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

FROM: J. M. Stephens, Assistant Vegetable Crops Specialist

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IN THIS ISSUE:

I. COMMERCIAL VEGETABLE PRODUCTION
   A. Potato Seed--Handling for Best Results
   B. Small Vegetable Operations Can Succeed
   C. Choosing Fungicides for Efficiency in Vegetable Production
   D. Herbicides for Pepper and Tomato Production

II. HARVESTING AND HANDLING
   A. Unit Handling of Produce

III. VEGETABLE GARDENING
   A. Does a Vegetable Garden Pay
   B. Know Your Vegetables - Sarsaparilla

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I. COMMERCIAL VEGETABLE PRODUCTION

A. Potato Seed--Handling for Best Results

It is probably more urgent now than in years past for growers to make careful plans to manage their potato seed stocks as efficiently as possible for the 1973-74 season. The reason is that potato seed is apt to be in short supply and quite expensive. In fact, the increase in seed cost per acre of potatoes will probably be greater than that for fertilizer, pesticides, etc. Growers should aim to "get the most" out of their seed.

The following list of suggestions, although not complete by any means, might serve as a guideline to efficient handling of potato seed stock for the 1973-74 season.

(1) Use only certified seed. DO NOT USE table stock potatoes as substitute for certified seed.

(2) Upon delivery of potato seed:
   (a) Check the filled bags for wetness, stains, etc., which might indicate problems with decay organisms.
   (b) Inspect by pouring out a number of bags selected at random. Check for dry rot, shatter bruising, grade, etc.
   (c) Call an inspector of the Plant Industry Division, if seed appears to not measure up to standard.

(3) Store in a cool, dry, well-ventilated room until planting time. Prevent seeds from over-heating, freezing, drying out, becoming wet, etc.

(4) Check, clean and sterilize all equipment to be used in sizing, grading, cutting, treating, storing and planting potato seed.

(5) Run seed potatoes on grading belt.
   (a) Remove diseased materials.
   (b) Grade according to size for cutting into two or four pieces. Jumbos might best be cut by hand for greatest economy.

(6) Select land carefully to avoid excessively wet or dry spots. Plant only to land which is known to be productive.

(7) Test the soil to determine proper liming and fertilization. Treat soil, if needed, for diseases, insects, nematodes, weed seeds, etc.

(8) Treat seed pieces with one of the approved fungicides. NOTE: The sequence to follow is cut, treat and plant immediately. Do not attempt to store treated seed pieces for any length of time. If the planting operation is interrupted, stop cutting and treating until planting is resumed again.
(9) Check the planter for accuracy of drop of seed pieces. Double drops and skips should be avoided.

(10) Throughout the production, check the crops often. Apply supplemental fertilizer and pesticides, as needed. Do not over-use these materials. They are not only costly, but may actually reduce yields, grade and quality of the crop.

(Montelaro)

B. Small Vegetable Operations Can Succeed

There are many who predict that the small vegetable operation will disappear completely from the scene in a few years. Their prediction is based on the fact that farms in general have become larger in size and fewer in number with each passing year. This development has been dictated in large part by the need to grow in size to offset bigger and more expensive equipment used in all facets of an operation. Small farm operations, not being able to justify large capital outlays, have often fallen by the wayside.

Some small vegetable operations have survived and prospered without having to grow in size. This was done largely by adapting rapidly to the changing situation. Successful operators modified their production and marketing practices to become proficient in specialized areas not commonly covered by the big production unit. There is ample opportunity to do this now and even to expand the number of small operations. To do this, it is necessary to take stock carefully of the resources available and to direct those resources to the best advantage to a pre-determined, specialized market. Rather than attempt to describe in detail the process which might be involved in determining specialized areas to select, it might be advisable to list some of those that have proven successful in the past or are thought to offer possibilities of being successful in Florida.

(1) On-Farm Retailing - Simply refers to systems of market whereby vegetables are sold on the farm to the consumer. This method of marketing offers considerable appeal to the consumer. Types available are:

(a) Roadside Marketing - Offers good potential for many small operations throughout Florida. Production units need not be large or heavily capitalized. Vegetables such as sweet corn, garden peas, vine-ripe tomatoes, strawberries and others are naturals for roadside marketing operations because top quality is not generally available in the normal retail outlets. Most vegetables will sell in a roadside market at good prices.

(b) "Pick-Your-Own" Operations - This type of operation appeals to the consumer who is interested in good quality vegetables at reasonable prices. Many of the vegetables sold this way are frozen or canned at home. Pick-your-own operations have gained much popularity because they offer lower prices generally as well as an opportunity for families to "get out on the farm" for pleasure.

