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

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VEGETARIAN NEWSLETTER 79-3

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COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS, STATE OF FLORIDA, IFAS, UNIVERSITY OF FLORIDA, U.S. DEPARTMENT OF AGRICULTURE, AND BOARDS OF COUNTY COMMISSIONERS COOPERATING
THE VEGETARIAN NEWSLETTER

I. NOTES OF INTEREST

A. Vegetable Crops Department Moves to New Building

The Vegetable Crops Department has moved to new facilities. The $7,000,000 complex (temporarily referred to as the Horticulture-Plant Pathology Building) will house the Departments of Ornamental Horticulture, Fruit Crops, Vegetable Crops and Plant Pathology. Vegetable Crops Extension phone numbers in the new building will be (904) 392-2134, 2135 and 2136 (revolving).

The building is located adjacent to Hull Road on the old Agronomy Farm just south of Lake Alice and north of the Archer Road. Stop by on your visits to Gainesville and get a personal tour of a beautiful facility.

(Montelaro)

B. Three Vegetable Field Days Set

Put these three dates on your calendar and make plans now to attend these vegetable field days. They are as follows:

1. Location: ARC, Hastings, Florida
   Date: April 19, 1979, 1:30 P.M.

2. Location: Belle Glade, Florida
   Date: May 10, 1979

3. Location: Bradenton, Florida
   Date: May 22, 1979

Detailed programs for these three field days will be mailed out later. Check the April issue of this newsletter for additional field day notices.

(Montelaro)

C. CORRECTION on Marlowe's February Article

It was called to our attention that some of the information presented in Table 6 of Dr. Marlowe's February article is not correct. Average weight of fruit as shown in the table is about 50% less than normal. Since Marlowe is gone and his raw data is not available to us, we are unable to make accurate corrections. In view of this, we suggest discarding Table 6 of the article or using size-data for relative comparisons only. We apologize for the error.

(Montelaro)
D. Vegetable Crops Fact Sheet 15 - Gardening Lots of Okra

Due to the cartoonistic format of this new fact sheet, some explanation should be given to its intended usage. It has been developed on a special Federal Urban Gardening (called "Gardening Lots") appropriation for Duval County to reach a special audience of low-income, disadvantaged families. However, additional copies have been made available to all counties for similar or other audiences. It is left to the judgement of homeowner agents as to the advisability of its use in your county. We intend to use the more conventional format for a general guide on okra for homeowners later on. Several other similarly illustrated fact sheets on other crops are soon to be released in the "Gardening Lots" series.

By the way, a revised edition of Circular 104, "Vegetable Gardening Guide" is in final stages of printing and is soon to be released.

(Stephens)

II. COMMERCIAL VEGETABLE PRODUCTION

A. Sulfur - Potential Need in Vegetable Production

Over the years sulfur has received far less attention than have the other two secondary nutrient elements, calcium and magnesium. The reason for this is simple. Comparatively speaking, relatively few instances of sulfur problems in plant nutrition have been noted. In the majority of cases where sulfur problems have been noted, they were related to toxicities from gaseous sulfur compounds, primarily sulfur dioxide and, possibly, hydrogen sulfide. Sulfur dioxide toxicities have been observed most often near chemical plants, power plants, etc. where gaseous compounds are exhausted from fuels used to generate power or chemicals used in manufacturing processes. If anything, this type of problem is less common now than 15 or 20 years ago as a result of rigid environmental regulations against use of high sulfur fuels and heavy exhaust of noxious gases.

By the same token, elimination of sulfur compounds from industrial exhaust systems may be leading to sulfur deficiency as a common problem much like calcium, magnesium, potassium, etc. Though harmful to humans, sulfur in exhaust from industrial plants supplied adequate sulfur to most soils for purposes of plant nutrition in past decades. There are indications now that soils in certain areas are becoming deficient in sulfur. Extension agronomists of the University of Florida even now are recommending a few pounds of elemental sulfur per acre in some areas of west Florida for corn.

