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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, Associate Professor and Extension Vegetable Specialist

VEGETARIAN NEWSLETTER 78-3

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I. NOTES OF INTEREST

A. Vegetable Field Days – Spring, 1978

Dates for two field days have been set and one has been rescheduled. They are as follows:

I. LOCATION: AREC, Sanford, Florida
   DATE AND TIME: 1:30 p.m., Tuesday, April 25, 1978
   CROPS: Cabbage, celery, etc.

II. LOCATION: AREC, Belle Glade, Florida
    DATE AND TIME: 9:00 a.m., Tuesday, May 9, 1978
    CROPS: General muck-grown vegetables

III. LOCATION: ARC, Immokalee, Florida
     DATE AND TIME: The April 26 date was CANCELLED and RESCHEDULED because of frost damage to crops.
     NEW DATE AND TIME: 1:00 p.m., Wednesday, May 10, 1978
     CROPS: Tomatoes, watermelons, etc.

A program for each field day will be sent out later. Put these dates on your calendar and plan to attend all events.

(Montelaro)

II. COMMERCIAL VEGETABLE PRODUCTION

A. Cavity Spot – A New Disorder of Carrots in Florida

A disorder of carrot roots found in central Florida recently is thought to be a potentially serious problem known as "cavity spot." This preliminary identification was made jointly by the writer, Seminole County Extension Agent Reggie Brown and Sanford AREC Plant Pathologist Jim Strandberg. Cavity spot is characterized by decayed spots at the point of attachment of the rootlets on the surface of the main carrot root. Size of individual spots may vary from less than one to two or more centimeters in diameter (one-eighth to 1 inch). Heavy cullage in carrots affected with cavity spots means less profit as a result of increased grading cost and reduction in marketable yield.
Cavity spot was reported to be non-pathogenic by the California researchers who discovered the disorder in the early forties. Dr. Strandberg also was unable to identify any pathogens responsible for the condition noted on Florida carrots. Researchers in Massachusetts showed that cavity spot in carrots was associated with calcium deficiency (Maynard, et al. 1963. The Influence of Plant Maturity and Calcium Level on the Occurrence of Carrot Cavity Spot. Proc. Amer. Hort. Soc. 83:506-510). They also observed that varieties differed in susceptibility to cavity spot. 'Hicolor 9', Florida's leading fresh-market carrot, is highly susceptible.

Cavity spot may never become more than an occasional problem of any consequence in Florida. Nevertheless, it must be watched closely. Any grower suspecting cavity spot in carrots is asked to report it to the county agent immediately. This will permit us to study the problem in more detail and to determine the potential seriousness of the problem.

Some information is available for immediate use in the event cavity spot of carrots develops into a problem to be dealt with in Florida. For the present, growers should check calcium nutrition of carrots carefully. Calcium deficiencies can result from lack of an adequate supply of the element in the soil and from cation antagonism. Growers may wish to test varieties showing resistance to this disorder. 'Dominator' is a resistant variety that is a good producer but somewhat less desirable in color than 'Hicolor 9'.

(Montelaro)

B. Water: For People or for Food?

The University of Florida, Institute of Food and Agricultural Sciences presented a conference on the Florida Water situation. This conference on February 21-22 considered past, present, and future fresh water usage and needs, means by which we might allocate supplies, and the alternatives associated with the various allocation methods.

The increase in fresh water use for irrigation, domestic, industrial purposes and for power generation in Florida during the past 25 years is dramatic. In 1950 Florida used about 1 billion gallons per day (bgd). In 1960 the rate rose to 3.8 bgd, in 1970 5.8 bgd and in 1975 almost 7 bgd were used.

Crop irrigation was the largest single user during 1975 (2868 bgd). Water used in the generation of electricity accounted for 1696 bgd, public and domestic use required 1412 bgd, and the water needed for industrial use amounted to 940 bgd.

