May 1, 1977

Prepared by Extension Vegetable Crops Specialists

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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 77-5

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THE VEGETARIAN NEWSLETTER

I. NOTES OF INTEREST

A. Vegetable Field Days - Three to go.

I. Location: ARC, Leesburg, FL
   Date: Wednesday, June 1, 1977
   Time: 1:15 PM
   Crops: Watermelon, Cantaloupe and Cukes

II. Location: Vegetable Crops Department - Gainesville, FL
    Date: Thursday, June 2, 1977
    Time: 9:30 AM
    Crops: General Vegetables

III. Location: Zellwood Farm (of AREC, Sanford) Zellwood, FL
      Date: Thursday, June 2, 1977
      Time: 7:00 PM
      Crops: Sweet Corn

(Montelaro)

B. Vegetable Gardening Publications

The following three publications on Vegetable Gardening have just been released by the Editorial Department for your use in the counties.

I. Circular 104L -- Vegetable Gardening Guide -- This issue includes considerable revisions particularly within the planting guide information. Supplies may be ordered as usual through the Editorial department. This publication should be used to serve your general gardening clientele.

II. Planting Guide for Vegetable Gardens -- This portion of Circular 104L has been reproduced on a sturdy-glossy finish for displaying on walls. A limited supply has been printed; so each county has been mailed a limited number based on population. Please distribute planting guides to those businesses, individuals, or other groups that you feel could best utilize them. We recommend that they be placed near seed displays.

III. Circular 420 - Vegetable Gardening -- Has been produced jointly by FAMU and University of Florida. It's primary purpose is an instructional manual to accompany a set of training slides, in working with counties in the 1890 program. Lawrence Carter of Florida A & M University is controlling distribution. It is not intended for general gardening audiences, but it may be useful in your program preparations.

(Stephens)
II. COMMERCIAL VEGETABLE PRODUCTION

A. Freeze - Damaged Vegetable Crops - A Follow Up

The January, 1977 freeze spelled disaster to producers of warm-season vegetables in south Florida. Temperatures dropped into the twenties for as many as three days in all areas of the state. Even the experts, among professors, county agents and growers, were saying that all warm season crops were "total losses". This predication, contrary to previous experience, proved to be wrong to a degree.

The first surprise came shortly after the freeze. Pepper and tomato fruits were not as badly damaged by the severe freeze as predicated. Salvage of mature fruits continued for two to three weeks in all areas. Quality and grade were down, but with favorable prices some growers were able to recoup part of their losses. In a special letter to the affected counties we cautioned against encouraging the marketing of sub-standard produce.

The choice was not a simple one for growers. The mad scramble to replant was stymied by a shortage of transplants and direct seeding offered the possibility of late harvest. Once again, we cautioned against over-planting to avoid a spring market glut. Taking the only alternative, other than destroying crops, many growers chose to gamble on "suckering" in hopes of producing a partial crop. Some growers hand-pruned their crops, others mowed plants to within a few inches of the soil and a few left plants untouched.

Interestingly enough all three systems worked. Experts in the field could see no major differences among the three systems. Some differences worthy of note, however, were observed. Peppers, tomatoes and eggplant under full-bed, plastic mulch culture were affected to a lesser degree than these same crops grown without plastic mulch.

Considerable differences were observed in the "quality" of fruits produced. Eggplant appeared to be the hardiest of the three crops. It recovered more uniformly and produced higher quality fruit than the other two crops. Tomato, of the popular Walter variety, produced good plants, but did not size its fruit adequately. This may have resulted from an overly abundant fruit set, especially on multi-branched plants. Varieties, like Florida MH-1 and Floradaede, did somewhat better in sizing of fruits. Pepper, on the other hand, was somewhere in between eggplant and tomato. Plants recovered satisfactorily and fruit quality was good. Fruits, in most cases, resembled second harvest "limb fruit" rather than the large, blocky, "crown-pick" growers have become accustomed to from full-bed, plastic mulch-grown peppers. One veteran county extension agent reported a yield of 650 boxes of marketable peppers from the first harvest of a suckered crop. Surprisingly, the crop graded about 75 percent fancy.
In a parallel vein, the potato crop produced no surprises. Crops that were advanced in stage of growth, especially where tubers had formed, were damaged severely. Reports on these crops vary from 30 to 50% yields depending on state of development. Potato crops just planted or sprouting were not injured except to delay maturity somewhat. The cool-season crops like celery, cabbage, escarole, lettuce, etc., suffered considerably less damage than was anticipated. Crops had been well conditioned to withstand the freeze by a long, cold period preceding the freeze. Some leaf burn and early bolting resulted, but even that was minimal.

