<td>8</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Pepper</td>
<td>18,558</td>
<td>53</td>
<td>22</td>
<td>37</td>
<td>35</td>
<td>27</td>
<td>2</td>
</tr>
<tr>
<td>Potato, Irish</td>
<td>35,773</td>
<td>143</td>
<td>31</td>
<td>194</td>
<td>39</td>
<td>28</td>
<td>10</td>
</tr>
<tr>
<td>Tomatoes</td>
<td>32,075</td>
<td>147</td>
<td>40</td>
<td>243</td>
<td>49</td>
<td>24</td>
<td>8</td>
</tr>
</tbody>
</table>

*Includes total leaf, stem and fruit fresh weight.
An example of how these figures can be used may be of interest. Let us assume that the soil test shows the field to be low in P and K with a pH of 6.3. The field selected for the spring tomato crop has a weed cover which is to be plowed under two months before field setting the containerized transplants in a full-bed mulch system. Let us also assume that 85% of the N applied, 30% of the phosphorus and 70% of the potassium applied will be recovered by the full season crop.

The statewide average yield of tomatoes sold per acre is about 750-800 thirty pound boxes (11.5-12.0 tons) but many growers achieve yields of 1200-1800 boxes (18.0 to 27.0 tons) per acre. Dr. C. M. Geraldson, AREC/Bradenton, did a plant food removal study of Florida tomatoes at two yield levels in 1963. It was found that the 1000 box level removed 159 lbs of N, 30 lbs of P\textsubscript{2}O\textsubscript{5}, 210 lbs of K\textsubscript{2}O, 78 lbs of CaO and 54 lbs of MgO (fruit and foliage). The 2000 box level removed 322 lbs of N, 57 lbs of P\textsubscript{2}O\textsubscript{5}, 442 lbs of K\textsubscript{2}O, 159 lbs of CaO and 50 lbs of MgO.

Let us assume that the grower wishes to fertilize for the high yield level. To provide the crop with approximately 500 lbs of N at an 85% recovery rate, 353 lbs of N would have to be applied. If calcium nitrate (15% N) was used as the only N source (353 divided by 15) or 2350 lbs would be required. Higher analysis nitrogen sources would, of course, decrease this somewhat high rate for the 15% material.

At 30% recovery for the phosphate (P\textsubscript{2}O\textsubscript{5}), a 57-lb provision would require 171 lbs of this nutrient. To get this amount from superphosphate (20% P\textsubscript{2}O\textsubscript{5}), 855 lbs would have to be applied. The potash "requirement" of 442 lbs, at a recovery rate of 70% would need 631 lbs of K\textsubscript{2}O, and if supplied by sulfate of potash (50% K\textsubscript{2}O), an application of approximately 1200 lbs per acre would be needed.

Fertilizer recommendations can be generated from many different approaches. Perhaps the most valid is the response level determined by fertilizer research, followed by on-farm testing at various locations. Soil tests, both the standard P-K and pH and the I & B (total salt level and composition) can be very helpful. The crop removal-per cent recovery method can be helpful (when modified by soil test values) when more specific research data on response levels are not available.

(Marlowe)

III. VEGETABLE GARDENING

A. Timely Gardening Topics

These questions and answers are suggested for agents' use in developing periodic (weekly) radio or newspaper briefs. They are based on letters of inquiry from Florida gardeners.

(1) Timely Topic for Week of July 18-24

Question

My okra pods tend to get too large before I can use them. What should I do to avoid this problem?

Reply

Once the okra plant starts producing pods, you must harvest them almost daily in order to avoid the problem you mentioned. You might try changing to another variety of okra and spacing the plants closer together in the row. You probably have been growing Clemson Spineless, a variety most commonly grown by Florida
gardei:ers. It is a good variety, but does produce rather large pods. Try growing a variety called Emerald. It produces well, but the pods are smaller than such varieties as Perkins Spineless, Clemson Spineless and Dwarf. By closer spacing of the plants within the row, you should further reduce the pod size. Space them about 3 to 4 inches apart. Even closer spacing than this will reduce pod size even more, but the number of pods by plant and total yield of pods will start to diminish.

(2) Timely Topic for Week of July 25-31

Question

I am interested in interplanting vegetables in my garden, but am not sure what the benefits are. Why is interplanting done?

