The VEGETARIAN Newsletter

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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

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VEGETARIAN NEWSLETTER 74-8

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I. COMMERCIAL VEGETABLE PRODUCTION

A. Phosphorus Use on Muckland Vegetables

Vegetable growers in Florida are faced with skyrocketing costs for seed, fuel, pesticides, fertilizer, etc. They realize now more than ever that they must effect every savings possible in production costs if they are to survive this period of inflation. Over the past year or so, this newsletter has suggested ways in which growers might trim fertilizer costs. Considerable emphasis has been placed on the efficient use of phosphorus which we feel has been grossly overused for many years. This article summarizes timely research work on the use of phosphorus on muck soils. The information can be used as a basis for determining most economical rates of phosphorus to use for vegetable crops to be grown on the muck soils in the coming season.

On muck soils considered to be low (2 lbs./A of water soluble \( \text{P}_2\text{O}_5 \)) in residual phosphorus, Dr. Howard Burdine at the AREC, Belle Glade, tested rates and placement of phosphorus on sweet corn. His results are summarized in the following table.

Effects of phosphorus source, placement, and rate on yields and ear size of sweet corn

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Yield(1)</th>
<th>Ear length</th>
<th>Ear diameter(3)</th>
<th>Unfilled tip</th>
</tr>
</thead>
<tbody>
<tr>
<td>160 pounds ( \text{P}_2\text{O}_5 ) broadcast as 47%</td>
<td>304</td>
<td>195</td>
<td>20.0</td>
<td>4.4</td>
</tr>
<tr>
<td>160 pounds ( \text{P}_2\text{O}_5 ) banded as 10-34-0</td>
<td>304</td>
<td>197</td>
<td>20.2</td>
<td>4.4</td>
</tr>
<tr>
<td>120 pounds ( \text{P}_2\text{O}_5 ) banded as 10-34-0</td>
<td>311</td>
<td>199</td>
<td>20.3</td>
<td>4.5</td>
</tr>
<tr>
<td>80 pounds ( \text{P}_2\text{O}_5 ) banded as 10-34-0</td>
<td>306</td>
<td>199</td>
<td>20.1</td>
<td>4.5</td>
</tr>
<tr>
<td>40 pounds ( \text{P}_2\text{O}_5 ) banded as 10-34-0</td>
<td>294</td>
<td>190</td>
<td>20.5</td>
<td>4.4</td>
</tr>
<tr>
<td>No phosphorus applied</td>
<td>204</td>
<td>172</td>
<td>20.8</td>
<td>4.2</td>
</tr>
</tbody>
</table>

(1) Estimated yield (5-dozen crates/acre).
(2) Average husked marketable ear weight.
(3) Measured at base of ear.

There were no significant differences among the first four treatments shown in the table. The fifth treatment (40 lbs. \( \text{P}_2\text{O}_5 \) banded) was slightly lower in yield, but ears produced were small and probably of less desirable overall appearance. Dr. Burdine feels that the threshold level might be slightly lower than the banded 80 lbs. \( \text{P}_2\text{O}_5 \) treatment. He also observed that the high \( \text{P}_2\text{O}_5 \) treatments reduced the uptake of copper and zinc. He concluded from this study that the amount of phosphorus for sweet corn on the Everglades muck soils can be decreased by using proper placement techniques.
In another study on Zellwood muck soil, Dr. Richard Forbes of AREC, Sanford, noted that the best treatment for cabbage was 0 nitrogen, 80 lbs. P$_2$O$_5$ and 120 lbs. K$_2$O per acre. Here again not more than 80 lbs. of P$_2$O$_5$ was required.

Growers should take every measure possible to reduce fertilizer to lowest possible rates consistent with economical returns. Soil samples should be taken and the amount of fertilizer applied adjusted according to the residual levels found in the tests. In the past, we have recommended 120 lbs. of P$_2$O$_5$ as a guideline to phosphorus rates for sweet corn on muck soils. These rates can be reduced by 1/3 to 2/3 for medium and high levels, respectively, of residue phosphorus shown in a soil test. This same principle can be applied to other crops in a general way. The reduced level of P$_2$O$_5$ should be placed in a band in close proximity to the seed drill for best results, especially in cold weather.

(Montelaro)

B. Destruction of Crop and Weed Residues Before Planting

Abandoned fields from spring crops overgrown with weeds can present serious problems for subsequent crops if they are not turned under in time to permit almost complete decay of all plant residues. Coarse plant materials can interfere with fumigation, precision seeding and laying of plastic. Even if it is not coarse enough to interfere with certain cultural practices, undecayed plant material can cause serious problems with diseases, insects and nematodes in subsequent crops.

