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

FROM: Stephen R. Kostewicz, Assistant Vegetable Crops Specialist

VEGETARIAN NEWSLETTER 74-6

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THE VEGETARIAN NEWSLETTER

I. COMMERCIAL VEGETABLE PRODUCTION

A. Dolomite as a Source of Magnesium

Magnesium sulfate (Epsom salt) has been used in large quantities in Florida to supply magnesium in fertilizer mixes and for foliar application to vegetable crops. As any grower or fertilizer representative knows, magnesium sulfate is in extremely short supply this season. The severe shortage is apt to continue into next season also.

The shortage of magnesium sulfate need not create undue problems. We have an adequate supply and inexpensive source of magnesium in dolomite. The dolomite mined and sold in Florida averages 36% magnesium carbonate (MgCO₃) with the balance being calcium carbonate (CaCO₃). Dolomite, if properly used, can supply all the magnesium that is needed for most of our crops. "Properly used" means that dolomite, a liming material, must be applied before planting.

The following "rules of thumb" are given to assist growers in using dolomite to supply magnesium and to increase soil pH.

1. Have soil tested at least three months before planting.

2. From the pH soil test, determine how much lime is needed.
   a. Use about 200 lbs. of lime for each 0.1 unit increase in pH level desired for sandy soils. Use proportionately more in soils like clays and mucks with greater buffer capacities.
   b. Take into consideration "Summer pH" or have a KCl pH determination made. Simply, a KCl pH test simulates the change in pH affected by addition of acid-forming fertilizer salts. A pH test taken on unfertilized soil in summer may drop as much as 1.0 pH unit by mid-winter from addition of acid fertilizers.

3. From the calcium and magnesium levels shown by the soil test, determine the type of lime (dolomite or high calcic) needed. Vegetables grow best when calcium to magnesium ratio is maintained in a range of 4:1 to 8:1.
   a. If Ca/Mg ratio is 3:1 or lower, use high calcic limestone.
   b. When Ca/Mg ratio is 9:1 or higher, use dolomite.

4. Apply lime two months before planting and disk well into the soil.

In general, dolomite, if used alone, will maintain the pH of most of our soils at a level of about 6.4 to 6.5. Growers who wish to raise crops at pH levels higher than 6.5 should use some high calcic limestone from time to time. However, benefits to be derived from a pH higher than 6.5 may be overshadowed by problems created in availability of micronutrients.

(Montelaro)
B. Cover Crops in Vegetable Production Operations

Recent shortages and high cost of fertilizer materials have forced growers to review their overall production practices in an effort to maintain growing costs at reasonable levels. Most vegetable growers are making a sincere effort to conserve energy, fertilizer, pesticides, labor, etc. Some are finding out that their efforts are paying off quite satisfactorily.

In the last issue of this newsletter, we discussed crop rotation, a practice recommended for decades to vegetable growers as a means of reducing crop losses from soil pests. Crop rotation, rightfully, should be used in conjunction with "cover cropping," the subject of this article. Cover crops are defined as those crops which are planted for plowing under. Cover crops can serve to add organic matter to the soil, conserve fertilizer nutrients in the off-season, help prevent wind and water erosion and, in the case of legumes, add nitrogen to the soil. The greatest benefit to be derived from cover cropping is the overall improvement of soil conditions including aeration, water percolation, buffer capacity, general tilth, etc.

The selection of a cover crop depends on a number of considerations. For instance, a green bean grower should not plant a legume as a cover crop for the simple reason that all legumes encourage the same group of soil pathogens. In view of this, a bean grower should plant a crop that is not closely related, like oats, rye, sorghum, etc. The legumes, however, are excellent cover crops to plant in rotation with all other vegetable crops except the table legumes. Legumes, as cover crops, not only provide the general soil benefits which can be derived from the non-legume cover crops, but can add considerable amounts of nitrogen to the soil. It has been shown that a good crop of soybeans can add as much as 300 pounds of nitrogen per acre if turned under green. Considering the value of added nitrogen, possible reduction in soil diseases and general benefits to soil conditioning, legumes certainly are worthwhile cover crops.

In addition to the potential benefits to be derived from a cover crop, growers should consider undesirable side effects such as nematode susceptibility, hard seed germinating over a period of years creating new weed pests, slow breakdown of plant residue which might interfere with subsequent vegetable production operations, etc.

Some of the cover crops that have been grown in Florida with success are:

(1) Legumes: Cowpeas (southern peas), soybeans, pigeon pea, hairy indigo, vetch, several clovers, crotalaria

(2) Grasses: Oats, barley, rye, sorghums

Cover cropping is an old, proven practice which can return many benefits to the grower of vegetables on most of our mineral soils. Although not easily measured in increased yields and net returns, growers can rest assured that the benefits which may be derived from cover cropping can be quite significant.