The average use of water per person is not easy to define because of the various accounting methods used in its determination. In general, the direct personal use of water ranges from 168 to 230 gallons per day. The indirect or total per capita water computation covers the water used for steel making, water used in food processing, food production, food washing, etc. This figure ranges from 1000 to 2200 gallons per day per person according to these experts in water planning.
THE VEGETARIAN NEWSLETTER

If we were to compare the direct water used by an "acre" of people to the water used to produce an acre of an important vegetable crop some rather interesting relationships may be revealed. The maximum number of people per acre in the Sarasota-Bradenton area is 23. This figure may be low for larger metropolitan areas but 23 will serve for this discussion.

Assuming the average direct water use per person to be 200 gallons, the 23 persons would use 4600 gallons per day or 1,679,000 gallons per year on the "acre." If this land had been used for vegetable crop production what food output could have been expected? A conversion to acre inches of water shows that this "people acre" uses about 62 inches of water. For conversion, let us refer to this 62 inches of water used on a people "acre" as a residential water unit (RWU).

This 62 inches of water could be used to produce 2.7 acres of tomatoes, 3.9 acres of Irish potatoes, 2.9 acres of sweet corn, or 3.3 acres of cabbage. The following table shows how sprinkler irrigation with an efficiency of 70% could be used to supply the season ET (evapotranspiration) of these four crops:

<table>
<thead>
<tr>
<th>Vegetable Crop</th>
<th>Planting Date</th>
<th>Water Needed ET, in/season</th>
<th>Irrigation (Sprinkler) Water inch/acre</th>
<th>Acres of Crop Possible per RWU*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tomatoes</td>
<td>Feb</td>
<td>16</td>
<td>22.8</td>
<td>2.7</td>
</tr>
<tr>
<td>Potatoes</td>
<td>Feb</td>
<td>11</td>
<td>15.7</td>
<td>3.9</td>
</tr>
<tr>
<td>Sw. Corn</td>
<td>Feb</td>
<td>15</td>
<td>21.4</td>
<td>2.9</td>
</tr>
<tr>
<td>Cabbage</td>
<td>Jan</td>
<td>13</td>
<td>18.6</td>
<td>3.3</td>
</tr>
</tbody>
</table>

*RWU = Residential water unit of 62 inches of water.

The following table shows how many pounds of each vegetable could be produced for this alternative use of the RWU water. The average American consumes 12 lbs of tomatoes, 67 lbs of potatoes, 9.3 lbs of cabbage, and 7.5 lbs of sweet corn in the fresh form each year. The table shows how many per capita consumption (PCC) units could be satisfied by this alternative use of the RWU water.

<table>
<thead>
<tr>
<th>Vegetable Crop</th>
<th>Avg. Yield lbs/acre</th>
<th>Acres of Crop per RWU</th>
<th>Pounds Food per RWU</th>
<th>Persons Provided PCC per RWU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tomatoes</td>
<td>25,600</td>
<td>2.7</td>
<td>69,120</td>
<td>5,760</td>
</tr>
<tr>
<td>Potatoes</td>
<td>20,000</td>
<td>3.9</td>
<td>78,000</td>
<td>1,164</td>
</tr>
<tr>
<td>Cabbage</td>
<td>28,200</td>
<td>2.9</td>
<td>81,780</td>
<td>8,793</td>
</tr>
<tr>
<td>Sw. Corn</td>
<td>9,500</td>
<td>3.3</td>
<td>31,350</td>
<td>4,180</td>
</tr>
</tbody>
</table>

These computations are more than mental gymnastics. As agriculturists, we should be able to defend the wise use of our best lands and water for food production. People can live comfortably on less desirable land than crops can.
The next time you are caught in a long traffic tie-up on Florida's highways be cheered by these comforting statistics: We now have 8.3 million people in our state (average about 10 million, tourists included). In the year 2000 this is expected to reach 14 million. When stymied by a long line of automobiles, bumper to bumper, I think we should give serious consideration to alternative uses of the RWU water.

(Marlowe)

C. Dollars and Sense of Producing Quality Vegetables

Successful vegetable growers require or need to develop skills in both crop production and business management. In this series of three articles, we have considered key production steps needed to grow and sell quality vegetables. Pointers about selecting the correct variety and postharvest handling tips on picking, grading, and packing of quality vegetables were emphasized. This article summarizes key points made by Drs. W. O. Mizelle and Bryan Wall at the Thomasville Market meeting about developing business management skills.