No incidence of sulfur deficiency has been noted on vegetable crops in Florida up to the present time. However, extension and research workers in south Georgia positively identified sulfur deficiency in a turnip crop two years ago.

These two examples are indicative of potential problems in Florida vegetable crops at some time in the future. The likelihood of sulfur deficiency in vegetable crops becomes more probable by the day with the increase of the use of: 1) sulfur-free fuels, 2) adequate scrubbing of exhaust fumes and 3) more highly-refined fertilizer materials.
Until the problem develops and is identified correctly, vegetable growers have nothing to worry about. They should be aware of the possibility of sulfur deficiency in vegetable crops. If the problem is encountered or suspected, please inform your County Extension Agent. The symptoms of sulfur deficiency are quite similar to those of nitrogen. The major difference is that new growth in sulfur deficient plants may be somewhat more chlorotic as this element, unlike nitrogen, is not translocated from old to new tissue in most plants.

(Montelaro)

B. Chemical Control of Weeds in Market Vegetable Gardens

(This article concludes a two-part series which is being published as an Extension Fact Sheet for use in county educational programs).

Herbicides - Chemical herbicides often provide dramatic results by selectively controlling many types of weeds when applied to vegetable listed on the label. However, their use in market vegetable gardens requires careful study and planning.

Herbicides must be applied at the right time for both weed and crop, and at exactly the proper rate. Only a very small amount of error can be tolerated before either your crop is injured or poor weed control is achieved. Special equipment including flat-fan type nozzles and a properly calibrated herbicide sprayer are essential for uniform application of herbicides. After application, some volatile herbicides will require immediate and thorough soil incorporation (preplant incorporation). Most other soil-applied herbicides (preemergence) require brief rainfall or irrigation to activate the chemical before the weed seeds germinate and emerge. A few herbicides are registered for postemergence use in vegetables, but often require special shielded application equipment.

Because several kinds of vegetables are often planted in market gardens, your choice of herbicides and their use will be somewhat limited. Several herbicides commonly used in vegetable production are listed in the following table. Note and compare the advantages and limitations of each herbicide.

With careful planning, you can group your vegetables according to their tolerance to two or three herbicides by listing the crops stated on each herbicide label. But before purchasing an herbicide, read the label information carefully and note the detailed instructions and precautions for the safe use of these chemicals. For more information about chemical weed control in vegetables, read Extension Circular 196, "Chemical Weed Control for Florida Vegetable Crops".

In summary, market vegetable gardeners should consider and develop a year-round weed management program. The program should minimize competition and enhance vegetable yields and quality. To achieve these goals, every crop and weed management factor that either influences the growth and reproduction of weeds or shifts the competitive balance in favor of the crop must be combined and implemented in the entire crop management system.
Table 1. Comparison of possible herbicides for market vegetable gardens. Read the label carefully to determine the proper amount and application method for your vegetable crops and field conditions.

<table>
<thead>
<tr>
<th>Herbicide</th>
<th>Available formulations (package size)</th>
<th>Vegetables listed on label</th>
<th>Weeds controlled and duration</th>
<th>Requirements and remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chloramben</td>
<td>Liquid (5 gal.) and granular</td>
<td>Few</td>
<td>Seedling grasses &amp; broadleaf weeds for several weeks.</td>
<td>Requires slight moisture for activation.</td>
</tr>
<tr>
<td>(Amiben)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DCPA</td>
<td>Wettable powder (4 lb) and granular</td>
<td>Many</td>
<td>Seedling grasses &amp; broadleaf weeds for several months.</td>
<td>Requires moisture or slight incorporation. Note label precautions about replanting crops within 8 months after application.</td>
</tr>
<tr>
<td>(Dacthal)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diphenamid</td>
<td>Wettable powder (4 lb)</td>
<td>Some</td>
<td>Seedling grasses &amp; broadleaf weeds for several months.</td>
<td>Requires moisture or slight incorporation. Note label precautions about replanting crops within months after application.</td>
</tr>
<tr>
<td>(Enide)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TC</td>
<td>Liquid (5 gal.) and granular (50 lb bag)</td>
<td>Few</td>
<td>Seedling grasses &amp; some broadleaf or perennial weeds for several weeks.</td>
<td>Requires immediate and uniform soil incorporation to prevent loss of herbicide.</td>
</tr>
<tr>
<td>(Eptam)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trifluralin</td>
<td>Liquid (1 qt) and granular</td>
<td>Some</td>
<td>Seedling grasses &amp; some broadleaf weeds for several months.</td>
<td>Requires immediate and uniform soil incorporation to prevent loss of herbicide. Note label precautions about replanting crops within 5 months after application in Florida.</td>
</tr>
<tr>
<td>(Treflan)</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

