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Prepared by Extension Vegetable Crops Specialists

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TO: COUNTY EXTENSION DIRECTORS AND AGENTS (VEGETABLE AND HORTICULTURE)

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I. NOTES OF INTEREST

A. New Publications


2. Research Report CF 82-1, Results of Cabbage Variety Trials -1980-81, by J. O. Strandberg and J. M. White is available from the Sanford AREC, P. O. Box 909, Sanford, FL 32771.

3. Sweet Corn Cultivar Trial, Zellwood Florida, CF 82-2 by J. M. White is available from the Sanford AREC, P. O. Box 909, Sanford, FL 32771.


(Maynard)

II. PESTICIDE UPDATE

A. Permethrin Granted Section 18 For Control of Leafminer On Tomatoes

A Section 18 exemption has been granted for the use of permethrin (Ambush, Pounce) for the control of leafminer on tomatoes in certain counties in Florida. The counties included in the exemption are Gadsden County and all counties
Permethrin is labeled at the rate of 0.05 to 0.1 lbs. A.I. per acre per application. A maximum of ten (10) applications is authorized. The exemption will expire June 30, 1982. Other restrictions are specified. Read the label and follow all specifications.

B. DCPA (Dacthal) To Be In Short Supply

A major factory explosion has stopped the production of DCPA (Dacthal). I have been informed by a representative of Diamond-Shamrock that the warehoused material will not be adequate to supply the demand for the herbicide this year. Specific decisions have not yet been made whether to rebuild the plant as before or buy an intermediate product that is needed in the formulation from another company.

No new product will be available for sale until probably 1983.

(Stall)

III. COMMERCIAL VEGETABLE PRODUCTION


Tomato production practices, such as method and rate of fertilizer application, mulching, fumigating, time of
planting, pest control, and irrigation are quite uniform throughout the Manatee-Ruskin area. This uniformity makes possible interesting comparisons of varieties and other production variables under commercial conditions.

The Duke variety was the leading variety in the Spring 1981 production season for this tomato growing district. Manatee County Extension Agent, R. T. Montgomery, Vegetable Program Assistant, E. H. Shannon, and this specialist studied the performance of the variety Duke at three different harvest dates to look at the influence of length of season on yield and quality. Blocks of seven plants from each of three farms on three different harvest dates were observed. Each plant was cut off at the soil line and subjected to uniform measurements of yield, size, and grade of fruit; plant weight (stem and leaves); and stem diameter. Per plant and farm averages were recorded and between-farm and between-harvest-period averages were compared. All fruits were ring-sized individually and placed in the 4 grade-size categories used by the Florida tomato industry. The per plant averages of the 3 farms at the three harvest dates are shown in Table 1. It is interesting to note that 53% of the marketable yield at the first harvest was in the extra-large and large size category. On the second harvest date this proportion stayed about the same; but on the third harvest date these two largest sizes accounted for 66% of the marketable fruit.
Table 1. The number and weight of marketable fruit of the Duke tomato variety at three different harvest dates, per plant averages, 3 farms each date.

<table>
<thead>
<tr>
<th>Date of Harvest</th>
<th>Extra Large</th>
<th>Large</th>
<th>Medium</th>
<th>Small</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>22 Apr.</td>
<td>16 7.6</td>
<td>10 4.2</td>
<td>12 4.0</td>
<td>11 2.6</td>
<td>49 18.4</td>
</tr>
<tr>
<td>30 Apr.</td>
<td>18 9.1</td>
<td>19 7.0</td>
<td>14 4.5</td>
<td>19 4.8</td>
<td>70 25.6</td>
</tr>
<tr>
<td>6 May</td>
<td>26 12.7</td>
<td>24 8.9</td>
<td>17 5.6</td>
<td>9 2.2</td>
<td>76 29.5</td>
</tr>
</tbody>
</table>

*Pounds per plant.

