The VEGETARIAN Newsletter
September 5, 1974

Prepared by Extension Vegetable Crops Specialists
J. F. Kelly  James Montelaro  J. M. Stephens
Chairman  Professor  Associate Professor
S. R. Kostewicz  J. R. Hicks  R. K. Showalter
Assistant Professor  Assistant Professor  Professor

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

FROM: James M. Stephens, Extension Vegetable Crops Specialist

VEGETARIAN NEWSLETTER 74-9

IN THIS ISSUE:

I. COMMERCIAL VEGETABLE PRODUCTION
   A. Foliar Fertilization of Vegetables
   B. Fertilizer Use on Muck Soils
   C. Wettable Powder Formulated Herbicides

II. HARVESTING AND HANDLING
   A. Machine Harvesting and Vegetable Quality

III. VEGETABLE GARDENING
   A. Timely Gardening Topics
   B. Know Your Vegetables - Salsify
   C. Common Sense Needed in Distribution of Vegetable Crops

Publications

NOTE: Anyone is free to use the information in this newsletter. Whenever possible, please give credit to the authors.
**THE VEGETARIAN NEWSLETTER**

**I. COMMERCIAL VEGETABLE PRODUCTION**

**A. Foliar Fertilization of Vegetables**

Vegetable growers facing increased costs for fuel, fertilizer, seed, etc., must examine all production costs carefully to effect savings wherever possible. This newsletter, over the past year, has attempted to assist growers in doing this by pointing out practices which might be modified to reduce production costs, however small. This is another in the series which deals with the use of soluble fertilizers for foliar feeding of vegetable crops.

Many vegetable growers continue to use considerable amounts of N-P-K foliar fertilizers in spite of the fact that research at experiment stations throughout Florida and elsewhere has shown that there are no significant economic benefits to be derived from their use over the standard methods of application to the soil. Following are some quotes made by workers who conducted research at several locations on this subject.

**Geraldson - Bradenton, 1951** - "Extensive trials on the Station Farm in Bradenton and on the farm of a "grower“ at Ruskin indicate that crops with high fertility requirements, such as the tomato, showed little or no response to foliar feeding as far as the major elements were concerned."

**Montelaro - Gainesville, 1951** - "Results indicate that no benefit was derived from foliar applications of urea nitrogen, whether alone or in combination with soil nitrogen, when compared with equal amounts of nitrogen applied to the soil."

In a second test - "No significant differences were found between the two sources (sodium nitrate as sidedressing on the soil and urea N as a spray) in total yield and number of fruits harvested."

**Forsee & Hayslip - Ft. Pierce, 1952** - "Yield trends were in favor of the nutritional sprays in that the average total yields for any of the spray treatments were slightly higher than the check (unsprayed). However, these yield trends were not statistically significant."

(Note: Check plot was unsprayed and therefore received less total nitrogen than sprayed plots.)

**Geraldson - Bradenton, 1953** - "This indicates that root feeding is preferable and that foliar feeding should be regarded only as an emergency measure. Tomatoes and cucumbers did not respond to nutritional sprays or to extra nitrogen."

**Malcolm - Homestead, 1953** - "Although some differences in yields were found in the fertilizer spray test (on tomatoes) none of these was sufficiently large or consistent to be reliable."
McCubbin - Hastings, 1953 - Testing foliar nitrogen sprays versus sidedress nitrogen on cabbage - "There were no significant differences among treatments."

On potatoes - "The sidedressed and sprayed plots out-yielded the check plots, but the difference in yields was not significant." (NOTE: Check plots received no supplemental nitrogen.)

If the above information is not convincing enough, consider the total amount of N-P-K found in a fully-grown vegetable crop and how many foliar applications would be needed to supply these large amounts at rates of 2 to 5 lbs. per application. Analyses at Bradenton showed that a fully-grown crop (including fruit) of tomatoes contained 320 lbs of N, 139 lbs. of P₂O₅ and 528 lbs. of K₂O. As many as ten foliar applications at the usual rates of 2 to 5 lbs. each would supply only a small part of the total fertilizer needed.