The January, 1977, freeze was different as were all others in the past. Much was learned from it which should benefit vegetable growers in future freezes. Much was done to reduce growers losses and it is hoped more can be done when a severe freeze strikes again.

(Montelaro)

B. Calculating the Daily Water Needs of Vegetables

Vegetable growers throughout the world are becoming increasingly concerned about water use. To some, it is a concern for water quantity, to others the emphasis is on quality, but to most the common concern is on energy costs for distribution and/or drainage.

We are being forced to look more closely at crop water needs. A simple answer should not be expected because over twenty soil, plant, and environmental factors influence crop-water efficiency. The system used by the University of Florida Water Resources Council is referred to as the Modified Blaney-Criddle Method. This method considers crop growth characteristics, length of light period, and air temperature during the growing period. This method provides a reasonably accurate estimate of water used by the crop in transpiration and water lost from the soil by evaporation, thus the term Evapotranspiration (ET).

Many states provide water needs in terms of inches of irrigation per day for the crop.

These crop figures vary a great deal between humid and arid areas, light and heavy soil types, and crop variety, as one would expect. In a recent survey of water needs per day of some commonly grown agricultural crops the following were noted: (inches per day)
Multiplication of the daily requirement by the length of the growing season gives a rough approximation of the seasonal need to be supplied by irrigation or natural rainfall.

A more accurate method may be to determine the seasonal ET and fit this figure to the growth curve of the crop. An example of this procedure may be of interest. Let us assume that the Blaney-Criddle method showed that summer squash planted February 1 in Central Florida required 6.2 inches of water during its 60 day crop growing season. If the grower used an irrigation system 50% efficient (and no rainfall occurred) 12.4 inches of water would have to be applied.

If one were to compare the two methods of expression, the following would apply:

<table>
<thead>
<tr>
<th>Growth Period</th>
<th>Water, Inches per Period</th>
<th>Irrigation, Inches (50% Efficiency)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Direct Division</td>
<td>Growth Curve</td>
</tr>
<tr>
<td>0 - 6 days</td>
<td>0.103 x 6 = .62</td>
<td>0.14</td>
</tr>
<tr>
<td>6 - 12 days</td>
<td>0.103 x 6 = .62</td>
<td>0.52</td>
</tr>
<tr>
<td>12 - 18 days</td>
<td>0.103 x 6 = .62</td>
<td>1.08</td>
</tr>
<tr>
<td>18 - 24 days</td>
<td>0.103 x 6 = .62</td>
<td>1.15</td>
</tr>
<tr>
<td>24 - 30 days</td>
<td>0.103 x 6 = .62</td>
<td>1.12</td>
</tr>
<tr>
<td>30 - 36 days</td>
<td>0.103 x 6 = .62</td>
<td>1.05</td>
</tr>
<tr>
<td>36 - 42 days</td>
<td>0.103 x 6 = .62</td>
<td>0.63</td>
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<tr>
<td>42 - 48 days</td>
<td>0.103 x 6 = .62</td>
<td>0.27</td>
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<tr>
<td>48 - 54 days</td>
<td>0.103 x 6 = .62</td>
<td>0.12</td>
</tr>
<tr>
<td>54 - 60 days</td>
<td>0.103 x 6 = .62</td>
<td>0.12</td>
</tr>
<tr>
<td>Total</td>
<td>6.20</td>
<td>6.20</td>
</tr>
</tbody>
</table>
C. Nutsedge Control in Vegetables - Chemical Suppression and Year-Round Management

In the previous article, several management options involving preventive measures and cultural practices aimed at reducing crop losses caused by nutsedge competition were discussed. This article will discuss chemical control and implications of developing a year-round cropping system designed to reduce nutsedge populations to manageable levels.

c. Chemical Suppression or Control - Historically, 2,4-D or related compounds and a few other chemicals were sometimes applied to actively growing nutsedge foliage during the fallow season or in conjunction with certain crops to suppress nutsedge growth. However, these chemicals killed only a few tubers at best, and control of the foliage was often erratic.