The fresh weight of the stem and leaves, and stem diameter of this variety at the three harvest dates are shown in Table 2 along with total fruit set. The reason for the small difference in top weight at the third harvest date is probably due to the drying and loss of lower leaves. The total fruit set figures show that this variety produces about 70% marketable size fruit within the normal harvest period. An extended harvest period may have allowed more small fruit to reach the larger sizes.

A word of caution should be made in regard to comparing these yield figures with the standard three continual-pick harvests. The destructive harvest used in this study show only the yield and growth condition at a single date rather
than accumulative yield. Table 1 reflects the shift in sizes by dates such as Extra Large increasing from 16 to 26 fruit per plant.

Table 2. The fresh weight of top, stem diameter and total fruit set of the Duke tomato variety at three different harvest dates, 3 farms each date.

<table>
<thead>
<tr>
<th>Date of Harvest</th>
<th>Stem-Leaf Wt.</th>
<th>Stem Diameter</th>
<th>Total Number Fruit Set/Plant</th>
<th>Marketable Fruit %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Kg.</td>
<td>Lbs.</td>
<td>mms.</td>
<td></td>
</tr>
<tr>
<td>22 Apr.</td>
<td>3.4</td>
<td>7.6</td>
<td>18.4</td>
<td>85</td>
</tr>
<tr>
<td>30 Apr.</td>
<td>4.7</td>
<td>10.5</td>
<td>19.6</td>
<td>100</td>
</tr>
<tr>
<td>6 May</td>
<td>4.4</td>
<td>9.8</td>
<td>20.5</td>
<td>106</td>
</tr>
</tbody>
</table>

This study helps to understand this fairly new tomato variety which produces such a large proportion of large fruit. With caution, yield and growth projections from a per plant to acre basis can be made. In a 7260 row feet "acre" of plants spaced 30 inches apart there are approximately 2900 plants. The green top weight of tomatoes in this "acre" would weigh 14.5 tons and produce (24.5 lbs x 2900) 71,050 lbs of fruit or 2368 30-lb boxes.

The manufacturing plant of 29,000 lbs producing 71,050 lbs of fruit per row acre is rather impressive. Each pound of top produced about 3.45 pounds of marketable tomatoes.

(Marlowe)
B. SULFUR: The Next Element That May Worry Florida Vegetable Growers

Until recently, growers received more than an "adequate" supply of sulfur for their soils from the atmosphere. Sulfur originated in the so-called "dirty" fossil fuels—oil and coal. Since the advent of the Clean Air Act, this is no longer the case. In fact, in the estimation of the writer, sulfur deficiency could be the next headache for the Florida vegetable grower. Extension agronomists are already recommending supplemental sulfur for some agronomic crops in North and West Florida. These areas of the state are isolated from the large population centers, and their associated "air pollution".

Fortunately for the vegetable growers, the problem is not yet serious in vegetable production. So growers need not worry about applying additional sulfur to their soils at the present time. However, a sulfur deficiency was found on turnips in South Georgia in the recent past. The author and others noted what appeared to be a lack of sulfur on mustard from the Central Florida sandy soils over a year ago.

Sulfur deficiency can be easily confused with nitrogen deficiency. The lack of sulfur, like nitrogen deficiency, causes a yellowing of the lower leaves, and the yellow color is almost white in appearance. On crops like mustard and turnip, there is a simple diagnostic test to detect sulfur
deficiency. If one were to crush some normal green leaf tissue from a mustard plant, it would give off the characteristically pungent odor of mustard oil. By contrast, the sulfur-deficient yellow leaf tissue, when crushed, is practically devoid of the odor of mustard oil. Sulfur is required in the synthesis of oil, and without sulfur, the plant cannot produce mustard oil normally.

There is no need at the present time for vegetable growers to make a special attempt to apply sulfur. Many fertilizers and amendments contain sulfur. Sulfate of potash ($K_2S0_4$) and epsom salts ($MgS0_4$) both contain sulfur. However, at some future date, it may become necessary to apply additional sulfur to our vegetable soils. In the meantime, growers should keep an eye open for possible sulfur deficiency, and then call on the University Specialists, if it is even suspected. We, too, are in the learning stage when it comes to recognizing and diagnosing a potentially new problem.