Growers can sharpen their business skills by considering the three components that determine PROFIT. First, growers need to calculate expected production costs for each vegetable they intend to plant. These cost figures will show cost per unit or break-even price at a certain yield level. Growers can then figure the cost per unit under varying yield levels. Because fixed costs will remain the same, cost per unit decreases as yields increase. Growers then have a better idea as to the yield they must achieve to earn a profit. By comparing their figures with averages and ranges from grower surveys conducted by farm management or marketing specialists, the grower can better estimate his crop production and management skills with other grower skills for the same crop. Compare the following production costs of small and large producers from Georgia and Florida.

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1Summarized from the Thomasville Market meeting held December, 1977 and sponsored by the Georgia Department of Agriculture - Marketing Division and the Georgia and Florida Cooperative Extension Services.

2Dr. W. O. Mizelle is Extension Marketing Specialist in Tifton, Georgia.
## COMPARISONS OF PRODUCTION COSTS FOR SMALL AND LARGE PRODUCERS

<table>
<thead>
<tr>
<th>Crop</th>
<th>Large Producers</th>
<th>Small Producers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Georgia</td>
<td>S. Florida</td>
</tr>
<tr>
<td>Okra</td>
<td>300</td>
<td>4.89</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S. Pea</td>
<td>130</td>
<td>3.18</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peppers</td>
<td>400</td>
<td>2.56</td>
</tr>
<tr>
<td>(Bell)</td>
<td></td>
<td>525</td>
</tr>
<tr>
<td>Squash</td>
<td>400</td>
<td>2.67</td>
</tr>
<tr>
<td></td>
<td></td>
<td>150</td>
</tr>
</tbody>
</table>

1 Data from one year abstracted from W. O. Mizelle, 1977, Fresh Market Vegetables (table), Tifton, Georgia.

2 Data from 5 years abstracted from D. L. Brooke, 1977, Costs and Returns From Vegetable Crops in Florida Season 1975-76 with Comparison, Econ. Info. Rep. 67, Food and Resource Econ. Department, IFAS.

3 Abstracted from R. A. Levins and R. D. Downs, 1974, Management Handbook for Small Farms in Florida (Plant City Area), Food and Resource Econ. Department, IFAS.

4 Abstracted from W. A. Colette, 1978, Vegetable Crop Production Budgets for Small Farms in North Florida, 1976, FRED Staff Paper 75, Food and Resource Economics Department, IFAS.

Note the comparable production costs between pepper and squash growers between all locations, but the extremely high costs for okra and southern pea producers in north Florida. An analysis of consumption patterns for the north Florida region revealed that major portions of the southern pea and okra production remained within the production region and were consumed locally. Much of this production was grown by small farmers with averages of 1.4 acres of okra and 6.25 acres of peas. Obviously, growers can greatly improve their competitive advantage by learning to increase their yields through County Extension and educational programs.
Second, growers should become acquainted with the price trends for their vegetables throughout the season. Over the long run, growers who are committed to vegetable production can compare expected expenses with average price trends to evaluate profitability of a specific crop, to obtain a loan, or to plan future production strategies. Price trends indicate when excess production and resulting low prices can be expected. Sometimes, the trends indicate when prices are favorable and the grower might consider whether a particular vegetable can be produced economically during particular periods of time.

A good method of obtaining price trend data is to ask the buyer when he needs certain types of vegetables to fill regular orders. The growers need to determine carefully whether quality vegetables can be economically produced at that time before deciding to plant. Otherwise, price trend data can be obtained from Marketing Specialists through the Extension Service.