Until recently, herbicidal control was limited to a few chemicals that either suppressed germination of the tuber or partially controlled the foliage. For example, thiocarbamate herbicides such as EPTC (Eptam), vernolate (Vernam), pebulate (Tillam), and butylate (Sutan) inhibit the germination of nutsedge tubers and other susceptible weeds when applied preplant and incorporated 4 to 6 inches into the soil surface. Occasionally, alachlor (Lasso) and napropamide (Devrinol) will also suppress nutsedge germination when the soil remains very moist. Nutsedge foliage can be controlled with a postemergence application of paraquat in certain crops where spray shields can be used to protect the crop. However, because these chemicals only inhibit tuber germination or "burn" the nutsedge foliage, control is only temporary and tubers resprout within 3 to 12 weeks.

Although nutsedge populations have been reduced by killing the tubers with certain multi-purpose soil fumigants, the application rates were 2 to 3 times greater than normal fumigation rates. Thus, nutsedge control using these chemicals was limited to high value crops and was seldom used to reduce nutsedge populations.

A new herbicide named glyphosate (Roundup) can be applied to actively growing foliage of many perennial grasses and other perennial weeds such as purple nutsedge, either in non-cropland situations or before the emergence of barley, field or sweet corn, oat, sorghum, soybean or wheat. At present, growers who wish to plant crops not listed on the label must wait one year after application. Although the chemical moves throughout the entire plant within a few days after spraying, repeated applications may be required for maximum nutsedge control because some plants will be protected by other foliage or some tubers may not germinate after the initial soil preparation. Tubers will seldom be eradicated even with multiple applications of glyphosate.
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REMEMBER - READ THE LABEL CAREFULLY when choosing an herbicide to suppress or control nutsedge in any vegetable crop. Rates, application directions, and precautions are also stated on the label.

C. Year-Round Nutsedge Suppression

When developing or modifying a weed management system, growers should be aware of two facts that will influence nutsedge populations. First, purple nutsedge can produce as many as 7 new plants or tubers within a month, especially when competition from other weeds or crops is minimized during the cropping season or fallow period. Second, nutsedge is susceptible to shading either by a competitive crop or cover crop, or by other weed foliage.

Growers are, therefore, best advised to assess their nutsedge situation and determine whether the infestation is localized in water furrows or in patches within the field, or distributed throughout the field. If localized, in small areas, the grower may wish to isolate these areas and apply an herbicide such as glyphosate followed by small plantings of green cover crops. However, if the entire field is infested, a major vegetable grower may wish to consider rotating the land with a series of agronomic crops in conjunction with glyphosate application, or to selectively suppress nutsedge with an herbicide in a competitive crop such as bush green bean, sweet potato, or possibly sweet corn followed by an intensive land management system involving a competitive green cover crop during the fallow season.

In summary, vegetable growers who wish to manage their perennial weed problems as they manage their crop production systems can reduce nutsedge populations to manageable levels and possibly eliminate the weed from some fields. To accomplish this goal, every management factor that either influences nutsedge growth and productivity or that shifts the competitive advantage towards the crop must be considered and used in the entire crop management system.

(William)

III. VEGETABLE GARDENING

A. Timely Gardening Topics

Four timely topics on vegetable gardening are offered each month to assist Extension agents in developing periodic (weekly) radio or newspaper shorts.

1. Community Gardening - May perhaps is the most satisfying month of the year for Florida vegetable gardeners. While harvesting also occurs in other months, most vegetables grown in home gardens reach the edible stage in May. Thus, all the toils of land preparation and planting finally pay off — providing the gardener has done his job well. It is not the time, however, to let down the guard. Attention must be given to watering, weeding and controlling an assortment of pests and predators intent upon reaping their own harvest. Some additional fertilizer may be needed, particularly for those vegetables still a few weeks away from harvest. Bear in mind that as plants get larger, their roots reach further into the row middles. Place light applications of fertilizer at the edges of the roots. Some scratching into the soil to determine root location may be helpful in avoiding fertilizer burn.
Keep irrigation equipment in good working condition, then use it wisely.
Florida frequently has a rather dry April and May, and with plants reaching maximum sizes at maturity, some form of irrigation is required in most locations. The further into the spring and closer to summer we go, the more pests and related problems we encounter. Observe label directions on pesticides containers; heed necessary waiting periods between times of application and harvest. Avoid spraying or dusting the same day that you harvest. Always wash produce thoroughly before cooking or serving. Insecticides and fungicides recommended for gardens are the mildest forms of poisons available; yet, like chemicals, they are still capable of causing serious injury if misused. Since flowers are now on the plants and insects (bees) are needed by many for pollination purposes, it is a good idea to wait until after 10:00 AM to dust or spray. Bee activity is greatest during the early morning hours, thus chances of bee kill are also greatest then. Keep the scarecrow prominently displayed as a deterrent not only to crows, but other birds as well. Some gardeners have found that a mock owl serves the same purpose. Protective netting is available to prevent damage from birds.