(Montelaro)
C. Weed Control Between the Seasons

The Florida vegetable season is nearing an end in South and Central Florida and many growers are thinking of next season's plans. Included in the planning should be a program to control problem or noxious weed species during the fast approaching "off-season" months. Some of the areas to consider are: (1) ditchbanks, (2) fence rows and border areas, (3) patches of hard-to-control perennial weeds in cropping areas, (4) around buildings and equipment storage areas, and (5) the cropping area to prevent a build-up of weed seeds in the soil. Each of these areas was touched on in previous articles in this newsletter.

Dealing with the problem areas mentioned is usually put off during the production year because of more pressing chores of the time. Certainly, some practices utilized by growers during the off-season help to control weed problems in the cropping area—flooding, cover crops, cultivation, etc. Other areas such as border areas or fence rows have been recently characterized as the most poorly managed areas on the farm in regards to weed control. These areas have become sources or pools of weed seeds for infesting the cropland. During the less hectic off-season, an effort to keep weeds down in these areas can reduce weed pressures in the cropping season.

Wide spectrum contact herbicides or in some instances "brush killer" hormone type herbicides can be used if done with care and judicious application. The misuse of these types of materials can result in injury to non-target plants by drift or misdirected spraying. To avoid this problem, the use of spray additives (foaming materials, thickening agents, etc.) and/or the use of appropriate nozzle tips (foam, large particle-forming, or flood jet tips) should be used in addition to proper application technique.

The use of cultural techniques in addition to herbicides can increase the effectiveness of the weed control program if combined properly. For example, if a broad-leaved perennial were a problem in a particular section of the field, the following approach could be taken. Apply a "hormonal" type herbicide that would be carried by the normal plant processes down into the roots of the weed. After sufficient time to allow this movement to occur has elapsed, the area could be plowed, disked, or mowed to stimulate a regrowth of the weeds. This would serve to drain the supply of stored foods in the roots of the weed. After the regrowth has reached a stage prior to maturity, a second cycle can be applied to further drain the reserves of the population. Eventually, the perennial weed will be killed so that no regrowth occurs.

In many instances, merely maintaining areas by mowing can reduce the potential weed problems. Mowing existing weeds frequently enough to prevent seed production accounts for the reduced potential. Occasional hand hoeing of problem spots can also lead to a reduction in the seriousness of the problem.

In summary, the grower is urged to consider the upcoming off-season as an excellent time to deal with some of his lingering trouble spots of weeds. By analyzing what and where the problems are and evaluating what combinations of methods he has at his disposal, he can get a headstart on a weed control program for next season's crop.

(Kostewicz)
D. Florida State Horticultural Society

The 87th Annual Meeting of the Florida State Horticultural Society will be held November 5-8, 1974 at the Carillon Hotel in Miami Beach.

The Society encompasses activities in vegetables, citrus, garden and landscape, handling and processing, krome memorial and ornamental horticulture. More than 100 authoritative papers will be presented at the meeting. All presentations are made available in journal form--Proceedings of the Florida State Horticultural Society.

The Society has led in the advancement of Florida horticulture and will continue to do so. It serves as an open forum for growers, processors, salesmen, research workers, County Agricultural Agents and all others interested in horticulture to discuss and resolve problems of mutual concern. If you are not a member, we urge you to consider joining the Society. Annual membership dues are $6.00. Student membership dues are $3.00. Send your check to:

Florida State Horticultural Society
Office of the Secretary
P. O. Box 552
Lake Alfred, Florida 33850

(S. J. Locascio, Professor and Horticulturist)

II. HARVESTING AND HANDLING

A. Shipping Containers

The September, 1973 Vegetarian contained an article on unit handling of produce or palletization. The complexity of this problem is brought into focus by Marketing Research Report No. 991 by Drs. Donald R. Stokes and Glenn W. Woodley. (Available from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C., 20402 - Stock Number 0100-02837, price $1.45.) This publication reports on the number of different containers for fresh fruits and vegetables found in two terminal markets. As an example, there were 35 different size containers for tomatoes, 27 for lettuce, 13 for peppers, 11 for potatoes, 11 for cucumbers, etc. The total number of different size containers was 371. Very few (17%) of the containers could be stacked to utilize as much as 90% of the space on a standard 48" x 40" pallet. The problem becomes much greater when several commodities are being stacked on the same pallet as is often done when making up loads at a warehouse for store delivery.