One of the most common problems encountered by vegetable growers is Rhizoctonia damp-off disease of seedlings where a crop is planted immediately following the turning of green plant materials. Many of the diseases of the previous crop can be transmitted to subsequent crops from inoculants carried over in the abandoned crop.

From the standpoint of facilitating cultural operations and reducing the hazards of diseases, insects and nematodes, early crop destruction is highly recommended to vegetable growers. Without necessarily increasing the cost of land preparation, timely destruction of crop and weed residues can pay dividends in subsequent crops by eliminating or, at least, lessening the hazards of many problems often encountered in vegetable production.

(Montelaro)

C. Quality Seed--First Step to Success

The single most important and least expensive factor in determining the yield and quality of a crop is the seed. This is not intended to imply that fertilization, pest control, irrigation and handling can be neglected even when high-quality seed of the appropriate variety is employed.

In most cases, seed problems can be avoided by purchasing seed of recommended varieties from reputable seed companies. If the local seed dealer is not accustomed to dealing with vegetable seeds and is not supplied by a reliable vegetable seed house, the grower should go elsewhere. I visited a
grower recently who asked his dealer for seed of a long green slicing cucumber. The dealer gave him seed of 'Long Green Black Spine', a pickling cucumber specifically for home gardeners and not recommended for Florida.

The buyer of seed must, therefore, be able to specify precisely what variety or cultivar he wants. He should not accept substitutes unless other seed sources have been checked. 'California Wonder' pepper is no substitute for 'Early Calwonder', for example.

Most commercial seed lots are true to type, that is, they are of the variety or cultivar specified. Occasionally, seed lots become mixed up and certain lots are not of the variety or strain labeled--more about what to do about these situations later. The way a plant looks, grows or tastes is called the phenotype. It is an expression of the genetic makeup (the genotype) under a particular set of environmental conditions. Many varieties are selected because of their ability to produce a given phenotype under a broad range of conditions--perhaps due to presence of several disease resistance genes or other factors. Some varieties have been developed for particular conditions--e.g. numerous vegetables are selected for their performance on muck soils. These varieties cannot be expected to produce the desired phenotype under other conditions. Even the most widely adapted varieties, planted at the proper time and handled according to recommended procedures, are often subjected to weather conditions which bring about atypical phenotypic expression.

Disease-free seed is essential, particularly for certain crops subject to seed-borne viruses and bacteria. In most cases, these diseases cannot be eliminated once introduced. Vegetable growers should in no case attempt to save their own seed. Disease-free seed comes from isolated fields, often in the Intermountain West, carefully handled from planting through harvest.

Seed treatment to overcome soil-borne diseases and insects is usually performed by the seedsman. It often spells the difference between a good stand and no stand.

Viable or living seed is essential and is generally guaranteed by current germination test as required by state law (Florida Seed Law, Chapter 578 - Copy available from Florida Department of Agriculture & Consumer Services, Tallahassee). In addition to viability, good seed must have high vigor, the strength to emerge and develop a healthy seedling after sprouting. Most fresh seed, properly stored and handled, will have sufficient viability and vigor to produce a crop. However, certain vegetable seeds are subject to rapid deterioration under poor storage conditions (which may occur after the required germination test). Many vegetable seeds can now be purchased in hermetically-sealed cans. If a grower is uncertain of the storage conditions used by his dealer, he should specify sealed cans or should deal with a supplier using controlled storage conditions. Leftover seed of many crops can be stored by repackaging in plastic bags and refrigerating. Moisture is the worst enemy of seed, followed by high temperatures.

Rarely does one get vegetable seed which is not clean, that is, free of weed seeds (regulated by law) and trash. Weed seeds, of course, increase the weed problem, and trash can interfere with proper seeding rates.
What does one do when he suspects his seed is of poor quality or is not true to type. First, contact the seed dealer. If there is agreement and there is still time to replant, a replacement seed supply can often solve the problem. Often, however, the seed dealer chooses to refer the problem to the seedsman. Seedsmen are by and large very fair and fully aware of problems which arise due to their fault—they may also be in a position to point out that the grower has done something (e.g. fertilizer too close to the seed) to injure the seed. Most complaints about seed quality can and should be settled at this level. When this fails, the grower may present his case to the Florida Seed Arbitration Council. The grower must register his complaint (accompanied by $10.00, refundable following the resultant hearing) in Tallahassee within ten days of the time he first observed his problem. A copy of the complaint must also be sent to the seed dealer by registered mail. He should have the field or crop inspected by a third party, and all records (seed source, lot no., photographs, crop records, etc.) should be retained. It is not essential to be represented by an attorney at the arbitration council. Any claims made by a grower should be realistic. Most growers and seedsmen accept the non-binding rulings of the council. Small claims should not generally be brought to arbitration because of their expense (time, travel, attorneys when used, etc.).