(c) Combination roadside marketing and pick-your-own operations - This type combines some of the benefits of each of the above.

(2) Specialty Operations - There are many possibilities which are lumped together into this category for convenience purposes. Generally, these include
operations where: (1) vegetables of unique types or (2) regular vegetables specially prepared and marketed are offered to the consumer. In other words, this category of small farm operations caters to markets not normally supplied by the large producers, buyers and retailers of standard vegetables. A few examples might suffice to demonstrate the many possibilities which do exist.

(a) Vegetables for ethnic groups - Many Americans of Asian, European, Latin American and other extractions use some vegetables which are not commonly found in the conventional retail outlets. When these markets are searched out and serviced well, they can be very profitable.

(b) Vegetables for "organic food" enthusiasts - There is a fast-growing demand for vegetables grown "organically." Those operators capable of finding these outlets and producing successfully for them stand an excellent chance of succeeding since prices received for organically-grown food are generally higher than those received for vegetables grown in the standard manner.

(c) Greenhouse, hydroponic or greenhouse-hydroponic vegetables - Many customers, like the "organic food" enthusiasts, feel that the quality of vegetables grown under specialized conditions is unsurpassed and are willing to pay a premium for them. Vegetables produced in this way can be sold at the farm level or through conventional retail outlets.

(d) Specially-prepared vegetables - This category includes those operations which capitalize on new and provocative ideas in preparing or presenting vegetable commodities to the consumers. A good example is fresh, shelled or cut table legumes (lima beans, garden peas, southern peas, snap beans and pole beans) properly handled and refrigerated, and sold at the producing unit on the farm or through local retail outlets. There are many other items which can be marketed profitably if some planning and imagination are used.

C. Choosing Fungicides for Efficiency in Vegetable Production

Growers often have a choice of several fungicides available to control diseases in some of the vegetable crops. The decision on which to choose for a specific application during the course of the growing season can mean the difference between profit or loss at the end of the season. There are no set "rules of thumb" which can be used to make the choice. The reason is that the situation may be completely different each time a fungicide has to be applied. There is, however, considerable information which can be used by the crop production manager to help him make the best choice possible.

First and foremost, the grower should identify the disease or diseases present and from past experience try to anticipate diseases which might develop shortly. The next step is to choose the best fungicide available for the particular disease present or anticipated. In choosing fungicides for subsequent application, some of the following points should be considered.

(1) Consider cost when two fungicides of equal potential for disease control are available, use the less expensive one.
(2) When using fungicides containing the heavy metals manganese, zinc, copper and iron, be sure to consider the fact that the heavy metals can be absorbed by plants and used in their growth processes. Excessive use of one can cause a toxicity of that element or a deficiency of one of the other heavy metals. It may be advisable to alternate these with each other and with those containing no heavy metals. Alternating fungicides may be beneficial from another standpoint. Even though several fungicides are reported to be about equal in disease control, scientists often observe small differences between fungicides on a particular disease. Alternating fungicides may help to obtain more uniform control of all diseases in addition to reducing the chance of developing nutritional unbalances or other side effects in the plant.

(3) When need for a certain minor element is anticipated or noted in a crop, it is often possible to supply that minor element to the crop and obtain good disease control by applying a fungicide containing the minor element in question. It is possible on some crops to supply copper, iron, zinc and manganese in this fashion.

The points discussed here are but a few considerations entering into management of the disease control program. These, however, are the ones often noted to have been overlooked when something goes wrong with crop growth or the control of diseases.

(Montelaro)

D. Herbicides for Pepper and Tomato Production

Herbicides are important tools in the production systems of most, if not all, vegetable crops. Thus, herbicide recommendations are continually being reevaluated and revised by extension and research personnel in the State. With the increase in use of full-bed mulch covers in peppers and tomatoes, a change in the format of herbicide recommendations has taken place. There are two major categories: (1) conventional or strip mulch culture, and (2) full-bed mulch culture. The latter category contains those materials recommended for use beneath the cover or sprayed over the top to effect weed control "at the hole" in the cover. At the present time, the materials listed in either section can be used in combination with cultivation to control weeds in the water furrow area between mulched rows.

The sequence of operations in full-bed mulch culture and the relationship to herbicide application is important. Some herbicides need to be incorporated to be effective. When these types are used under the cover treatments, they usually should be applied as close to the cover laying operation as possible. Frequently, this can be incorporated into the program without a great deal of difficulty by using a sprayer, a tiller to incorporate the material into the top of the bed, and a bed press or shaper to reform and firm the bed prior to the application of the mulch.