Another component in price trend data is price variability for each crop throughout the season. Crops with lower price variabilities may be better suited to growers having limited resources. The following crops are listed in order of decreasing price variability for north Florida production in the warm weather months.

| PRICES MOST VARIABLE | Okra          
|                       | Peppers       
|                       | Tomatoes      
|                       | Beans         
|                       | Southern Peas 
|                       | Squash        
|                       | Sweet Potatoes
|                       | Corn          
|                       | Eggplant      
|                       | Greens, Collards, Mustard 
|                       | Turnips       

| PRICES LEAST VARIABLE
| Greens, Collards, Mustard 

In summary, growers who consistently produce quality vegetables and keep a focus on production costs, price trends, and economic methods of increasing yields have the best chance of earning a profit in vegetable production. Practical experience and common sense are needed as the grower develops his crop production and business management skills. Repeat sales and developing a reputation for selling only quality vegetables are essential while growers break into or maintain market outlets for their vegetables.

(William & Wall)
A. A Production-oriented Postharvest Problem Observed on Chinese Cabbage

The "Bok Choi" type of Chinese cabbage has shown a black specking at harvest which becomes more pronounced in storage. It has been observed on the lower east coast sand land areas of Florida that this type tends to exhibit these specks on the internal petiole areas. It becomes worse as the crop becomes more mature. No pathogen has been found associated with these spots.

In reviewing the literature, a similar condition was described on cabbage by J. O. Strandberg, J. F. Darby, J. C. Walker and P. H. Williams ("Black Speck A Nonparasitic Disease of Cabbage." Physiopathology 59:1879-1883. 1969.)

This was reported in the December 23, 1968 Vegetarian No. 83. For your information, it is repeated here:

"Black speck, sometimes referred to as 'pepper spot' is a disease of winter cabbage in Florida which causes serious loss in transit and storage. The disease, as the name implies, appears as numerous, black specks on the inner leaves of the cabbage head. Black speck seems to intensify on the cabbage heads when held under refrigeration. Exact causes for this disorder have not been determined, but research at Sanford and Belle Glade, Florida, and in other states has pointed out some factors associated with it.

Until now, no pathogenic organisms have been found associated with the problem. Some cabbage varieties and hybrids are more susceptible to the disease than others. The disease is often accentuated by certain soil factors, weather, and foliar sprays.

Researchers Strandberg, Forbes and Darby at Sanford and Berger at Belle Glade have investigated this cabbage disease rather intensively in Florida. In addition to noting varietal differences in susceptibility, they observed that the application of copper by foliar sprays caused a significant intensification of the disease.

Until further information is developed on black speck of cabbage, growers are advised to go easy on the use of copper in fertilizers or in any spray materials. Soils, with high copper contents should be avoided when possible, or limed heavily (to pH 7.0) to reduce soluble copper content. Growers might also check with their seedmen to obtain resistant varieties and hybrids for small trial plantings. Field performance of the more resistant lines has not been adequately determined as yet."

We suspect that what is being seen on Chinese cabbage is the same as was observed on cabbage by Dr. Strandberg.
It is interesting that two reports in this issue are concerned with produce quality. This one involves a possible excess of copper causing toxicity symptoms and the other a deficiency of calcium causing a non-pathogenic disorder on carrot roots.

There is some evidence that calcium deficiency on the relationship of low calcium to high copper may be involved in this black specking on all crucifers. We suggest that the use of copper fungicides, high copper soils and copper in the fertilizer as a micro-nutrient all be avoided as a precaution against this disorder. The best control at present seems to be to avoid varieties that are susceptible and to harvest before they become over mature.

(Marvel)

IV. VEGETABLE GARDENING

A. "Canning" Tomatoes - The Way to Grow

Growing good, big, juicy, red-ripe tomatoes will be the aim of many thousands of Florida home gardeners this spring season. To grow tomatoes, with space limitations, one should consider "canning" tomatoes -- that is, growing them in cans.

Tomatoes grown in cans and other containers produce well, and make attractive plants. To enhance the landscape, cans may be placed at strategic locations around the exterior of the home.

Furthermore, tomato fruits produced in this manner are just as tasty and nutritious as those grown in the ground.

This article describes a method of can culture used successfully in a home garden in central Florida last year. The principles used were sound, and the results were outstanding. There is every reason to believe that the system will work just as well for you.

