INSTITUTE OF FOOD AND AGRICULTURAL SCIENCES
UNIVERSITY OF FLORIDA

VEGETARIAN NEWSLETTER

May 8, 1979

Prepared by Extension Vegetable Crops Specialists

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

FROM: R. D. William, Assistant Professor & Extension Vegetable Specialist

VEGETARIAN NEWSLETTER 79-5

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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
A. Vegetable Crops Gets A New Department Chairman

The following memo from Vice-President Tefertiller to all IFAS faculty and staff is self-explanatory.

"I am pleased to announce at this time that the new Chairman of the IFAS Vegetable Crops Department will be Dr. Donald N. Maynard, who is now serving as Professor in the Department of Plant and Soil Science, University of Massachusetts.

Dr. Maynard brings to IFAS an outstanding national reputation and we are fortunate to have him lead such a vital department.

Dr. Maynard, whom many of you met during his visit with us, is a native of Connecticut. He did his undergraduate work at the University of Connecticut and received a doctorate degree in Botany at the University of Massachusetts.

I know we all look forward to working with Dr. Maynard and welcome him to Florida and to the IFAS staff. He, his wife, Charlotte and their son David, will be arriving in July.

Until Dr. Maynard assumes his duties, Dr. C. B. Hall will continue serving as Acting Chairman. We are grateful to Dr. Hall for his willingness to continue in this capacity."

The Vegetable Crops faculty looks forward to working with Dr. Maynard.

(Montelaro)

B. Vegetable Field Days Set - Final

Put the following dates on your calendar and make plans to attend these vegetable field days. Detailed programs for these field days are being mailed.

1. Location: Bradenton, Florida
   Date: May 22, 1979, 9:45 AM

2. Location: Gainesville, Florida
   Date: June 5, 1979, 9:45 AM

3. Location: Leesburg, Florida
   Date: June 6, 1979, 1:15 PM

(Montelaro)
C. Vegetable Gardening Demonstration Day

1. Location: FAMU, Tallahassee, Florida
   Date: May 25, 1979, 9:00 AM
   (Stephens)

II. COMMERCIAL VEGETABLE PRODUCTION

A. Developments in Starting Vegetable Crops - Containerized Transplants

Vegetable growers in Florida have always been progressive in adopting new production techniques. This is true for increasing overall efficiency in starting their vegetable crops. One primary goal is to improve rate, time and uniformity of germination which is a prerequisite for the efficient production of high yielding, good quality, uniformly maturing vegetable crops.

To a degree, this has been accomplished with many vegetable crops in Florida. Many growers have adopted such practices as the use of sized seed, pelleted seed, precision planting, plug-mix seeding, etc. Even these practices have not been fully exploited by all vegetable growers in the state.

Two developments of the past decade have created considerable interest among the more progressive growers. They are: 1) use of containerized transplants for starting vegetable crops and 2) priming or pregermination of seeds together with specialized seed drilling or placement techniques. Various types of containerized transplants have been used for many years by market gardeners, primarily. It was not until full-bed, plastic mulch culture became widespread that containerized transplants became popular in Florida vegetable production. Transplant production has progressed from the use of peat pots and paper bands to efficient, streamlined cell-pack trays and pressed cubes or blocks.

Presently containerized transplants are used on about 60% of the tomatoes, peppers and eggplants grown in the state. This system of starting vegetable crops has been tried with success on a number of other vegetables including lettuce, celery, endive, cantaloupes, squash, watermelons and cucumbers. It offers many advantages over the conventional methods such as use of bare-rooted transplants or direct seeding. As expected, there are some negative aspects to the use of containerized transplants. Among these, primarily, is the lack of knowledge and experience.

Although transplants in containers can be purchased from commercial producers, they can be grown by a vegetable grower. Many are doing so now in Florida. Containerized transplant production adds a new dimension to any vegetable operation. It generally involves additional capital outlay and production expertise. However, those that have tried it seemed to feel that it is worthwhile.