Every effort should be made to avoid settlement of seed cases through the courts.

(Kelly)

D. Broadcast Versus Banded Herbicide Applications

Herbicides can be applied to the soil in several ways. Many growers recognize that there is a distinct difference among the methods in the amount of material needed. The methods most frequently used are broadcast and band applications.

Florida recommendations are given in pounds of active ingredient per acre on a broadcast basis. Broadcast application refers to a complete coverage or spraying of the crop area (in rows and between rows). A band application of herbicide refers to placing a swath of herbicide spray or granules in a restricted area with untreated areas between treated areas. Examples of this would be spraying the bed surface but not between beds or water furrow area (middles), spraying a limited area on either side of a crop row or spraying the "shoulder" area of a full-bed mulch cover crop.

In these cases, the crop area (row and between rows) is not fully covered so that the amount of herbicide material used compared to the broadcast method is less. If only 1/3 of the area is sprayed, then the recommended rate which is on a broadcast basis for a sprayed acre will cover three acres instead of one.

The first impression is that band applications would save money by allowing less material to cover more area. One must consider, however, that weeds will grow in the untreated area and some means (cultivation) will be required to control them. The energy shortage has dictated that unnecessary trips in the
field be eliminated. Thus, it may prove to be more economical to broadcast-treat the area (especially in open culture situations), thereby reducing the number of cultivars required.

(Kostewicz)

II. HARVESTING AND HANDLING

A. Lettuce

Lettuce is one of the more perishable commodities--particularly if not handled properly. Temperature and relative humidity are important factors in handling and transporting most fresh vegetables, but for lettuce they are critical. This crop has a large surface to volume ratio, which makes it very vulnerable to water loss and wilting if the relative humidity is not maintained at 95% or above. It can be held twice as long at 32°F as at 38°F, but the freezing point is 31.7°F--which means that 32°F is the absolute minimum and perhaps 33-34°F would be safer and more practical.

There are a number of other problems associated with the postharvest handling of lettuce. It is susceptible to attack by a number of pathogens (including soft rot) and yet there are no suitable decay control treatments available. Chlorine, which is widely used for decay control of vegetables, should not be used on lettuce. It is effective against decay organisms, but reacts with the lettuce and the treatment may be worse than the problem.

Another potential problem that should be kept in mind when storing or shipping lettuce is a physiological one. All fresh fruits and vegetables respire, which means they utilize oxygen and give off carbon dioxide. Lettuce is sensitive to carbon dioxide which may accumulate to toxic levels during long shipment in the newer, tighter trucks and rail cars. The level which will produce damage depends upon a number of factors including variety, maturity, oxygen level, time exposed and temperature. Ethylene may also cause problems if lettuce is stored or shipped with a commodity which produces high levels of this volatile.

The best method of maintaining quality and freshness is by careful handling and accurate temperature control. Bruising provides free moisture and points of entry for decay organisms. Both bruising and decay increase the rate of respiration which increases the utilization of oxygen and the production of carbon dioxide. One of the reasons that adequate precooling is so critical is because quick cooling means a quick reduction in the respiration rate, growth of decay organisms and transpiration (see Vegetarian 72-1 and 72-3). Since the respiration rate is greatly reduced by cooler temperatures, the chances of carbon dioxide build-up and oxygen depletion are reduced. Without chemicals to protect against postharvest decay, temperature control is the primary safeguard against bacterial soft rot and other pathogens.

An Illustrated Guide to the Identification of Some Market Disorders of Head Lettuce - Marketing Research Report No. 950, by ARS, USDA, describes (with color photos) a number of problems which may be encountered during storage or transport of lettuce. We have a limited supply of these reports which we will be happy to share--as long as they last.

(Hicks)
III. VEGETABLE GARDENING

A. Vegetables Suggested for North Florida Gardens

Introduction

Most vegetables have a peak period of the year where optimum growth and least pests combine to produce the best crop possible. This peak period varies with each vegetable. However, to obtain maximum year-round production from a garden plot, vegetables must be grown outside of, as well as during, these peak periods.

Here are lists of vegetables grouped according to season when they might be planted for satisfactory results under average conditions in North Florida.