III. HARVESTING AND HANDLING

A. Improved Exchange of Marketing Information

Improving the handling and marketing of vegetables is an objective of the Vegetable Crops Department Extension program that is often difficult to achieve. Handling vegetables for maximum consumer quality involves horticultural properties often not understood or perceived by untrained laborers employed by industry in harvesting, packing, transporting and merchandising. Available quality maintenance information from previous research greatly exceeds the level of technology used in commercial marketing channels. Poor grading, rough handling, lack of decay control treatments, and poor temperature and humidity management are very common, and they result in unnecessary losses as high as 25 to 30 percent from diseases, mechanical injuries, dehydration and changes in composition. Thus, a large percentage of the resources put into production and marketing of horticultural crops may be lost through
improper handling at any step enroute to the consumer.

The Extension program in vegetables at the University of Florida is directed primarily to the citizens of Florida through county Extension staffs with some efforts expended directly with youth, homeowners, commercial growers and industry groups. Production technology has been Extension's main objective and the major kind of information provided to growers. Marketing technology is very complex and the emphasis changes from biological factors during production to economic factors after harvest. Before harvest, growers are usually familiar with factors they can use to control growth of their crops, their relative cost and their local Extension staff who can assist them in case of problems.

In a recent national study of Cooperative Extension Service programs for large commercial family farms, it was reported that most of the interviewed farmers looked to Extension as a reliable source of information on production technology and they were well satisfied. When these farmers were asked to list obstacles preventing them from accomplishing their goals, marketing information was most frequently mentioned (30%) and only 2% listed production technology. Few farmers expected comparable assistance in marketing from Extension and a surprising number did not even think of Extension as a source of marketing information. The nature of Extension programs with local grass roots development added credibility with farm people that were dissatisfied with other government programs.

From harvesting operations to consumption, many people influence subsequent quality and profitability. Costs of labor or machines for harvesting, preparation, packaging, transporting and merchandising vegetables amounted to 75% of the retail price in 1977. Many decisions are made by buyers, truckers, businessmen and others who do not consult with Extension. Problems are accentuated in marketing over long distances, and industry has not used many postharvest research findings because the people involved do not know or choose not to pay for optimum conditions. Only with road-side or other local marketing can customers communicate with growers about size, maturity, variety, quality, price or other factors.

In the 1978 report of the national Extension study committee, marketing information was considered critical and present sources inadequate. This committee had difficulty in defining specific needs and recommended a follow-up study to provide more specific program direction.

If program planners had attended the American Society for Horticultural Science meeting in New Orleans in February, they could have listened to professional Extension workers discuss their methods and goals in one hotel while industry members of the United Fresh Fruit and Vegetable Association discussed their marketing problems and needs in another hotel of the same city. In the industry meeting, one group interested in improved tomato quality proposed that a merchandiser travel around the country to instruct retail personnel how to handle tomatoes and prevent chilling injury. If the professional and industry groups had shared their meetings with each other, both could have gained some needed coordination of activities. Similarity in some objectives of the two groups was indicated when the report by Robert Reinecke, President, Produce Marketing Association was read in both meetings.
Quotations from this important message are as follows:

"I am constantly amazed at the different levels of marketing knowledge found throughout the growing and shipping segment of the produce industry. At one end of the spectrum we find several marketing oriented firms and the commodity marketing boards (or commissions) with their well thought-out marketing plans. These companies put no limit on the funds spent to provide accurate and complete market information on all of the commodities they handle.