The increasing cost and shortage of good vegetable land, energy, fertilizer, pesticides, etc. as well as ever-tightening government regulation may serve to make the use of containerized transplants more attractive to vegetable growers with each passing year. A crop can be started in a restricted area (usually a greenhouse) and kept there for a period of 4 to 6 weeks. In this way, cost for pesticides, fertilizer, tractor use, etc. can be considerably less than starting the same crop in the field. Containerized transplants generally take off fast and produce good
yielding, uniform crops in a relatively short period of time.

New techniques in the production of containerized transplants have given new impetus to the use of this method for starting vegetable crops in Florida. It is a highly specialized operation employing many of the new and time-tested techniques which apply to vegetable production in general. This even includes recent development in priming and pregermination, together with improved seed drilling. This subject will be discussed in a subsequent article.

Summarizing briefly, technology for use by growers in starting vegetable crops more efficiently has progressed tremendously. We fully expect to see breakthroughs which should further benefit vegetable growers. It is an area which should be given careful consideration continuously by all vegetable growers in Florida as it promises even greater dividends than ever before.

(Montelaro & Cantliffe*)

*Dr. Daniel J. Cantliffe is Associate Professor and Associate Horticulturist, Vegetable Crops Department, IFAS. His primary responsibility is teaching and research in the area of seed physiology.

B. Herbicide Persistance and Waiting Periods For Non-Labelled Crops

Vegetable growers sometimes wish to rotate their crops, but wonder whether the herbicide used in the previous crop will persist and injure the second crop. Many herbicide labels specify the time interval required before a crop not listed on the herbicide label can be planted with little or no risk of injury. A list of these time intervals follow:

<table>
<thead>
<tr>
<th>Herbicide name</th>
<th>Common name</th>
<th>Vegetable crops not listed on label</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alanap</td>
<td>Naptalam</td>
<td>(usually does not persist past duration of labelled crop)</td>
</tr>
<tr>
<td>Amiben</td>
<td>Chloramben</td>
<td>(usually does not persist past harvest of labelled crop)</td>
</tr>
<tr>
<td>(Several brands)</td>
<td>Atrazine</td>
<td>12 to 24 months</td>
</tr>
<tr>
<td>Balan</td>
<td>Benefin</td>
<td>4 to 5 months</td>
</tr>
<tr>
<td>Basagran</td>
<td>Bentazon</td>
<td>--</td>
</tr>
<tr>
<td>Caparol</td>
<td>Prometryne</td>
<td>5 months for 7 crops only (read label carefully)</td>
</tr>
<tr>
<td>Dacthal</td>
<td>DCPA</td>
<td>8 months</td>
</tr>
<tr>
<td>Devrinol</td>
<td>Napropamide</td>
<td>12 months</td>
</tr>
<tr>
<td>Dowpon, Basfapon</td>
<td>Dalapon</td>
<td>A few weeks</td>
</tr>
<tr>
<td>Dual</td>
<td>Metolachlor</td>
<td>18 months</td>
</tr>
<tr>
<td>Enide</td>
<td>Diphenamid</td>
<td>6 months</td>
</tr>
<tr>
<td>Herbicide name</td>
<td>Trade</td>
<td>Common</td>
</tr>
<tr>
<td>---------------</td>
<td>-------</td>
<td>--------</td>
</tr>
<tr>
<td>Eptam</td>
<td>EPTC</td>
<td>(usually does not persist past harvest of labelled crop)</td>
</tr>
<tr>
<td>Evik</td>
<td>Ametryne</td>
<td>12 months</td>
</tr>
<tr>
<td>Furloe CIPC</td>
<td>Chlorpropham</td>
<td>(usually does not persist past harvest of labelled crop)</td>
</tr>
<tr>
<td>Kerb</td>
<td>Pronamide</td>
<td>up to 12 months</td>
</tr>
<tr>
<td>Lasso</td>
<td>Alachlor</td>
<td>(does not persist past harvest of labelled crop)</td>
</tr>
<tr>
<td>Lorox</td>
<td>Linuron</td>
<td>4 months</td>
</tr>
<tr>
<td>Paraquat</td>
<td>Paraquat</td>
<td>(no detectable soil residue)</td>
</tr>
<tr>
<td>Prefar</td>
<td>Bensulide</td>
<td>18 months</td>
</tr>
<tr>
<td>Premerge</td>
<td>Dinoseb</td>
<td>(usually does not persist past harvest of labelled crop)</td>
</tr>
<tr>
<td>(Several brands)</td>
<td>Simazine</td>
<td>12-24 months</td>
</tr>
<tr>
<td>Ramrod</td>
<td>CDAA</td>
<td>(usually does not persist past duration of labelled crop)</td>
</tr>
<tr>
<td>Roundup</td>
<td>Glyphosate</td>
<td>12 months</td>
</tr>
<tr>
<td>Sencor, Lexone</td>
<td>Metribuzin</td>
<td>18 months</td>
</tr>
<tr>
<td>Sinbar</td>
<td>Terbacil</td>
<td>24 months</td>
</tr>
<tr>
<td>Sutan</td>
<td>Butylate</td>
<td>(usually does not persist past harvest of labelled crop)</td>
</tr>
<tr>
<td>Treflan</td>
<td>Trifluralin</td>
<td>5 months</td>
</tr>
<tr>
<td>Tillam</td>
<td>Pebulate</td>
<td>(usually does not persist past harvest of labelled crop)</td>
</tr>
<tr>
<td>Tok</td>
<td>Nitrofen</td>
<td>(usually does not persist past harvest of labelled crop)</td>
</tr>
<tr>
<td>Tolban</td>
<td>Profluralin</td>
<td>6-8 months</td>
</tr>
<tr>
<td>Vegadex</td>
<td>CDEC</td>
<td>(usually does not persist past harvest of labelled crop)</td>
</tr>
<tr>
<td>Vernam</td>
<td>Vernolate</td>
<td>(usually does not persist past harvest of labelled crop)</td>
</tr>
</tbody>
</table>