There are other considerations which strengthen the argument against foliar feeding. If applied separately from pesticides, the added fuel, machinery and labor use would increase production costs significantly. Applied with pesticides, foliar fertilizers may react in the tank in such a way as to reduce effectiveness of one or more of the pesticides or to cause foliar injury to the crop.

Cost comparisons between most foliar fertilizers and the standard types applied to the soil generally show that the foliar materials are much more expensive. In many cases, response to foliar fertilizer noted by growers may not be directly from leaf absorption but from root absorption following rains that washed the fertilizer from the leaves to the ground.

The benefits, if any, to be derived from the use of foliar fertilizer are far outweighed by the added costs and problems which may result from their use. It must be pointed out, however, that foliar feeding can and should be used to correct certain deficiencies in growing crops, particularly micronutrient deficiencies.

(Montelaro)

B. Fertilizer Use on Muck Soils

During the present period of fertilizer shortages and high prices, vegetable growers on the mucklands of Florida could, in many cases, reduce rates of application of fertilizer without reducing yields. Depending on the area, soil analysis, etc., reduction in fertilizer usage may entail savings in use of nitrogen, phosphorus, potassium and minor elements. Last month, this newsletter reported research results obtained at Belle Glade to support the fact that during the present fertilizer crisis, phosphorus rates could be reduced significantly if properly placed, without reducing crop yields or quality. Work conducted by Dr. R. B. Forbes at Zellwood further strengthens the feeling that fertilizer usage on vegetable crops on the muck soils can be reduced without serious consequences. At a vegetable field day in May at Zellwood, he reported findings of a fertilizer rate study for cabbage on muck soils. Prior to addition of fertilizer, the soil tested as follows: pH - 7.1, P₂O₅ - 73 lbs./A and K₂O - 168 lbs./A. He concluded that "There was no yield increase from any of the treatments. The quality factor (width of head), a measure of head firmness, was weight
influenced only very slightly. Added nitrogen gave a poorer quality, a tendency toward more puffy heads. The best treatment supplied no nitrogen, 80 lbs. P\textsubscript{2}O\textsubscript{5}, 120 lbs. K\textsubscript{2}O and 80 lbs. MgO/acre.

A test completed on sweet corn in late spring showed similar results. Forbes found no statistically significant differences in yield when he tested 16 combinations of N, P\textsubscript{2}O\textsubscript{5}, K\textsubscript{2}O and MgO. The results are presented in Table 1.

Table 1. Treatments and Yields on the Sweet Corn Fertilizer Trial

<table>
<thead>
<tr>
<th>Treatment, lb/acre</th>
<th>Average yield cwt/acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 0 0 0 0</td>
<td>148.1</td>
</tr>
<tr>
<td>2. 0 0 0 80</td>
<td>142.3</td>
</tr>
<tr>
<td>3. 0 0 100 80</td>
<td>124.9</td>
</tr>
<tr>
<td>4. 0 50 100 80</td>
<td>136.4</td>
</tr>
<tr>
<td>5. 0 50 0 0</td>
<td>139.4</td>
</tr>
<tr>
<td>6. 0 50 100 0</td>
<td>137.9</td>
</tr>
<tr>
<td>7. 0 50 0 80</td>
<td>136.4</td>
</tr>
<tr>
<td>8. 0 0 100 0</td>
<td>122.0</td>
</tr>
<tr>
<td>9. 40 0 0 0</td>
<td>139.4</td>
</tr>
<tr>
<td>10. 40 0 0 80</td>
<td>140.2</td>
</tr>
<tr>
<td>11. 40 0 100 80</td>
<td>130.7</td>
</tr>
<tr>
<td>12. 40 50 100 80</td>
<td>136.4</td>
</tr>
<tr>
<td>13. 40 50 0 0</td>
<td>111.8</td>
</tr>
<tr>
<td>14. 40 50 100 0</td>
<td>136.4</td>
</tr>
<tr>
<td>15. 40 50 0 80</td>
<td>153.9</td>
</tr>
<tr>
<td>16. 40 0 100 0</td>
<td>151.0</td>
</tr>
</tbody>
</table>