Because of it, buyers and merchandisers are properly informed about fluctuations in price and production factors such as weather which affect quantity, size and quality. These produce industry companies are staffed with people who really understand marketing and the importance of good supplier/customer relationships. Unfortunately, too few belong to this category.

At the other end of the spectrum we find those who operate with a "buyer beware" philosophy and believe that marketing is simply selling their products at the best price. This is the group that does not "think retail" and does not try to understand what is necessary to advertise and merchandise their products effectively. They fail to understand that the buying trade today is best able to sell properly and adequately when serviced by high quality informative connections.

Also, the next time you attend a growers meeting and someone starts condemning supermarket produce prices, stand up and defend your customer's policies. Make sure you know the facts about gross margins. Usually, growers look at two figures: the prices they receive and the prices charged at retail. Everything in between is thought to be gross profit. This narrow view of gross profits is a false concept and should be refuted whenever possible.

Remember that cost to a retailer includes not only what is paid to the grower-shipper, but also precooling charges, brokerage fees, other service fees such as wrapping, packaging, palletization and freight charges. All of the store produce department expenses have to be allocated to each item sold. Labor, shrinkage, store operating expenses, taxes, administrative overhead - all must be considered.

They reduce store gross profit down to a net profit figure far below the spread between what the grower-shipper receives and the figure rung up at the check-out register."

Many reasons can be cited for improving the exchange of handling and marketing information. Since many individuals in the produce industry are not reached by traditional Extension programs, more educational effort should be directed through industry meetings and publications. Organizations such as Produce Marketing Association, Florida Fruit and Vegetable Association, United Fresh Fruit and Vegetable Association, Food Marketing Institute and individual crop organizations have meetings where reports on industry related subjects are often welcome.

(Showalter)
A. An Energy Conservation Garden

As the world's energy crisis worsens due to the gradual depletion of oil and natural gas supplies, all areas of endeavor which utilize products and practices based on these scarce energy sources must be examined for any possible changes that might be made to conserve energy. Gardening is one such endeavor that is done by a sufficiently large segment of society to make any conservation moves consequential. Perhaps as insignificant as turning off a light switch when light is not needed, any step a gardener might take to reduce petroleum based energy utilization would contribute to the nation's overall effort to conserve energy.

The first step in designing an energy conservation garden is to identify all of the gardening inputs which depend upon oil or natural gas in any way for their utilization in gardening.

The second step is to outline the various ways energy is involved with the particular input so that priorities can be placed on changes needed.

The third step is to determine what possible substitutions are available which would be equally effective in producing the vegetables while also minimizing utilization of scarce energy sources.

The final step is to organize all of the energy conscious steps into a practical procedure for a successful vegetable garden.

This article will briefly outline the first three steps. However, considerable more space is needed to fully explore these steps and to effectively deal with step four.