(Montelaro)

C. Weed Control In Crucifers

1980-81 has not been good years for herbicides in the production of crucifers. Nitrofen (TOK) and CDEC (Vegedex) have been withdrawn from use and now Dacthal is in short supply.
There are two remaining herbicides that can be used for weed control in crucifers, CDAA (Randox) and trifluralin (Treflan).

Randox is labeled for cabbage only. It is a preemergence or post transplant material that can be used on both organic and mineral soil.

Randox controls germinating annuals, especially grasses. It has proven fairly weak in broadleaf control. Care must be taken in the application of Randox, it is quite irritable to the skin, eyes and nose.

Treflan is labeled on several crucifers, but cannot be used on the organic soils. Treflan must be preplant incorporated and again has a better control on grasses than broadleaf weeds.

Both herbicides should be used at less than the upper limit rates if the crucifers are direct seeded. Phytotoxicity has been seen when the labeled rates are exceeded.

Joan Dusky, AREC, Belle Glade has submitted an emergency specific exemption (Section 18) for the use of Dual for several crucifers. If and when this is granted by the EPA, I will immediately inform you.

This year, as never before, cultural weed management practices should be practiced. This includes the following:
plowing at different times to change weed species survival, cover cropping to suppress weeds, and land selection so that non herbicide controlled weeds are not the predominant species.

Methyl bromide is labeled for nematode control in cabbage seed beds. Fumigation will also control many weeds and should be considered this year as an alternative to other nematode control practices in seed beds. Broadcast and bed fumigation can be contracted through licensed applicators in several parts of the state.

IV. HARVESTING AND HANDLING

A. Dietary Fiber In Vegetables

Vegetables are an important source of fiber in the diet. The increasing evidence that fiber is an important health factor has focused considerable attention on dietary fiber. American public interest in eating nutritiously is greater than ever before, and nutritional knowledge is essential for improved diets. Fiber in the diet was formerly considered to be the indigestible part of foods, measured as crude fiber, that had little influence on nutrition. Research has shown that plant fiber includes a mixture of substances, including cellulose, that are partially digested or changed by secretions in the intestines.

Tables of vegetable composition which report crude fiber actually include only that portion of the total fiber left
after extraction with acid and alkali. Dietary fiber is a more inclusive term for a complex mixture that includes cellulose, hemicellulose, pectin and lignin. There are no comprehensive tables of dietary fibers for vegetables and its significance in view of the changing attitude about the role of fiber in man's food. Nutritional analysis should be a regular part of horticultural research and extension, especially since vegetables provide more nutrients per calorie than any other food category.

Refinements in the analysis of dietary fiber include the acid-detergent method for more accurate measurements of cellulose and lignin, and the neutral-detergent method (3) which also includes hemicellulose. Dietary fibers (detergent methods) in carrots, cabbage, broccoli and okra exceeded the crude fiber (AOAC method) (1) by more than 100% in recent studies at the University of Florida (4). The 14% cellulose in broccoli was 5% higher than the cellulose in okra. Hemicellulose was much higher in cabbage, 6%, than in the other vegetables. Lignin was less than 2% in all four crops.

Among nine vegetables analyzed (7) for neutral detergent fiber (NDF) and crude fiber (CF), potatoes were the lowest with 4.7% by NDF and 0.5% by CF on a dry weight basis. Green beans ranked highest with 22.0% NDF and 10.6% CF. The pectin content of 2.2% (fresh weight basis) in carrots and sweet potatoes (2) exceeded the cellulose components of 1.0
and 0.6% in these vegetables. The crude fiber of 1.0 and 0.9% for these crops (9) does not include the water soluble pectin and therefore this component of dietary fiber is excluded.

The physiological functions of fibers in human food are difficult to determine because of their unique physical and chemical properties that vary with source, plant age, cooking and digestion. Dietary fibers are recognized for their water-holding capacity, gel filtration, cation exchange and adsorption or excretion of other metabolites.

