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TO: COUNTY EXTENSION DIRECTORS AND AGENTS (VEGETABLES AND HORTICULTURE) AND OTHERS INTERESTED IN VEGETABLE CROPS IN FLORIDA

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VEGETARIAN NEWSLETTER 77-7

IN THIS ISSUE:

I. NOTES OF INTEREST
   A. Revisions of Two Crop Production Guides Available
   B. Tomato Growers' Institute Plans
   C. Workshop for Salesmen and Technical Representatives

II. COMMERCIAL VEGETABLE PRODUCTION
   A. Soil Tests - Timing and Use in Vegetable Production
   B. Greenhouses and Hydroponics - Construction and Management Publications
   C. Roadside Marketing for Small Farm Producers

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

NOTE: Anyone is free to use the information in this newsletter. Whenever possible, please give credit to the authors.
I. NOTES OF INTEREST

A. Revisions of Two Crop Production Guides Available

The Sweet Corn and the Lettuce and Endive Production Guides were revised and reprinted recently. We printed only 3,000 copies of each. County Extension offices will get a small but adequate supply of each for their needs. Agents are asked to use sound judgement in distributing these guides. They cannot be given to home gardeners for use. Agents needing a few extra copies can obtain them from a limited supply retained in the bulletin room.

(Montelaro)

B. Tomato Growers' Institute Plans

Plans have been finalized for the Annual Tomato Growers' Institute. It is set for Thursday, September 8, 1977 and is to be held in the Mounts Agricultural Building (county agents' office), West Palm Beach, Florida. The program promises to be a good one. So please put this date on your calendar now and make definite plans to attend.

(Montelaro)

C. Workshop for Salesmen and Technical Representatives

A workshop on leaf miner and pinworm problems will be held on Wednesday, August 17, at the Manatee County Extension Auditorium, Palmetto. This is the second annual workshop designed especially for this vital segment of the Florida vegetable industry. Last year the topic was on applied plant nutrition.

County agents are invited to this workshop. County agents are asked to alert salesmen and technical representatives of this meeting. We are not extending an invitation to vegetable growers because many topics expected to be covered are not suitable for recommendation at this time.

Copies of the program can be obtained from the Vegetable Crops Department, Gainesville, or Terry Montgomery, Manatee County Extension Service, 1303 17th St., Palmetto, 33561, telephone (813) 747-3007.

(Marlowe)
II. COMMERCIAL VEGETABLE PRODUCTION

A. Soil Tests - Timing and Use in Vegetable Production

Delaying too long or omitting soil tests can be a costly mistake in vegetable production. Timely soil test information, used correctly, may not only contribute to bumper yields but reduce fertilization costs as well. In order to obtain the greatest benefits from soil testing, it should be done two to three months before planting time. This is especially true where lime may be needed.

The most important soil test is the determination of pH. If lime is needed, it should be applied two to three months prior to planting. Early application is necessary to permit the lime to react in the soil to correct low acidity. Together with pH, the determination of Calcium (Ca) and Magnesium (Mg) levels is important, also. These two soil test values help determine the kind of lime to use. A need for magnesium can be satisfied inexpensively by the use of dolomitic limestone. Growers should shoot for a Ca/Mg ratio in the range of 5/1 to 8/1. In other words, use high dolomitic limestone if Ca/Mg ratio is 8/1 or greater. Conversely, high calcic limestone should be used if Ca/Mg is 5/1 or less. In between, it is a toss-up. The two materials can be alternated from season to season or applied together each time.

Estimating fertilizer nutrient levels to use without adequate soil test information is poor business. Phosphorus and potassium, two nutrients generally used in large quantities, can be adjusted accurately only with good soil test data. An excess of potassium is not only wasteful but may reduce yield by injuring the crop. Many of our vegetable soils are high to very high in residual phosphorus levels. On these soils phosphorus can be omitted in the warmer seasons. A small amount of phosphorus placed close to the seed drill or transplant roots is usually sufficient to tide seedlings over in cold soil. Many vegetable growers in Florida are lowering fertilizer costs significantly by reducing phosphorus application on soils showing high levels of this nutrient.

Every two to four years, old vegetable soils should be tested for levels of micronutrients. The most important of these are the four heavy metals -- iron, manganese, zinc and copper. Micronutrient application for every crop or, even every year can be wasteful and, in some cases, harmful. Periodic testing for the heavy metals can help monitor significant changes in ratio and amounts among these elements. Within the past few years, copper has been found to be accumulating rapidly in soils where copper fungicides are used for disease control. On these soils, growers would be wise to leave copper completely out of their fertilizer applications.
Another test that may be of real value to vegetable growers prior to planting time is soluble salt determination. Excessively high levels of soluble salts are being found on some soils where full-bed plastic mulch culture was used for two or more seasons. An excessively high soluble salt reading on these soils might dictate a change to another crop or even abandonment for a while.