An energy conservation garden, in its simplest form, resembles an old fashioned hand powered, organic garden. Perhaps somewhere in between this most austere approach and today's present energy wasteful approach of giving the plants in the garden everything available on the market and doing things the easy way, the energy conscious gardener might find the most practical contribution to the conservation of energy.
<table>
<thead>
<tr>
<th>Step 1</th>
<th>Step 2</th>
<th>Step 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Chemical Fertilizers</td>
<td>a. Production, Containerization, Merchandising, and Transportation of products.</td>
<td>a. Use locally available natural organics, or make more efficient use of inorganics.</td>
</tr>
<tr>
<td>b. Chemical Pesticides</td>
<td>b. Same as for &quot;fertilizers&quot;</td>
<td>b. Use resistant varieties, cultural practices, and the non-chemical ways to control pests where feasible. Spray or dust only as necessary.</td>
</tr>
<tr>
<td>c. Seeds</td>
<td>c. Same as for &quot;fertilizers&quot;</td>
<td>c. Save one's own seeds where feasible. Reduce container inputs thru bulk vending. Grow one's own transplants using energy conserving practices.</td>
</tr>
<tr>
<td>d. Mulch</td>
<td>d. Same as for &quot;fertilizers&quot;</td>
<td>d. Eliminate use of plastic mulches, use only locally available materials, or re-use plastic</td>
</tr>
<tr>
<td>e. Water</td>
<td>e. Same as for &quot;fertilizers&quot;; additionally, application of water requires further utilization of energy.</td>
<td>e. Conserve water by mulching. Use more efficient application methods such as drip (although drip requires use of plastics), and better timing of applications.</td>
</tr>
<tr>
<td>f. Tools</td>
<td>f. Same as for &quot;fertilizers&quot;; also, various items of gardening equipment also requires energy to operate.</td>
<td>f. Use simple hand operated tools. Eliminate gasoline powered equipment. Avoid plastics.</td>
</tr>
</tbody>
</table>
B. Know Your Vegetables - Saffron

Saffron (Crocus sativus L) essentially is not a vegetable, although in some areas of the world the corms of various crocus spp. are eaten by local peasants. Saffron is one of the world's most expensive spices. The slender dried flower stigmas of the saffron plant constitute the true saffron of commerce. Some reports place the wholesale price of saffron at around $100 per pound and the retail price at 80¢ a gram, or $365 a pound. Each blossom yields only three stigmas, which must be picked by hand. Supposedly it takes 210,000 stigmas to make one pound of saffron. At one time saffron was popular as a yellowish-orange natural dye stuff. Today synthetic dyes have replaced it.

Crocus sativus native to southern Europe and Asia is a small showy, bulbous perennial, 6 to 10 inches high, with violet to bluish, lily shaped flowers.

It is questionable whether or not saffron plants will grow well here in Florida, for reportedly low annual rainfall of 15 to 18 inches is desirable. Obviously, Florida's annual rainfall exceeds this amount greatly. Heavy rains at flowering time do considerable damage to the blossoms producing the saffron.

In areas of the world where saffron is grown, such as Spain, Portugal, France, and India, an annual yield of 8 to 10 pounds of dried saffron is obtained in an established planting. Usually the maximum yield occurs in the third year after planting.

Plants are propagated vegetatively by planting at 6 by 6-inch intervals the young cormlets that form annually at the base of the bulblike mother corm. While the plants may live and bloom for ten to fifteen years, few plants are kept longer than five years commercially. In Italy saffron is cultivated as an annual, mature corms being set every fall; in France they are uprooted and replanted every three years, in Spain after four years, and in India after 10 to 15 years.

When the plants begin to bloom, harvesting should commence quickly, for the flowering period may last only fifteen days. The triple stigmas are picked by hand daily just as the flower opens. It is estimated that about 210,000 dried stigmas taken from 70,000 flowers are required to make one pound of true saffron. On drying, either in the sun or by artificial heat, the stigmas lose 80 per cent of their weight.

After harvest and when fully dried, the saffron must be stored immediately, preferably in tightly covered or sealed tin containers, and protected from light to avoid bleaching. The final product is a compressed, highly aromatic, matted mass of narrow, threadlike dark orange to reddish brown strands about an inch long.

True saffron has a pleasantly spicy, pungent, bitter taste and a tenacious odor. Fortunately, a little saffron goes a long way. Besides being steeped in tea, it is used for seasoning many foods such as fancy rolls and biscuits, rice, fish, and others.

(Stephens)