Reply

Interplanting is the growing of two kinds of vegetables in the same seed drill at the same time. The usual reason is to shorten the length of time required to grow the two vegetables in question on a limited land area. For example, if sweet corn and pole beans were grown in the same row with one planted after the other matured, a total of about 140 days would be required (80 for the corn and 60 for the beans). However, if the beans were interplanted in the corn row when the corn was about 40 days grown, only 100 days would be required for the two crops. Thus, a fall crop of beans might be possible following a summer crop of corn with this system. However, with interplanting there usually is a yield decrease due to plant competition. Even so, yields are acceptable with many crops thusly interplanted, particularly if spacing of each is wider than usual, and when planting dates are properly timed. Continuing the "corn-bean" example, the corn has to be planted sufficiently ahead of the beans to allow the overhead foliar canopy to diminish at maturity so that the beans can mature. Reverse interplanting is practiced also, as where radishes are planted with other crops. The radishes reach maturity early and are harvested before the larger crop starts to out-compete them.

(3) Timely Topic for Week of August 1-7

Question

I would like to know if I can use soybeans for making bean sprouts.

Reply

Bean sprouts are most often made by germinating mung beans. However, since soybeans have significantly more protein than mung bean seeds, they would be a better substitute nutritionally. Many soybean varieties contain certain carbohydrates which are poorly digestible in humans. But it has been shown that these indigestibles decrease after the beans have sprouted for three or more days. In a recent test, individuals were asked to compare the taste of mung bean sprouts and soybean sprouts. Results were that three-day old soybean sprouts were as acceptable as the mung bean sprouts. Although more digestible, the six-day old soybean sprouts were not as acceptable in taste as the 3-day old sprouts or the mung beans. For making soybean bean sprouts, most all varieties of soybean may be used, including those commonly grown for oil production. The so-called edible varieties generally have larger seeds, but are no more desirable for sprouting than the smaller seeded field types. Be sure that you do not use any seeds which have been treated with chemicals for controlling soil pests.
(4) Timely Topic for Week of August 8-14

Question

This fall, I will be interested in growing strawberries in a big steel drum. Please tell me how to prepare the drum for planting.

Reply

You should be able to grow from 40 to 50 strawberry plants depending on the size of your drum. Follow these steps:

(a) Prepare your drum by cutting out the top and washing thoroughly to remove any plant toxic materials.
(b) Cut holes or slits in the sides to receive the plants. Space them 8 inches apart around the drum, and 8 inches apart up and down the drum. Space each hole diagonally to those above and below it.
(c) Cut 5 or 6 holes around bottom edge of drum for drainage. Fill bottom two inches of drum with coarse gravel.
(d) A section of gutter or stove pipe is needed for watering and feeding. Punch nail-size holes in the sides of the pipe, distributing them evenly over the surface of the pipe. Place the pipe in the center of the drum, with one end resting on the gravel and the other just above the level of the top of the drum. Fill the pipe with coarse sand.
(e) Mix 1 pound of 6-8-8 fertilizer with 55 gallons of good garden soil. Shovel soil onto the coarse gravel and around the pipe until the level of the first (lower) row of holes is reached. Firm the soil.
(f) Set the berry plants into the bottom row, spread the roots in a fan-shape fashion, and cover to hold in place.
(g) Sprinkle the set plants, then repeat until drum is filled to within 1 inch of top.
(h) Cover top with black plastic mulch.
(i) Water plants twice weekly by pouring into pipe and on top around plants. Monthly applications of additional fertilizer are needed. Dissolve 1/2 cup of similar fertilizer in 1 gallon of water and pour into pipe.
(j) Take care of your strawberries as for any other growing method.

(Stephens)

B. Know Your Vegetables - Rape

Rape (Brassica napus) also called colpa, colsa and chou oleifere, is a cool-season annual plant similar to turnip and rutabaga. Rape originated in northern Europe and was cultivated in the Mediterranean area. It is seldom found in Florida gardens and presently is of no commercial importance in the state.

The upright, many-branched rape plants have rutabaga-like leaves that are 4 to 12 inches long, slick and generally lobed. Unlike rutabagas, however, they have no swollen root, only a thin tap root.

Those wishing to try growing the rape plant should sow seeds in September through November in Florida; it will tolerate the cold season here. Culture and problems are similar to those for turnips or rutabaga.

The young leaves may be removed and cooked as a potherb much as kale or collards. Composition of the young leaves: 83.3% water; 2.9% protein; 1.7% fat; 11.2% carbohydrates; and 1.8% fiber.

Although rape is outlined here due to its usefulness as a vegetable, it has been grown primarily for green livestock fodder and for its seed oil (called colza oil).

(Stephens)