Don Burgis (Professor and Horticulturist) at AREC Bradenton has done extensive weed control work with peppers and tomatoes under both unmulched and full-bed mulch cover systems. In a previous Vegetarian (72-10), the herbicide and full-bed mulch culture research of Mr. Burgis was described in some detail.
The following tables contain evaluations from his work and others in the State. The tables are subject to last minute alterations prior to inclusion in Circular 196 (Chemical Weed Control for Florida Vegetable Crops), but for the most part will constitute the recommendations to be included. NOTE: Always check and read the container label before using the material. The following tables are abbreviated and labels should be consulted for remarks on application methods and precautions.

### PEPPERS

<table>
<thead>
<tr>
<th>Herbicides</th>
<th>Lbs./Acre (Active Ingredients)</th>
<th>Sandy Soils</th>
<th>Time of Application to Crop</th>
<th>Remarks on Application</th>
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<tbody>
<tr>
<td><strong>Unmulched or Strip Mulch Culture</strong></td>
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<tr>
<td>Dymid or Enide</td>
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<td>Preemergence</td>
<td>Incorporated</td>
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<td>Postthinning</td>
<td>Incorporated</td>
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<td>Pretransplant</td>
<td>Incorporated</td>
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<td>Vegiben</td>
<td>3</td>
<td>Posttransplant</td>
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<tr>
<td><strong>Full-Bed Mulch Culture</strong></td>
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<tr>
<td>Dymid or Enide</td>
<td>4-5</td>
<td>Preemergence</td>
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(1) All treatments are "preemergence" to weeds.
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<tr>
<td>Dymid or Enide</td>
<td>4-6</td>
<td>Preemergence/Postthinning</td>
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<td>Pretransplant</td>
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<tr>
<td>Treflan</td>
<td>3/8-1</td>
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<td>Vegiben</td>
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<td>Posttransplant</td>
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(1) All treatments are "preemergence" to weeds.

**NOTE:** The use of trade names in this publication is solely for the purpose of providing specific information. It is not a guarantee or warranty of the products named and does not signify that they are approved to the exclusion of others of suitable composition.

(Kostewicz)
II. HARVESTING AND HANDLING

A. Unit Handling of Produce

Consumers had the luxury of purchasing food supplies in 1972 with only 16 cents of every dollar earned which is the lowest on record. Since then, consumers have been increasingly resentful of rising food prices. When the government tried to control prices, more and more items were missing from the supermarket as industry refused to operate at a loss. Consumers need to be informed why food costs what it does, and that production and marketing expenses have risen and will continue to rise. For each dollar spent for fresh vegetables and fruits, the grower receives 32 cents, whereas marketing charges amount to 68 cents.

At the 1973 Convention of the United Fresh Fruit and Vegetable Association, it was emphasized that no single factor will have a greater benefit in holding down produce marketing expenses than the successful use of unitization and palletization. By this we mean the method of field assembly, precolling, handling, transporting and storing containers of vegetables and fruits on a horizontal platform or other unitizing device to hold the containers together. A survey of the supermarket industry showed that the 48'' x 40'' pallet was the standard pallet already in use by their industry. A survey of shippers showed that only about 36% of them were using 48'' x 40'' pallets, and the main objection of the non-users was unsuitable container sizes.

Industry members of the UFFV Association's unitization committee strongly urged the use of modular type containers constructed with standardized units or dimensions to make unitized shipments possible. January 1975 was established as the target date for achieving unit handling throughout the produce industry, and after that date receivers could refuse shipments of produce if they did not arrive in containers unitized on a 48'' x 40'' pallet. Incidentally, this pallet size is almost identical to the standard European pallet of 100 x 120 centimeters. The advantages and savings which the industry hopes to achieve with unitization would be realized by:

(1) Less labor with quicker and easier handling of produce.

(2) Better utilization of field trucks, fork lifts and other equipment.

(3) Better control of quality with less damage, less breakage and better arrivals.

(Showalter)
A. Does a Vegetable Garden Pay

I'm sure it is not news to anyone anymore to hear that backyard vegetable gardening is regaining the momentum of The Victory Garden era throughout the country, and certainly here in Florida. Lest anyone should doubt this, take note of a routine "public welcome" meeting on vegetable gardening held August 29 by the Extension Service in Sarasota. In the past, 100-200 people attending such a meeting would be a crowd. This time, over 1,000 people showed up.