LSD .05 no significant difference

Vegetable growers on the muck soils of Belle Glade use very little nitrogen. However, it is a common practice to apply nitrogen in the Zellwood area. Some nitrogen may be needed during periods of cool weather when nitrification is slow, but certainly not in the warm periods of fall and spring. Growers should have soil tested for phosphorus, potassium and magnesium and should adjust rates of these elements according to the residual levels shown in the soil test.

(Montelaro)

C. Wettable Powder Formulated Herbicides

Some herbicides are not soluble in water and may or may not be soluble in organic solvents. In these cases, the wettable powder formulation is frequently used as the retail unit. A wettable powder is made by placing the active ingredient chemical on an inert carrier chemical and then finely grinding the resulting combination.

The wettable powder does not form a solution when added to water. The particles must be dispersed in the spray water by agitation. If the mixed spray is allowed to stand without agitation, the particles settle to the bottom of
the tank. Such a condition would lead to a varying rate of application due to the difference in concentration between the top and the bottom of the tank.

To prevent this situation from occurring, agitation is a requirement in the spray tank with wettable powders. There are several methods of agitation used from the simple by-pass jet agitator to mechanical agitation with paddles mounted inside the tank. Most herbicide workers feel that mechanical agitation is the best means to insure thorough mixing of the spray solution. This method, however, usually is expensive and requires periodic maintenance.

When using wettable powder herbicides:

(1) Make certain adequate agitation is provided for in the spray tank.

(2) When adding the powder to the spray tank:

(a) Have a moderate amount of water already in the tank.
(b) Mix powder into a small quantity of water in a bucket to form a slurry.
(c) Pass slurry through a screen when adding it to the spray tank (removes lumps, etc.).
(d) Fill tank and agitate spray solution before beginning application.
(e) Use nozzle screens.
(f) Check and calibrate frequently. Wettable powder sprays are abrasive and will enlarge the nozzle openings after a period of time.

(Kostewicz)

II. HARVESTING AND HANDLING

A. Machine Harvesting and Vegetable Quality

Mechanical harvesting of Florida vegetables has made big strides in recent years. Most of the labor required for vegetables comes in harvesting and handling the crop. When this labor became less available and much more expensive, machines were used instead of people. Harvesters for potatoes, radishes and carrots were the first to be utilized. At present, most snap beans and a large portion of the celery and sweet corn crops are machine harvested. Other major vegetable crops will probably be machine harvested when present harvesting systems are no longer feasible and when suitable mechanical means are available.

There are many factors involved in changing a harvesting system and ideally the ultimate system should be satisfactory to all concerned, from grower to consumer. The goal in mechanical harvesting is to maximize economic returns by maximizing yield and quality. The change from hand to once-over machine harvesting of certain vegetables, including those mentioned above, has been accomplished without changing varieties. For others, varietal changes were required. Varieties better adapted to mechanization and with better consumer qualities can be developed and should be included in the research objectives for new varieties. Quality factors related to machine harvesting are the physical attributes such as maturity, mechanical damage and trash.
The effects of machine harvesting on quality vary considerably among the different vegetables.

(1) Maturity - The carrots and radishes grown in Florida are much better adapted to machine harvest than the snap beans. Small carrots and radishes are removed by sizing machines before packaging, mainly to achieve uniformity rather than because of their lack of eating quality. Our snap bean varieties that were developed for multiple pickings still have blossoms along with mature pods when machine harvested. The pods less than 1/4 inch in diameter lose moisture rapidly during marketing and if they are not sorted out at the shipping point, the wilted pods reduce the marketability of the entire harvest. Celery and potatoes have a wide range in maturity and size when machine harvested, but there is a demand for these sizes when they are packaged separately. In contrast, sweet corn has a very narrow maturity range when the ears have good eating quality. Small ears with immature kernels (usually the second ear on the stalk) should not be marketed.