Soil tests are important management tools to the vegetable grower. They should be used to the fullest extent.

(Montelaro)

B. Greenhouses and Hydroponics - Construction and Management Publications

During the past five years in Florida there has been a marked increase in the number of requests for information about out-of-season vegetable production. A typical letter may start with "Please tell me all about the growing and marketing of tomatoes during the winter in hydroponic culture." This question is, of course, far too comprehensive to answer in a letter. It is felt that the county Extension Agent should have reading lists available to send to persons for initial guidance on these broad topics.

A comprehensive reference list has been developed on each of four topics for this purpose. The following lists are available from the Vegetable Crops Department, 3026 McCarty Hall, University of Florida, Gainesville, Florida, 32611.

1. VC 77-12 Greenhouse construction, heating and operation (references)
2. VC 77-13 Greenhouse vegetable production (references)
3. VC 77-14 Hydroponics, soilless culture, and nutriculture (references)
4. VC 77-15 Plant production (references)

Some of the most significant publications appearing in these lists are worthy of a brief discussion. Extension agents in counties reflecting high interest in these topics may wish to order some of these key publications directly from the source mentioned.

1. Greenhouse Construction, Heating and Operation

The University of Illinois Circular 905, 1965, entitled Plastic Greenhouses is one of the most comprehensive publications in the list. The University of Kentucky fathered plastic greenhouses in the U. S. in 1954. Publications from this source are among the most specific and detailed. A USDA publication entitled Sources of Information on Greenhouses is helpful to those desiring a broad look at greenhouse construction, control devices, and uses.
2. Greenhouse Production Publications

As would be expected, the state having the largest greenhouse industry prepared one of the most complete publications on greenhouse tomato production. Ohio State University Extension Bulletin SB19, written in 1973, is an extremely valuable publication for the commercial grower.

The USDA publication, Agri. Handbook No. AH382 provides a very comprehensive discussion of production practices for greenhouse tomatoes from a nationwide viewpoint. Growers interested in greenhouse vegetable production in soilless media may be greatly helped by the VPI publication MH94, entitled Greenhouse Schedules with Artificial Mixes.

3. Nutrient Culture Publications

The serious hydroponic vegetable grower would benefit greatly from some of the more technical publications such as Soilless Growth of Plants, 1974, by Ellis and Swaney; The Water Culture Method for Growing Plants Without Soil by Hoagland and Arnon, 1950; and The Chemistry of Nutrient Solutions, 1974, by Dr. Labanauskas of University of California, Berkeley, California Extension Service.

Hobby interests would find Beginners Guide to Hydroponics, 1972, by J. S. Douglas, and Hydroponics as a Hobby in the Rutgers University Extension Leaflet No. 432, worthwhile. Many British and Canadian publications on greenhouses, hydroponics, and greenhouse production are excellent but they are sometimes difficult to obtain.

4. Plant Production Publications

Plant growers have organized an international association, Bedding Plants International. Printed proceedings are developed from each of their yearly meetings. Serious plant growers should consider affiliation with this group as it provides an outstanding opportunity to learn of the latest methods and equipment related to this specialized field.

Three of the most detailed publications available are Growing Vegetable Transplants, 1952, by Jones & Shoemaker, Ontario Dept. of Agriculture, Bulletin No. 485; Courter and Vandermark's Vegetable Plant Growing, 1964, University of Illinois Extension Circular No. 884; and the North Carolina State University Circular No. 231 entitled Plant Production for Commercial Growers, 1959, by Drs. A. Banadayga and J. Wells.

(Marlowe)
C. Roadside Marketing for Small Farm Producers

Many small producers of fresh fruits and vegetables realize that basic knowledge of marketing and a consideration of marketing options is as important as successful crop production. Dr. Bryan Wall, Extension Vegetable Marketing Specialist, has recently developed a Food and Resource Economics Fact Sheet entitled "Marketing Alternatives for Fresh Vegetables." In addition, Dr. Wall and Mr. Manny Palada* offer the following suggestions for profitable marketing of fresh produce.

A roadside market refers to a retail business located in a producing area rather than in a consuming area. Although many types of roadside markets exist, we will confine our remarks to fresh produce markets where the fruits and vegetables are sold by the grower directly to the consumer. These markets usually operate on a seasonal basis depending on the type and variety of produce being grown and sold. The availability of fresh, crisp, or juicy vegetables having superior quality is perhaps the major factor that motivates people to purchase vegetables at a roadside stand. Also, most customers will regularly travel within a six or seven mile radius for the fresh produce and occasionally will travel further for larger amounts of produce. Thus, stand location and maintaining quality produce in the sales area are major points to consider when planning or operating a roadside stand.