Why this resurrection of gardening? A desire for better quality produce and ecological return to the land feelings are part of it, of course, yet most of those queried on this point at the Sarasota meeting indicated that by growing some of their own vegetables, they could do something about the rising cost of living.

But does vegetable gardening pay, or does the produce grown actually cost the gardener more than if he were to purchase it from a supermarket?

The answer is that gardening can pay, but does not always pay, depending upon the mode of operation and success of the gardener.

One can get an indication of the economic feasibility of growing vegetables at home by figuring the cost and returns for a sample garden. Therefore, let us assume that only tomatoes were planted on a very tiny plot, one row 4 feet wide and 25 feet long (100 square feet), and that these tomatoes were successfully grown.

At a spacing of 2 1/2 feet between plants in the row, 10 plants could be grown and expected to produce an average yield of 6 pounds of fruit per plant. Thus, the total row yield of edible fruit would be 60 pounds. The total monetary value of the crop, figured at the price one would have to pay at the store for the same produce, which is currently 35 cents per pound, would be $21.00.

Cost of producing the 60 pounds of tomatoes must be figured based on hypothetical inputs, with a complete gardening program assumed. Items of cost would be: (1) seeds (35¢); (2) fertilizer (25 pounds for $1.65); (3) pesticides ($3.00); (4) water ($5.00); (5) equipment ($5.00 - note: entire cost of a sprayer should not be charged to the tomatoes, as it would be used for more than one season and for more than one crop). Total cost (money expended) would be $15.00.

Therefore, net earnings on the row of tomatoes would be about $6.00. Another way to look at it is that this represents a savings of $6.00, since the person gets $21.00 worth (60 pounds) of tomatoes for $15.00.

Of course, a lot of variables might be inserted which would alter the net earnings one way or the other. For example, the gardener could utilize improvised equipment, such as an old sock for applying dust, and reduce the equipment cost from $5.00 to $1.00 and total cost from $15.00 to $11.00. The net "savings" would then amount to a total of $10.00.
received from 10 tomato plants. The elimination of pesticides altogether might further reduce production costs by another $3.00, and total costs from $11.00 to $8.00. Providing that yields were not also reduced, the net "savings" could then be $13.00.

Should yields exceed the 6 pounds per plant figure, then, of course, the value would increase even further. Without further expenditures, yields could go up to 10 pounds of edible fruit per plant for a total of 100 pounds of tomatoes valued at $35.00.

Given the possibility of high yields (10 pounds per plant) in combination with minimum inputs (no pesticides and equipment improvements), the net "savings" could be maximized at $27.00.

On the other hand, total crop loss could result in a minus net value; the same would be true for excessive expenditures, such as a gasoline powered roto-tiller (note: such equipment could pay off, however, over a long time and given sufficient scope of production).

Labor inputs and crop value are other factors which must be considered in order to get a true picture of the monetary value of a garden. Labor costs have not been charged to the production costs since one is assumed to do the gardening in his own free time. Tomatoes are a relatively high valued crop, at 35 cents per pound compared to potatoes at 15 cents per pound. The costs of production would be similar for both crops (excluding labor) yet yields and returns per pound would alter the net return value.

Further obscuring the picture is the fact that yields occur during such a short period of time that surpluses would result. Waste and spoilage would then reduce the net value, unless ways of preserving or storing were utilized, such as canning or freezing. If processing were utilized, further costs would have to be assessed against the crop, with the possibility of reduced values accompanying the comparison of fresh produce pricing with processed produce pricing.

So the overall answer to the question, "Does a vegetable garden pay?" must be answered by a somewhat wishy-washy, "It depends!"

Monetarily, some will profit and some will lose. However, there is something of value to be gained by anyone endeavoring to have a vegetable garden in Florida. Whether or not these values are ever obtained depends on the circumstances surrounding each individual case.

(Stephens)

B. Know Your Vegetables - Sarsaparilla

While not vegetables according to the usual classification, sarsaparilla and sassafras should be mentioned here due to their minor importance as aromatic herbs.

Sarsaparilla, the "good guy" drink of the early American western movies is made from the dried roots of several various species of Smilax. Three of these species are Smilax officinalis, Smilax papyracea, or Smilax medica. It does not come from the sassafras tree as some have been led to believe.
Sassafras is a tree of the laurel family, *Sassafras variifolium*. The leaves, stem bark, and root bark contain volatile oils and odors. In Florida, sassafras spreads rapidly over abandoned fields by means of suckers from the roots. The bark is sometimes used in water as a tea. Also, the oil is sometimes distilled from the roots.

(Stephens)