Scientific evidence on fiber in the diet was inadequate for inclusion of dietary fiber in the 1980 Recommended Dietary Allowances (5) of the National Research Council which publishes dietary standards for the United States. However, the 1980 Dietary Guidelines (8) issued by USDA and HEW recommend increasing consumption of complex carbohydrates for adequate starch and fiber. With the average American diet relatively low in fiber, increases in vegetables, fruits and whole-grain cereal products were recommended. United Fresh Fruit and Vegetable Association has published a review (6) of many kinds of plant fibers plus possible nutritional benefits and hazards resulting from fiber in the diet. Industry is currently sponsoring projects to measure the nutrient content of vegetables for nutritional labeling and use in promotion and point-of-sale
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information. This update emphasizes the need for more fiber research in the scientific community.

REFERENCES
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V. HOME VEGETABLE GARDENING

A. The Medfly and The Florida Vegetable Garden

With all the attention and news-service the Mediterranean fruit fly (Medfly) is getting in the current eradication campaign, many home gardeners are wondering what effect it will have on their vegetable gardening activities. Most are anxious to know that their garden vegetables do not contribute to the proliferation of the pest, while others might fear that the fly could become yet another pest injurious to their vegetables.

Actually, at the current level of infestation, the Medfly should have little if any effect on what, when, and how to plant vegetables in gardens anywhere in Florida. Vegetables are not included in the list of preferred hosts, some of which are kumquat, sour orange, Surinam cherry, calamondin, grapefruit, mango, plum, roseapple, and guava. However, at least two of the fruiting vegetables, tomato and pepper, are on the list of host plants for the fly, and would be subject to possible attack if the pest should ever become heavily populated in the state.

Gardeners inside and outside the quarantine area, which at this writing is centered in Hillsborough County, should
continue their normal gardening activities. Any vegetable ordinarily planted at this time of the year may still be planted and harvested. It is neither necessary nor suggested that the gardener's pest control program be altered in any way in an attempt to avoid or kill the Medfly.

Control of the Medfly within the quarantine area should be left to the eradication efforts of the Division of Plant Industry, Florida Dept. of Agriculture and Consumer Services. Aerial spraying of baited malathion insecticide, coupled with the release of sterile adult flies, probably will be the primary methods employed for combatting the fly. It is doubtful that Florida gardeners will have to strip their garden produce and dispose of it even in the event the fly is found in their area.

Since malathion is one of our safest and most commonly used garden insecticides, most gardeners are already using it to control other insect pests on vegetables. Therefore, it is possible that a very small degree of protection from the Medfly might result with regular spraying. It would be advisable for gardeners throughout the state to be able to recognize the Medfly and to take suspicious insect specimens to their county Cooperative Extension Service Office for identification. It is very unlikely that Medfly will show up in a vegetable garden, but there is a remote chance.
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The best way gardeners within a quarantined area can assist in the eradication of the Medfly is to keep and use all their vegetables at home. Since unfumigated host fruits and vegetables will not be allowed out of quarantine area, no gardener within the area should transport any form of tomatoes or peppers out of the area. Better yet, a gardener should not attempt to share any garden produce, particularly fruiting vegetables, with friends or relatives outside the quarantine area. Within this classification, most vegetables such as beans, eggplant, melons, and peas might not be considered as hosts, yet should remain inside to remove any question about their host possibilities. Leafy vegetables such as celery, lettuce and cooking greens, along with other forms of non-fruiting vegetables, such as carrots, broccoli, and potatoes, could legally be transported in and out of the area; however, since they could possibly possibly be carriers of the insect in some unforeseen way (soil on roots, in containers, etc.) gardeners would be wise and helpful not to transport them outside.

Many entomologists have called the Medfly the most feared pest of fruits and vegetables in the world. However, its presence in Florida is limited at the moment and should not keep vegetable gardeners from "keeping on keeping 'em growing".