A permanent stand located near a populous area or along a major highway where produce can be sold during a long growing season will have the greatest potential sales volume. The stand should be convenient for persons entering from both highway lanes and be surrounded by a large, accessible parking lot. An interesting building and surrounding, including trees, landscaping, and perhaps a "country atmosphere" will attract customers also. Depending on the expected sales volume a stand containing 300 to 600 square feet which includes ample display area for most vegetables and a refrigerated storage and display area for highly perishable items will provide adequate facilities. In addition, smaller or portable stands may be erected near the production site, the grower's home, or busy intersections for marketing a limited amount of mixed produce or specialty items such as sweet corn or watermelons. However, total sales are generally reduced in these smaller stands because the number of regular customers also declines and the season may be reduced. When establishing a new stand, the grower is advised to carefully evaluate traffic patterns, accessibility, and competition from other types of markets that also sell similar produce.

Growers who market a wide variety of quality produce invariably sell greater amounts than people who sell only a few items. Consequently, the grower should plant a large array of vegetables throughout the entire season that are adapted to the growing area. Usually, an 8 to 20 acre farm will be sufficient size to produce a wide variety of vegetable crops. In addition,

*Mr. Manny Palada is conducting his doctoral research on alternative vegetable production systems for North Florida.
the grower should pick the produce at peak maturity and ripeness. After picking, the vegetables should be graded according to uniformity in size and color, maturity, and quality. Poor quality produce should be discarded in the field or disposed of properly. Every attempt should be made to maintain the produce quality by refrigerating or storing in a cool, shady location.

Attractive and colorful displays of vegetables and fruits can be as important as the congenial and friendly sales person. Bright red, crisp green, deep purple, glowing orange, and brilliant white vegetables can be arranged in colorful minibaskets, square produce boxes, bushel baskets, or any attractive container. When arranging the produce, keep an eye on beauty and appealing displays.

Establishing prices for produce can be simple, but the grower or manager must know the local market prices for each item - both wholesale and retail if possible. After establishing the local wholesale and retail prices, most roadside market managers establish an intermediate price that is both consistent with the quality of produce and the supply and demand of that product in the neighborhood. Also, note that in Florida, produce sold by weight must be sold on an approved scale. Otherwise, growers should sell on a volume basis such as by the bushel, box, or number.

Advertising along the road will alert customers and arouse their senses if the signs are colorful, simple, and brief. Signs should be located approximately 500 to 1,000 feet on either side of the stand and should be located according to the highway regulations for state or county roads. Newspaper or radio advertising can also be used to inform more people about the roadside market and the types of vegetables being sold.

Successful roadside marketing can be both profitable and pleasurable for the small vegetable grower. Total farm profits can be increased substantially for a small farm operation with rather small capital expenditures where family labor or neighbors can be hired to help harvest, grade, and sell the fresh produce in a roadside market. In addition, the salespersons should become acquainted with the customers and their preferences. Salespersons can encourage the return of customers, especially if their requests can be satisfied.

(William)
III. VEGETABLE GARDENING

A. Timely Gardening Topics

1. Spider Mites on Summer Eggplants

During the most intensely hot days of early Florida summers, foliage and leaves of eggplants and tomatoes may become completely encased in a thin web. This, in most cases, is the web of the spider mite. Both top and bottom are covered by the web, and scurrying about the webbed surface may be seen hundreds of tiny (1/50 inch long) reddish mites. These tiny mites, which are not insects but are related to spiders, injure plant leaves by piercing the surface and sucking out juices. Since there are so many feeding at once, they give the plant surface a scorched, greyish look. The plants end up stunted and non-thrifty. Kelthane has been the old standard control on eggplant and tomato, but recently has been withdrawn from the label for use on eggplant due to plant injury. Kelthane still may be used on both for mite control. On both crops, the gardener can control the mites to a satisfactory degree by spraying with malathion or diazinon. Spray once a week until they are controlled. Allow three days between spraying and harvesting fruits.

2. Spring Garden Potatoes - Storing

The problem of how to store all those potatoes grown in the spring and dug in the early summer confronts many gardeners at this time of year. Actually, Florida summers make it very difficult to store potatoes for more than about five weeks out of refrigeration. The main consideration is temperature.