Containers: The gardener used 5-gallon square cooking oil cans. Anything similar, such as bushel baskets or plastic garbage cans may be used but not smaller containers.

Location: A four-foot wide strip of black polyethylene was laid out on the ground. It was long enough to accommodate about 24 cans. The cans were placed on the mulch in full sunlight. Containers may be placed wherever they might be most attractive. Since the containers have their own soil, they can be placed on hard surfaces such as concrete patios or wooden decks.

Soil: Sawdust was used as a soil-substitute. It is important to use well-rotted, old sawdust for best results. Although this gardener did not put anything else in the sawdust at the time it was placed into the cans, it is advisable to mix about a half cup of dolomite in each can to provide sufficient calcium.

Varieties: Plants were set directly into the sawdust. The varieties used were 'Floradel,' 'Walter,' 'Big Boy,' and 'Stakeless.' Best production was obtained from 'Walter' and 'Floradel' and least from 'Stakeless.' 'Big Boy' was only fair. Other varieties suggested for use are 'Floramerica,' 'Manalucie,' and 'Tropic.' Also, the
small-fruiting varieties such as 'Summer Cherry' do well in can culture. The latter will also permit growing into the warm summer months.

**Fertilizer and Watering:** A fertilizer solution was prepared and applied daily to each can. The fertilizer solution was mixed in a five gallon container. The gardener mixed two tablespoonsful of high analysis soluble fertilizer (Nutri-sol) into five gallons of water. One gallon of this solution was poured into each tomato can once each day. At the end of each week, the fertilizer was omitted and, instead, each container of sawdust was given a thorough wetting with the garden hose. The purpose was to wash out accumulated salts from the fertilizer, since soluble salt buildup can cause root injury.

Alternatives to the methods of fertilizing used might be mixing a slow-release fertilizer into the sawdust before planting; or twice weekly light applications of dry common fertilizer such as 6-8-8 to the sawdust surface followed by watering in.

**Staking and Supporting:** All varieties should be supported so that they are made to grow in an upright position. Regular methods of supporting such as staking and string-trellising may be used.

**Further care:** The usual care and attention was provided as the plants grew. Some pruning was done to remove unwanted suckers. Pesticides, as needed, were sprayed onto the plants. Weeds were not a problem, since the black plastic kept the weeds away from the area around the cans, and the sawdust contained no weed seeds.

(Stephens)

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**B. Know Your Vegetables - Shallot**

Shallot (Allium cepa L. Aggregatum group) is a vegetable very similar to the common onion.

Cibol is another name (Spanish) for the plant. Scallion has been used somewhat interchangeably with shallot, but the term scallion really refers to any onion that is pulled young before the bulb is formed.

Shallot is a perennial which produces a cluster of small pointed bulbs from a single planted bulb. The hollow, rounded leaves are up to 24 inches long. Bulbs are from 3/4 to 1 1/2 inches in diameter and are of varying color -- red, pink, white, gray or russet.

They are grown mainly for use as a green onion, particularly here in the south. Also, they may be grown for the dry bulbs, which are more mild flavored than onions. While the shallot will grow nicely here in Florida, most of the U.S. commercial production is centered in southern Louisiana.

Shallots are not grown from seeds, but from their 'clove,' or by division. Actually, the bulb is compound, containing several parts called cloves. Each bulb is surrounded by a thin leaf scale, but the entire group of cloves is not enclosed in a membrane in a manner similar to garlic.
To plant these, cloves should be divided and set in the soil with the point of the clove just below or at the surface. Rows should be one foot apart, and cloves three to five inches apart in the row.

As the daughter bulbs and plants develop, some soil should be pushed around them to blanch (whiten) the lower portion of the stems.

Here in Florida, planting should be from September through March. Time from planting to use as a green onion is normally about 3 months.

Some of the U.S. varieties acceptable for Florida gardeners are 'Louisiana Pearl,' 'Bayou Pearl' and 'Wilmington.'

Shallots may be used fresh, in salads, or in cooking.

(Stephens)