(2) Mechanical damage - Among the root vegetables, bruising during harvesting is a much more serious problem for potatoes than for carrots and radishes. Proper cushioning on potato harvesters greatly reduces bruising and the occurrence of tuber diseases that start as a result of mechanical damage. Along with mechanical harvesting the type of handling has changed from containers to bulk loads throughout the mechanized handling and preparation for market.

The handling systems following machine harvest of celery, sweet corn and snap beans are still being developed. The few celery petioles that are bruised or broken by the harvesters are on the outside of the stalk, are easily visible and are removed during hand stripping. Severe crushing of sweet corn kernels by the harvesters can be seen on the outside of the husk, and these ears may be discarded by the packers. However, pressure sufficient to break 5 to 15 kernels often goes unnoticed by the packers, and the hidden damage becomes apparent when ears are prepared for retail sale or cooking. Machine harvesting has had the greatest detrimental effect on snap beans in the form of broken pods which discolor and may decay in fresh market channels. Mechanical broken bean eliminators greatly improve the quality, but will continue to reduce yields until improved varieties or harvesters are available.

(3) Trash - Machine harvesting of potatoes results in varying amounts of vines, weeds, soil and clods being delivered to the packinghouse. Special pieces of equipment such as a clod eliminator in the water flume, have been developed to remove extraneous materials from potatoes, and the remainder must be sorted out by hand. Machine-harvested snap beans may differ from hand-picked beans in the amount of stems, leaves, weeds, rocks, etc., that are picked with the pods. Mechanical equipment can remove these unwanted materials except for clusters of hard-pulling pods which must be separated from their stems by hand labor. An important problem associated with sweet corn harvesters is elimination of stalk sections, leaves and shanks at the base of the ear. Suitable equipment is not yet available to prepare machine-harvested ears for packing; therefore, more hand labor is needed than for hand-harvested sweet corn.

Harvesters uniformly top carrots, radishes and celery in the field. After washing, these vegetables have a better, more uniform appearance than hand-harvested lots. In order to market high-quality produce from various mechanical harvesting systems, adequate sorting to remove unnecessary materials and grading into various quality levels are very important.

(Showalter)
III. VEGETABLE GARDENING

A. Timely Gardening Topics

These questions and answers are suggested 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 September 15-21.

Question

Having just moved to Florida, I would like to know which, if any, vegetables I can plant in my garden in the fall for winter production.

Reply

Fortunately for Florida gardeners, our mild winters allow us to plant a wide assortment of kinds and varieties of vegetables at this time of year. Keep in mind, however, that most areas of the State experience frost or freezing temperatures during the period of November through February. In these areas, such warm-season crops as cucumbers, beans and tomatoes must be sequenced into production between such plant damaging cold and the hazards of the hot humid summer months. In sections of South Florida, where frosts rarely occur, these warm-season crops may be planted from now on through the winter. On the other hand, it is becoming seasonal throughout the State for the cold hardy vegetables such as cabbage, radishes and strawberries. For the best times to plant, get a copy of Extension Circular 104, "Vegetable Gardening Guide."

(2) Timely Topic for week of September 22-28.

Question

Why do the parsnips I grow down here taste so flat compared to those I used to grow up North?

Reply

Parsnip roots must be subjected to winter cold near the freezing point to change the starch to sugar and give it the sweet nut-like flavor for which it is famous. Seeds take a long time (15-25 days) to germinate and a long time to mature (100-120 days). Be sure to plant them in time for the roots to mature in the coldest part of the winter.

(3) Timely Topic for week of September 29-October 5.

Question

I would like to pot some herbs for inside decor. Which ones should I choose?