Read the herbicide label carefully for specific references to particular crops or other agricultural situations that may vary from these general label restrictions.

(William)
C. Liquid Fertilizers - Quotes From An Expert

Dr. Robert E. Lucas retired recently after many years as an Extension Soils Specialist at Michigan State University. Much of his time was spent working with vegetable crops. Presently, he is located at the Agricultural Research and Education Center, Belle Glade, Florida as a visiting professor. The quotes, presented here with his permission, are taken from his leaflet entitled "Liquid Fertilizers", Extension Bulletin E-933, January, 1976.

"Liquid fertilizers have been marketed for several decades. Still, many users do not know the difference between liquid and dry fertilizers and many costly mistakes have been made."

"Any liquid that contains one or more available plant nutrients is a liquid fertilizer. The plant nutrients may either be in complete solution or part in solution and part in suspension."

"The main advantage of liquid fertilizer is greater ease of handling and applying. Liquids permit more uniform application. The product is more uniform in analysis. Certain pesticides are compatible."

"Liquid fertilizers require special storage tanks, pumps and hoppers which can greatly add to costs."

"Nearly all the active ingredients in liquid or dry fertilizers commonly sold are water- or citrate-soluble. Thus, they are equally available for plants. Although the fertilizer salt may be 100% water soluble, there may be a rapid change to compounds of low water solubility after application to the soil. For example, a liquid fertilizer containing 100,000 ppm of phosphorus will likely test no more than 0.3 ppm in the soil solution after application."

"Liquid fertilizers seldom show any residues in the soil when band-placed as do many dry fertilizers. This residue should never be cited as an example of poor recovery for dry fertilizers. These residues are usually conditioners, inert materials, by-products such as gypsum and impurities. Some of these residues may be calcium, magnesium or sulfur which are essential plant nutrients for which no claim has been made. If such materials were added to liquid fertilizers they would normally cause sedimentation."

"All mineral fertilizers can cause injury to plants when applied in excess. Unless diluted with water, most liquids of comparable formulation are as toxic as dry fertilizers. Fertilizers can show differences in burn which are measured by a "salt index"."