For those who can, potatoes should be stored at around 40°F and in moist conditions. Unfortunately, most refrigerators are already jam packed with other more perishable produce from the garden, so potatoes, generally, end up outside at temperatures ranging from 70°F in some homes up to 90°F in some carports and garages. Needless to say, at these higher temperatures tuber decay progresses very rapidly. Where storage under less than desirable conditions is necessary, one can take the following steps to keep the potatoes usable as long as possible.

a. Spread the unwashed potatoes out onto hardware cloth, screenwire, a shelf or the floor. Make sure they are well ventilated and that they are not piled on each other.

b. Sort out and discard any tubers showing watery breakdown or soft rot. Such rot spreads rapidly to adjacent tubers.
c. If possible, store in a screened area so that maggots are eliminated. Fly maggots invade rotten tissue and hasten rotting, helping to spread decay all over the pile.

d. Keep tubers out of the light, as they turn green on exposure to light.

e. Store only sound, uninjured potato tubers.

3. Storing Squashes and Pumpkins

Summer squashes, such as crooknecks, straightnecks, zucchinis, and scallops, do not store well for more than a week. They can be held a few days in the refrigerator, but chilling injury occurs rapidly after three or four days at 32°F - 40°F. For longest storage, up to two weeks, maintain the temperature at 45°F - 50°F. If left in a bag on the kitchen counter or on the porch, they can not be expected to last longer than 3 to 4 days in an edible condition.

Winter squashes, however, get their name due to their being stored long enough to be used in the winter. Main types grown in Florida gardens are acorn and butternut. These will keep two to three months at 50°F. Even at normal temperature, these winter squashes will keep up to five weeks. Pumpkins usually do not keep as well as winter squashes, but in general about the same storage conditions are best for them. In all cases, pumpkins and winter squashes should be well matured, free from defects and rots, then kept dry and cool (50°F) for longest storage.

4. Sunburned Tomatoes

One of the most noticeable defects of garden tomatoes each year is sunburning. Unlike Florida sunbathers who get too much exposure, Florida tomatoes do not peel. Instead, their shoulders turn yellow instead of red. In severe cases, the shoulders have white sunken areas which is labeled sunscald.

Sunburning usually results from overpruning. The determinate or bush-type varieties should be pruned only lightly, if at all. Even the indeterminate or staking varieties should not have all their suckers removed. With only one main branch, there is not enough canopy of foliage to prevent sunburn or sunscald. Two or three main stems should be encouraged. Tying or staking the vines in an upright fashion exposes the tomato fruits to the sunlight. Therefore, on bush-type tomatoes, it is advisable to let the bush settle on the ground. Be sure to cover the soil with some form of mulch, however, to prevent fruits from rotting due to soil-borne decay organisms.
When harvesting, be careful not to pull the plant apart unnecessarily, exposing unpicked fruits to the sun. Actually, there might be some merit to attaching a paper shield over each hand (cluster) of tomato fruit. Do not cover leaves, as they must receive the sunlight to manufacture needed food for the plant.

Sunburned fruits are edible. Usually, only one to two slices are lost near the stem end. They are unsightly, and most gardeners would prefer to have the fruits reach a deep red color over the entire surface of the fruit.

(Stephens)

B. Know Your Vegetables - Chufa

Chufa (Cyperus esculentus) has other names such as tiger nut, zulu nut, yellow nutgrass, ground almond, edible rush, and rush nut. It is one of two major species of the nutsedge genus Cyperus found throughout Florida or all types of soil from rockland to muck. Its close relative, Cyperus rotundus, is called purple nutgrass politely, but has many impolite names due to its severity as a weed problem. Both are weed pests, but rotundus is a more widespread problem than the esculentus chufa, which has often been cultivated as a livestock food. On occasion, it is cultivated for human consumption, with the tubers eaten raw or baked.

Chufa is a perennial sedge which produces small tubers (1/2 to 3/4" or less in diameter) underground in a chain-like fashion. The top of the plant is grass-like, from 6 to 36 inches tall.

Certainly it is easy to grow vegetatively. The chufas are planted in late spring to mid-summer by dropping the dried nuts 6 to 12 inches apart in rows spaced 2-3 feet apart. Planting rate is 15 to 40 pounds per acre. The tuber germinates, developing into a plant with several tubers bunched together directly beneath the plant and a few stragglers some distance away. Although bunched together, each nut is attached to a thin underground stem (rhizome) which connects the single tuber to the growing shoot.

Although seldom grown as a food item in home gardens, chufas were grown on about 2,000 farms in the U.S. in 1944, mostly in Florida. In 1941, 7,000 acres were hoggoff in Florida and over 3,000 bushels were dug from 170 additional acres. The nuts weigh about 44 pounds per bushel.

(Stephens)