Keep in mind that severe cold weather, which occasionally occurs in North Florida, could injure or kill some of the vegetables listed for the winter garden; also, vegetables planted in the summer require more care than usual due to greater abundance of problems related to hot, humid weather (such as insects, diseases, weeds, nematodes and physiological). Quality, as well as yields, may be reduced in the summer.

Selecting the Crops

Plant vegetables in your garden that are liked by your family and will grow in your area. This list may be limited by the size of the garden space. The size will not only limit the number of kinds of vegetables that may be grown, but it also limits the choice of these kinds. Large-growing crops in a small garden limit the number of kinds that can be planted.

If some of the garden produce is to be frozen, make certain that you select varieties adaptable for freezing. Also, choose varieties recommended for your area. The Florida Vegetable Garden Production Guide lists recommended varieties.

Make a Plan

It is a good idea to make a plan of the garden. Obtain seed catalogs and variety recommendations and then plan the garden on paper. The plan should include the kind of vegetables to be planted, distance between rows, distance between plants, and time of planting. This and other useful information are included in the Florida Vegetable Garden Production Guide. The plan is of utmost importance to a successful garden and will help you to carry out the various jobs on time.

Place long-season crops such as strawberries to one side of the garden so they will not interfere with the preparation of the rest of the garden each season.

Plant tall-growing crops on the north side of the garden so they will not shade other plants.

Arrange the rows according to the planting dates of the various crops. By doing this, only a narrow strip is prepared for the early plants and the rest of the garden can be prepared as needed.
Plan to keep the garden space fully occupied throughout the year. It is possible to have vegetables growing throughout every month of the year. By intercropping, it is possible to plant another kind of vegetable between the rows of an earlier-maturing kind where space is a factor. Crops that are transplanted to the garden after danger of frost has passed are frequently planted between rows of early peas, lettuce, spinach, etc. During the summer months, plant a cover crop on areas not planted to other crops.

Succession plantings every 10 to 14 days of radishes, snap beans, turnips, cabbage, sweet corn, and other crops will provide vegetables for a longer season.

A similar effect will result from planting at the same time two or more varieties with different maturity dates.

I. Fall Garden

Planted: July-September
Harvested: October-November, or later

Beans, Bush Snap (A-S)*
Beans, Pole (A-S)
Beans, Lima (A)
Beets (S)
Broccoli (S)
Cabbage (S)
Carrots (S)
Cauliflower (S)
Celery (S)
Collards (S)
Sweet Corn (A)
Cucumbers (A-S)
Eggplant (J)
Endive-Escarole (S)
Lettuce (S)
Mustard (S)
Okra (J)
Onions (for spring bulbing) (S)
Onions (green) (S)
Onions (multipliers) (S)
Southern Peas (A)
Peppers (J)
Radish (S)
Squash, summer (A-S)
Strawberry (for spring harvest) (S)
Tomatoes, large fruited (A)
Tomatoes, small fruited (A)
Turnips (S)

*Best month to plant for fall.

II. Winter Garden

Planted: October-December
Harvested: December-February, or later

Beets (O-N)*
Broccoli (O-N)
Cabbage (O-N)
Carrots (O-N)
Cauliflower (O-N)
Celery (O-N)
Chinese cabbage (O-N)
Collards (O-N)
Endive-Escarole (O)
Kale (O-N)
Kohlrabi (O)
Lettuce (O-N)
Mustard (O-N)
Onions (O)
Leek (O)
Chives (O)
Shallots (O)
Parsley (O-N)
Peas, English (O)
Radish (O-N)
Rutabaga (O)
Spinach (O-N)
Strawberry (Oct. for spring harvest)
Turnips (O)

*Best time to plant for winter.
### III. Spring Garden

**Planted:** February-April  
**Harvested:** March-June, or later

<table>
<thead>
<tr>
<th>Vegetable</th>
</tr>
</thead>
</table>
| Beans, Snap (M)*                 | Okra (M)  
| Beans, Pole (M)                  | Onions (other than bulbing) (F-M)  
| Beans, Lima (M)                  | Leek, Chives, Shallots (F-M)  
| Beets (F-M)                      | Parsley (F-M)  
| Broccoli (F)                     | Peas, English (F)  
| Cabbage (F)                      | Peas, Southern (M)  
| Carrots (F)                      | Pepper (M)  
| Cauliflower (F)                  | Potatoes, Irish (F)  
| Celery (F-M)                     | Potatoes, Sweet (M)  
| Chinese Cabbage (F-M)            | Radish (F-M)  
| Collards (F-M)                   | New Zealand Spinach (M)  
| Corn, Sweet (M)                  | Squash, Summer (M)  
| Cantaloupes (M)                  | Squash, Winter (M)  
| Cucumber (M)                     | Swiss Chard (M)  
| Eggplant (M)                     | Pumpkins (M)  
| Endive-Escarole (F-M)            | Gourds (M)  
| Kohlrabi (F-M)                   | Tomatoes (M)  
| Lettuce (F)                      | Turnips (F-M)  
| Mustard (F-M)                    | Watermelons (M)  