"Most liquid fertilizer concentrates weigh 10 to 11 pounds per gallon. Thus it takes about 9 gallons of liquid to compare to 100 pounds of dry fertilizer. If the dry fertilizer costs $9.00 per hundred ($180.00 per ton), then you should be on guard if the liquid fertilizer of the same formulation costs more than $1.00 per gallon. Fertilizers of the same grade, formulation, placement and rates give nearly identical response whether liquid or dry!"
A. Vegetable Nutritive Values

The nutritive needs of vegetable plants for maximum yields and quality have been intensively studied and impressive sources of published information are available. Human nutrition is presently a topic of growing interest and one of vital importance to the vegetable industry. People using media such as newspapers, radio, television, books and meetings are discussing nutritive values of food. The February convention of the United Fresh Fruit and Vegetable Association featured a consumer affairs workshop that identified needs for nutritional merchandising for the public. Panel members cited opportunities for retailers, the media, cooperative extension services and others, to better acquaint consumers with food values of fresh produce. We have a nutrition-conscious public, but not a public well-educated in nutrition.

What is good nutrition? There is no simple answer, but about half the U.S. households are now modifying their diet for health reasons. These are about equally divided between those that have a health problem and those trying to avoid one. Vegetables are recognized as important sources of the many vitamins, minerals and trace elements that have a vital role in human nutrition.

The first USDA Handbook No. 8 published in 1950, presented data on 11 nutrients in 751 foods. The 1963 revision included 13 nutrients in 2,483 foods. The 1979 revision that is now in preparation will include more detailed information than previous editions with data on 9 vitamins, 9 mineral elements, fatty acids, cholesterol, phytosterols, and 18 amino acids. This increase from 4 nutrients identified in 1892, to 65 at present is indicative of the expanding knowledge on nutrient composition of foods.

The thousands of chemicals in the body include water, protein, fats, carbohydrates, minerals and vitamins. Food supplies energy, measured as calories, to carry out body activities. The only nutrients that provide calories are fats, proteins and carbohydrates. Protein can be used to build tissues or provide energy, but carbohydrates such as those in vegetables can supply the same amount of calories at a much lower cost than meats. Carbohydrates and proteins both provide 4 calories per gram of food, whereas fats provide 9 calories per gram. Vegetables are good sources of sugars and starches used as major energy sources for the body. Other vegetable nutrients function in releasing energy and tissue growth, assist in muscle, nerve and blood activities, and form components of bones and teeth. The fiber provided by many vegetables has only recently been considered important as undigestible matter that aids in waste elimination.

Dr. R. Gaurth Hansen, Professor of Nutrition and Biochemistry at Utah State University, has reported in the Food Processing Magazine on a method describing the value of particular foods for providing specific nutrients by an index based on the relationship of calories and nutrients. He found that vegetables provide more nutrients per calorie than any other food group.
With the increased consumer awareness of vegetable nutritive values, consumption is increasing. In this decade, total vegetable use has increased from 213 to 227 pounds per person with potatoes and home garden vegetables excluded. There has been a significant break in the long-time decline in use of fresh vegetables. The advent of nutritional labeling on many food products focused more attention on the need for current information about the composition of fresh vegetables. If typical or average nutrient values can be established for certain vegetables from a region or season, the information may be used as major product features and enable industry groups to do a better job of merchandising.

(Showalter)

IV. VEGETABLE GARDENING

A. Tips on Digging and Storing Garden Potatoes

Digging of Irish potatoes, a popular garden vegetable found in most Florida spring gardens, usually takes place in most areas of the state in late April and May. Unless there has been a setback due to abnormal growing conditions, potato tubers are ready to dig from 80 to 90 days after planting. If left undisturbed, the tops of the potato plants generally die down naturally and the tubers stop growing in about 120 days after planting.

Many gardeners wish to dig a few early potatoes before the tubers have reached full size and maturity. Some prefer to dig tubers as needed, from the time most tubers are ready until the plants die. However, most wait until the tubers are mature, then dig the entire crop.