2. Pollinating Vegetables for Fruit Productions - At harvest time, gardeners may be looking for fruits as well as vegetables in the vegetable garden. Almost all parts of vegetable plants are consumed as food, with the fruit of the plant being the most important in many instances. The most common vegetables producing edible fruits are tomato, eggplant, pepper, cucumber, pumpkin, squash, melons, okra, peas, beans, and sweet corn. With all of these vegetables, transfer of pollen from male to female parts of the flower (called pollination) is required before an edible fruit is produced. There are some exceptions, such as with parthenocarpic (seedless) varieties of vegetables. Pollination is accomplished and aided in one of three main ways: (1) wind, (2) insects, or (3) self-pollinated. The wind is directly responsible for the pollination of sweet corn, as it carries pollen from the tassels to the silks. Wind is indirectly responsible for the pollination of other vegetables due to its shaking of the plant and flowers. The tomato is an example of vegetable flowers self-pollinated by aid of the wind. Beans and peas are examples of vegetables that pollinate themselves due to the structure of the flower.

With most vegetables, insects play the major role in transferring pollen from the male parts of the flower to the female parts. Examples of vegetables producing edible fruits resulting from insect-borne pollen are cucumber, cantaloupe, watermelon, squash, pumpkin, eggplant, pepper, and okra. In most all of these cases, the honeybee, both wild and domestic, is the insect primarily responsible for pollination.

In well cared-for gardens growing under good conditions, pollination takes place normally; however, situations do arise where for some reason or another pollination does not occur naturally. In these cases the gardener may need to assist the plant by hand pollination, shaking the plant, or introducing the proper supply of insects (bees).

3. Diazinon - Dual Purpose Insecticide - For the Florida home gardener, choosing an insecticide for both foliar and soil application may not be as difficult as it may appear. Now that DDT is a thing of the past, and chlordane soon to follow, the choice narrows down to diazinon as the main substitute. Not only is diazinon safe when used as directed, it is a suitable tool for home gardeners for several other reasons.
As indicated, it may be used both on the plants above ground parts to control foliar-feeding insects as well as to the soil to control insects living in the soil. It may be used on a wide variety of crops and insects. Here are some examples of the pests it controls on the foliage: Aphids, bean leaf beetle, Mexican bean beetle, spotted cucumber beetle, leaf miner and thrips. Applied to the soil it helps control cutworms, wireworms, white grubs, root maggots, and lesser corn-stalk borer.

From this listing it is obvious that diazinon does not control all the insect pests in the garden. However, along with the two most popular garden insecticides - carbaryl (Sevin) and malathion, it is a very handy and useful insecticide to have on the garden supply storage shelf. As with any garden insecticide, always read and heed the label on the container.

4. Are Your Beans Ready to Pick - Early in the season, gardeners spend a lot of time peering into the dense foliage of the various vegetable plants in hopes of spotting a squash, tomato, or bean that is ready to pick. Knowing exactly when a bean is ready to pick can be a little tricky, since there are so many types of beans. As the name implies, snap beans are meant for snapping, so must be crisp, young and tender. The seeds should not be well developed, and there should be no stringy fiber or toughness to the pods. Shell beans might be snapped also, if picked in the young tender stage just prior to seed development. Using a similar vegetable for an example, southern peas are generally preferred as a combination of both snaps and shelled peas. When the housewife is shelling the peas, she makes the decision whether to snap or shell based on how young and tender the pod is. Pods that are too immature are limp and flabby. However, if handled rapidly they are a delicacy. In France many of the garden beans are consumed when very small. The main types of beans for snapping purposes are bush snap, pole snap, and wax beans.

The most common shell beans are lima and horticultural. The seeds are shelled out of the pods while young and tender, but after the seeds become plump. Left too long in the pods the over-mature seeds become tough and flavorless. Even so, some gardeners prefer to harvest their shell beans in this mature stage, then produce the flavor by proper seasoning. The U.S.D.A. standards for lima beans state that lima beans should be fresh, not over-mature, not excessively small, and fairly well filled. The term "fairly well filled" means, according to the standards, that "more than one-half of each pod shall be filled with well developed beans, but no pod may have less than two fairly well developed beans".