(Stephens)
B. Know Your Minor Vegetables - Orach

Orach (Atriplex hortensis L.) is a member of the Chenopodiaceae family. It is also commonly known as mountain spinach, French spinach, and sea purslane. Some variations of the name are orache, arache, and orage. The name derives from the French "arroche", a corruption of the Latin "aurago" (golden herb). It is sometimes called "salt bush" due to its tolerance of alkaline soils.

Orach is a native of Europe and Siberia, and is considered to be one of the oldest cultivated plants. It is grown as a substitute for spinach in Europe and in the northern plains of the U.S. It is seldom seen in the tropics, but is occasionally grown in gardens in Florida.

Description-Orach is an annual plant grown for its leaves, which are used like spinach. Leaves are arrow-shaped, 4 to 5 inches long, 2 to 3 inches wide, slightly crimped, soft and pliable. Stems are 5 to 6 ft. high, angular and furrowed. A rosette of leaves first develops, followed by a seed stalk which may reach up to 8 feet. Flowers, which have no petals, are small, green or red colored.

Seeds are flat, russet-colored, and surrounded by a light yellow leafy membrane. The plant also produces some seeds which are black, membraneless, and often non-viable.
Varieties - There are four varieties of orach which have been cultivated over the years and throughout the world. **White orach** is most commonly grown. The leaves are very pale green, almost yellow. **Dark Red Orach** has dark red stems and leaves. **Green Orach**, also called Lee's Giant Orach, is a very vigorous kind, with a stout, angular, branching stem. The leaves are rounder, less toothed, and darker green then those of the white variety. The fourth is a copper-colored variety which is rarely grown.

Culture - Orach is a cool season vegetable, and should be grown much like garden spinach. It is quick to bolt in summer. In South and central Florida, plant in October through January. From Orlando northward, plant seeds mid-September through February.

Sow seeds one half to one inch deep in rows spaced 2 feet apart. Thin seedlings to stand 6-12 inches in the row. Seedlings may be transplanted.

Use - Leaves and portions of tender attached stems are ready for harvest 40 to 60 days following seeding. Pick the leaves as they are wanted. The leaves are eaten boiled like spinach.

(Stephens)

VI. MASTER GARDENING AND YOUTH

A. Results of 1981 State 4-H Horticulture Events

The 1981 Florida 4-H Congress has turned to memories. During the Congress, the State Horticulture Identification
and Judging Contest was held on July 28, 1981, with a total of 14 teams participating in this event.

Marion County received first place honors with Brevard and Volusia taking second and third place, respectively.

Ricky Jefferies, a Leon County 4-H Club Member, took first place in the Horticulture Demonstration Event at State 4-H Congress.

Ricky along with Jeannie Piotrowski, Kim Ambrose, Rip Haskins, and Tom Siverson (the Marion County team) will compete at the NJHA Contest this year.

The National Junior Horticulture Association will hold its Annual Convention this October 30, through November 2, at Colorado Springs, Colorado. The meeting was last held in Colorado (Denver) in 1970.

Congratulations to each winner.

(McDonald)

B. Florida Master Gardener Advanced Training and Recognition Program

Approximately 95 Master Gardeners who volunteer their time and skills working at their county extension office traveled to Gainesville on August 25 and 26 for the "Advanced Master Gardeners Course".

Representatives from the six pilot counties, Hillsborough, Dade, Brevard, Manatee, Polk and Volusia attended the two-day program covering subjects from care of house plants to IPM principles.
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The highlight of the event was the Recognition Banquet. Each Master Gardener was awarded a certificate of completion for the advanced training, by Dr. J. T. Woeste, Dean for Extension. Special recognition went to Bruce Lauenborg and Larry Bearse, both Manatee County Master Gardeners who have each volunteered 500 hours of service to their county.

The Master Gardener Program is expanding into three new counties this fall. Orange, Lake and Osceola counties will begin their course work on September 9, in Orlando. The Florida program will begin its third year this fall.

(McDonald)

Statement: "This public document was promulgated at a cost of $324.07 or 49¢ per copy for the purpose of communicating current technical and educational materials to extension, research and industry personnel."