Reply

The better potted herbs for indoor culture are basil, chives, mints, parsley, sweet marjoram, and rosemary.
(4) Timely Topic for week of October 6-12.

Question

I would like to grow my own mushrooms at home. Is this feasible?

Reply

Production requirements for mushrooms are so exacting, requiring strictly controlled conditions, especially temperature and humidity, that home production would probably be disappointing. Since mushrooms do not require light for growth, they are grown in darkness for better control of temperature and humidity. In addition, production requires especially prepared "spawn" and compost.

There are very small homeowner kits for sale at garden supply centers and through seed and garden supply catalogs. While such kits introduce you to the concept of mushroom production, they generally provide too few mushrooms for most families' needs.


Question

I have some gourds which I want to prepare for decorating. How should I go about this?

Reply

Wash fruits in warm, mild soapy water, then rinse and dry. A household disinfectant added to the clear rinse water can reduce decay organisms. Lay gourds on several layers of newspaper in a dry, airy place to remove surface moisture. Do not dry in direct sunlight as they could lose their color. Gourds should be thoroughly dry before shellac is applied. Immature specimens of some species may take several months to dry completely. Keeping these cooler than 65°F will help retard shriveling during the drying and curing process. Sanding and scraping the surface of some gourds improve drying and enhance their appearance. Some gourds could be used without waxing, or shellacing, but such treatment makes many others more attractive.

(Stephens)

B. Know Your Vegetables - Salsify

Salsify (Tragopogon porrifolius) is also known as the oyster plant or vegetable oyster. It is grown for the edible root which has a flavor like that of oysters. Salsify is grown only occasionally in Florida home gardens.

The plant is a biennial belonging to the same family of plants as chicory and dandelion. It is grown as an annual with culture similar to that for parsnips or carrots. The long, slender, tapering, smooth leaves are about 1 inch in diameter at the crown and are 10 to 12 inches long. Roots are 8 to 12 inches long, cylindrical, an inch or less in diameter and salamon or brown in color.
Salsify requires a long-growing season of 120 to 150 days from seeding to harvest. In the northern states, it would be planted in the spring and harvested in the fall. In Florida, the best production period would be from October through March, as it will withstand frost.

The seedlings should be thinned to 3 to 4 inches apart in rows 18 to 24 inches apart. Cover the seed 1/2 inch deep. The variety 'Mammoth Sandwich Island' is most common.

Salsify is used in soups and stews; it is boiled, but into small pieces and creamed like asparagus; or it is cut into long strips, boiled, then fried in butter; or it may be mashed.

(Stephens)

C. Common Sense Needed in Distribution of Vegetable Crops Publications

We are asking all County Extension Agricultural Agents working in vegetable gardening or commercial vegetable production to take a close look at the way both types of publications are distributed to the public. The reason for this request is that printing costs have increased tremendously. Funds are not available to supply the demand for vegetable publications of all types unless care is taken to eliminate wasteful distribution.

Vegetable publications revised in the future will carry on the front page the statement "For commercial producers only" or "For vegetable garden use only" for commercial and vegetable gardening publications, respectively. We suggest that County Extension Agents:

(1) Never give a commercial vegetable guide to a vegetable gardener. They are too expensive to print and contain recommendations for chemicals which should not be used by home gardeners.

(2) Stop blanket mailings. Check your mailing lists and mail publications only to those needing, e.g. don't send the recently revised "Pepper Production Guide" to a vegetable producer who does not grow or is not interested in growing peppers.

(3) To insure that each county gets its "fair share" of new releases of commercial vegetable publications in the future, the Vegetable Specialists will give the Bulletin Room Office a guide list for first mailings. Additional copies can be ordered from the reserve supply by letter explaining the request.

We feel we can keep County Extension Offices well supplied with commercial vegetable publications if they cooperate fully with us. The vegetable gardening publications are being printed as rapidly as funds permit. Here, too, we ask your cooperation in distributing these with good common sense.

(Kelly, Montelaro)