Dry beans are either snap or shell beans which are allowed to mature before picking. The pods may be picked when mature, yet still green, then dried later, or picked after they are dried hard in the garden. Such drying in the garden is difficult to accomplish due to regular rainfall which usually occurs in the harvest period in Florida.

(Stephens)
B. Know Your Vegetables - Peanuts

The peanut (Arachis hypogea) is also called goober, pindar, groundnut, and earthnut. While peanuts are most valuable as an agronomic crop here in Florida, they also are grown quite frequently in home vegetable gardens. Therefore, this article deals with their culture in a home gardening situation.

The peanut plant is a low annual legume with a central upright stem. The numerous branches vary from low flat to almost erect. Peanut varieties are readily separable into bunch and runner types. The nuts which are legume pods like peas and beans are closely clustered at the base of the bunch type. The runner varieties have nuts scattered along their prostrate branches from base to tip. The peanut has a well-developed tap root with numerous lateral roots that extend several inches into the ground. Most roots have nodules but bear very few root hairs.

The flowers are borne in the leaf axils, above or below ground, singly or in clusters of about three. It is not uncommon to find the blossoms with their yellow petals three inches below the soil surface. After self-pollination, the ovary which produces the pods is pushed into the soil by "pegs" where the pod develops. The pods, containing usually from 1 to 3 seeds, develop only underground. The seed is covered with a thin papery seed coat.

1. Varieties -- Peanut varieties are classified into three market types: Runner, Spanish (bunch), and Virginia (both runner and bunch).

   For Florida, the following varieties are suggested: Florigiant - a Virginia type maturing in about 135 days. Florunner - a runner type maturing in about 135 days. Starr - a Spanish type maturing in about 120 days. Other Spanish types which may be planted are Tifspan, Spancross, and Tamnut 74.

2. Planting Information -- Peanuts are adapted to all portions of Florida except South Florida. Prepare the garden soil as you would for all the vegetables. Be particularly careful to apply sufficient lime to the present row and mix thoroughly with the top soil. For development of well-filled nuts, an adequate supply of calcium must be available in the fruiting zone.

   Plant seeds in the spring of the year, beginning March 15 in Central Florida and April 1 in North Florida. Continue planting through May 15.

   Space seed 2 to 4 inches apart in rows 24 to 36 inches apart. Cover the seed two to three inches in light soil and 1 1/2 to 2 inches in heavier soils.

   Fertilize the peanut row as you would for the rest of the garden. A broadcast application of regular garden fertilizers is adequate. Two to four pounds of 6-6-6 or other common analysis garden fertilizer may be used.

   The peanut is a legume and therefore, capable of fixing nitrogen within its root nodules. Where peanuts are grown for the first time, inoculation of the seeds is advised. Use the cowpea group strain. Granular application in the seed furrow at planting time is sufficient. Follow label directions.
3. Pests - Peanuts are attacked by a wide variety of insect and mite pests. Cutworms, armyworms, corn earworms, lesser cornstalk borers, wireworms, white grubs, leafhoppers, thrips, and spider mites are the most common. Most of the insecticides normally used on the other vegetables in the garden are suitable for use on peanuts. However, be sure to check the label on the container for special peanut directions. For example, malathion for aphid control should not be applied within 30 days of harvest.

For disease control, some of the same fungicides that are used on the other garden vegetables may be used to control peanut leaf spots and rust. Be sure to check the label on the container for possible use on peanuts. Maneb, copper, and Bravo are recommended.

Nematodes control, use Nemagon, Fumazine, or Oxy BBC.

4. Harvesting - Peanuts from the garden are used either as boiling peanuts or as dried peanuts. Those used for boiling are harvested while the peanuts are well formed yet still "green". When harvesting for dry usage, open a few pods before digging. Look to see if the seeds are turning darker indicating maturity. Some gardeners prefer to cut off the top half of the plant 3 to 4 days before harvest. After digging the plants, pile the plants into fluffy well aerated piles (called windrows). Allow to "cure" in this fashion for 5 to 10 days of warm temperatures and relatively dry weather without rain. Proper curing is necessary to insure desirable flavor, texture and overall quality. Reducing the moisture content of the seeds and pods is the main purpose of curing.

(Stephens)

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