*Best time to plant for spring.*  

**Note:** Best time to experiment with new kinds and varieties.

### IV. Summer Garden

**Planted:** May-June  
**Harvested:** July-September, or later

<table>
<thead>
<tr>
<th>Vegetable</th>
</tr>
</thead>
</table>
| Beans, Snap (M)*                 | Lettuce, Leaf & Summer Bibb (M)  
| Beans, Pole (M)                  | Okra (M)  
| Beans, Lima (M)                  | Southern Peas (M)  
| Collards (M)                     | Pepper (M)  
| Corn, Sweet (M)                  | Sweet Potatoes (M)  
| Cucumbers (M)                    | New Zealand Spinach (M)  
| Eggplant (M)                     | Squash, summer (M)  
| Mustard (M)                      | Tomatoes, small fruited (M)  

*Best time to plant for summer.*  

(Stephens)

### B. Timely Gardening Topics

These questions and answers are provided for your use in developing periodic (weekly) radio or newspaper briefs. They are based on letters of inquiry from Florida gardeners.

(1) **Timely Topic for Week of August 18-24.**

**Question**

Is it true that the larger vegetable seeds produce a better plant than the smaller seeds?
Answer

Yes, in general, this is true, although for many crops there may be little advantage in selecting seed size. For many vegetables, the heavier the seed, the greater the yields from the resulting plant. Of course, the genetic makeup of the seed has more to do with actual plant response than does seed size. However, where genetic makeup is similar, seed size does have an effect.


Question

Should I cut off part of the foliage when I transplant my vegetables?

Answer

Since the foliage contains carbohydrates needed by the plant for growth and development, the foliage should not be removed even in part. Early yield in particular would be reduced.

(3) Timely Topic for Week of September 1-7.

Question

I have access to a large quantity of sawdust. Would it be beneficial to apply liberal amounts to my garden soil?

Answer

In tests where up to 40 tons of sawdust have been added per acre, yields were not increased. In fact, heavy applications of such carbonaceous material as sawdust tend to reduce yields due to increased competition of microorganisms for nitrates. When well decomposed, sawdust is beneficial to increase organic content of the soil. Thus, the soil's structure and ability to hold water and minerals are improved. However, sufficient additions of fertilizer (particularly nitrogen and calcium) must accompany such additions of sawdust, and ample time allowed for decomposition.

(4) Timely Topic for Week of September 8-14.

Question

Should I plant melons in my Florida fall garden?

Answer

Generally, watermelons, cantaloupes and honeydews planted for fall and early winter harvest in Florida result in poor-quality fruits. This is due primarily to the fruits being formed as the days become shorter. Since melon quality is associated with sugar content, among other things, short days tend to reduce sugar content of melons. Furthermore, since melons require at least 4 months to mature, they would have to be planted in the hot, humid month of July in many parts of Florida to avoid frost in November.

(Stephens)
C. Know Your Vegetables - Garlic

Garlic (Allium sativum L.) is similar to onion, except instead of producing a single bulbous stem or large bulb, it produces a compound bulb consisting of groups of white or purplish scales. Each group is referred to as a clove, and the bulb is enclosed in a purplish membraneous bag. The leaves reach 12 inches in height, are narrow, but not hollow.

In Florida, garlic is grown almost exclusively in home gardens. Its culture is similar to that for onions, thus the soil is prepared in the same manner. Suggested planting dates are October through January. The young plants withstand cold weather, so there is no danger from freezing.

Since garlic does not produce seed, it is propagated by division of the cloves and planting each as a "set." Following harvest of the bulbs for seed purposes, the bulbs are stored for about 9 months at 50° F. If stored at higher temperatures, they fail to bulb when planted.

While there are several strains or selections of garlic being grown, there are few varieties. The major varieties cultivated are 'Creole', 'Italian', 'Tahiti', 'California Late', and 'California Early'.

Garlic must be well dried and cured after harvest before storing. This can be accomplished outdoors if no rain occurs, or indoors in a dry shed.

(Stephens)