This once-over harvest requires care in digging and proper storage techniques to prevent loss of the stored tubers. Many problems arise after harvest, such as tuber decay, shriveling, sprouting, greening, and injury from insects and rodents.

Part of the decay and shriveling problems encountered later on are due to skinning of the tubers at digging time. To minimize the loss due to or enhanced by skinning, the gardener may take some precautionary steps.

First, the potatoes should be left undug as long as possible until the plant tops have died back naturally. With the additional maturation period, the outside surface skin of the tubers becomes tougher and more resistant to scratching and skinning at digging. Of course, the dilemma here is that tubers left in the ground in Florida in June are subject to increased chances of rotting due to heavy rainfall.

Second, the tops of the plants should be removed 10 to 14 days prior to digging. Merely cut the vines at ground level with shears, a sharp knife, or a lawn mower and remove from the garden. This top cutting causes the skin on the tubers to set and become tough. Obviously, one would not want to cut tops too early, or loss of yield would result.

Thirdly, the gardener should exercise great care in removing the tubers from the soil. Rough handling while digging results in skinned, bruised and cut tubers. All of these are more prone to decay and other problems in storage.

After potatoes have been dug, they should be cleaned before storing in order to
remove dirt and soil that may contain decay organisms. The best way to clean is to brush off the dirt by hand using a burlap bag or soft brush. Brushing is particularly easy where only a small amount (bushel or two) of potatoes are involved. Washing is o.k., except that dumping and washing in a tub or container of water should be avoided. Decay organisms are spread by the water from one tuber to another. It is best to spread the tubers out and hose them down with a spray of water. Or, one might rinse each tuber by hand under a tap. Then, it is important that they be dried thoroughly in the shade or for 3 or 4 hours in the sun before storing.

Potatoes should be stored in a dark, cool, dry, well-ventilated place. Since it is not practical for most gardeners to store quantities of potatoes at the desirable temperature of 50° to 60°F, room temperatures and outdoor shed temperatures have to be tolerated. Under these warmer conditions it is advisable to keep the tubers spread out rather than stacked or heaped. Store in a dark area to avoid greening due to light. Sprouting is not a problem at these higher temperatures for the first two months, since the potatoes are usually in a no-growth "resting" stage. Potatoes do not keep well much longer than two to three months anyway.

The final storage precaution is to grade out rotting tubers periodically so that the entire batch is not contaminated.

(Stephens)

B. Know Your Vegetables - Ice Plant

The ice plant (Mesembryanthemum crystallinum L.) is a little known vegetable of the southern hemisphere, now introduced to warm areas in the north. It is seldom if ever grown in Florida gardens, as a vegetable anyway, and it is unlikely to become more than just a curiosity plant.

Ice plant is named after the shimmering silvery dots that cover the leaves. Other names used for it are "fig marigold", (after the edible fruits) "frost plant", "diamond plant", "mid-day flowers", and "dew plant". This is not to be confused with New Zealand spinach which is sometimes referred to in gardening booklets as New Zealand ice plant.

The plant is a perennial, but is grown in gardens as an annual. It is a small (about the size of bibb lettuce) peculiar looking plant with spreading, round stems. Blades of the leaves widen towards the outer ends, and become narrow near the stalk. All green parts of the plant are covered with small, very transparent, membraneous bladders, which give the plant the appearance of being covered with frozen dew. Each tiny, white flower has a swollen calyx covered with the bladders. Seeds are very small, black and shiny. Seed longevity is about five years.

The culture of ice plant appears to be quite easy. The very small seeds are sown shallow like spinach seeds. Space rows one foot apart, and thin plants to stand six inches in the row.

Most favorable climatic conditions seem to be hot and dry. Since Florida's climate is hot and even rather dry at times, it seems possible that the plant would do well here planted in the spring. The biggest problem is probably lack of a source of seeds.
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Pick the leaves as wanted once the plant has several leaves well established. The slightly acid flavored fleshy parts of the leaves are boiled and served like spinach.

(Stephens)

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