Europe has developed recommended dimensions for containers of perishable products involved in international trade. The container sizes recommended by the Organization for Economic Cooperation and Development are 40 x 30, 50 x 30, 50 x 40, and 60 x 40 cm (which would be 15 3/4 x 11 3/4, 19 3/4 x 11 3/4, 19 3/4 x 15 3/4, and 23 3/4 x 15 3/4 inches). All of these containers fit the 48 x 40 inch pallet (or the 120 x 100 cm pallet) with over 96% of the surface area utilized. As Drs. Stokes and Woodley point out, if the European recommendations gain widespread acceptance, it could create real problems with any export shipments that are in "odd size" containers.
It is also pointed out that restricting the size and type of containers too severely might lead to the following difficulties if improper containers were selected:

"(1) problems in packing and increased packing cost,
(2) poorer product protection and
(3) increased container damage."

However, the possible benefits or proper containers include:

"(1) Economies in manufacture or fabrication of containers.
(2) Economies in packing labor.
(3) Lower inventory investments in packing materials.
(4) Greater utilization of space in transport vehicles and at all other levels of storage and distribution.
(5) Reduced costs of handling.
(6) Improved product protection.
(7) Reduced container damage."

The produce industry is rapidly approaching the point where it cannot afford the luxury of manually handling individual containers. The first step in palletization should be the adoption of containers which are compatible with the pallet. The second logical step would be to limit the number of container sizes so that different commodities would be in compatible size containers.

(Hicks)

B. Water Chlorination

The enclosed Fact Sheet on Water Chlorination is available from the Vegetable Crops Department. Contact us for additional copies.

(Hicks)

III. VEGETABLE GARDENING

A. Timely Gardening Topics

These questions and answers are suggested here for your use in developing periodic (weekly) radio or newspaper shorts. They are based on letters of inquiry from gardeners around the State.

(1) Timely Topic for week of June 16-22.

Question

Now that my spring garden is just about gone, what vegetables might I plant for the summer?

Reply

Many vegetables will grow quite satisfactorily in the summer in Florida, but are bothered more than usual by insects, diseases and weeds, along with the seasonal
heat and heavy rains. Most of the cool-season crops such as radish, carrots, lettuce, English peas and cabbage should not be planted at this time. Crops that can be grown with adequate care and fair results are pole beans, lima beans, southern peas, okra, cucumbers, squash, pumpkins, sweet potatoes, sweet corn, Swiss chard, New Zealand spinach, mustard, collards, peppers, eggplants, and cherry tomatoes. While these are not all of the crops which can be grown here at this time, they should provide you with an ample assortment for the summer.

(2) Timely Topic for week of June 23-29.

Question

I have trouble using the fertilizer recommendations given in gardening books, as they are usually given in pounds per 100 square feet or even larger amounts. Can you help me convert to smaller amounts of fertilizer for the few plants I have?

Reply

Although mixed fertilizers (10-10-10, 5-10-5, etc.) will vary some with moisture content and texture, they generally weigh about 9/10 that of water. Here is a little table that may help you.

<table>
<thead>
<tr>
<th>Weight of Mixed Fertilizer</th>
<th>Per 1000 sq. ft.</th>
<th>Per 100 sq. ft.</th>
<th>Volume Measure for 100 sq. ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,960 Pounds</td>
<td>45 Pounds</td>
<td>4 1/2 Pounds</td>
<td>5 Pints</td>
</tr>
<tr>
<td>1,650 &quot;</td>
<td>38 &quot;</td>
<td>3 3/4 &quot;</td>
<td>4 &quot;</td>
</tr>
<tr>
<td>1,220 &quot;</td>
<td>28 &quot;</td>
<td>2 3/4 &quot;</td>
<td>3 &quot;</td>
</tr>
<tr>
<td>1,000 &quot;</td>
<td>23 &quot;</td>
<td>2 1/4 &quot;</td>
<td>2 1/2 &quot;</td>
</tr>
<tr>
<td>785 &quot;</td>
<td>18 &quot;</td>
<td>30 Ounces</td>
<td>2 1/4 &quot;</td>
</tr>
<tr>
<td>610 &quot;</td>
<td>14 &quot;</td>
<td>21 &quot;</td>
<td>1 3/4 Cups</td>
</tr>
<tr>
<td>390 &quot;</td>
<td>9 &quot;</td>
<td>15 &quot;</td>
<td>1 &quot;</td>
</tr>
<tr>
<td>300 &quot;</td>
<td>7 &quot;</td>
<td>11 &quot;</td>
<td>3/2 &quot;</td>
</tr>
<tr>
<td>200 &quot;</td>
<td>4 3/4 &quot;</td>
<td>7 1/2 &quot;</td>
<td>4 Tablespoons</td>
</tr>
<tr>
<td>100 &quot;</td>
<td>2 1/4 &quot;</td>
<td>3 1/2 &quot;</td>
<td>1 &quot;</td>
</tr>
<tr>
<td>50 &quot;</td>
<td>18 Ounces</td>
<td>2 &quot;</td>
<td>3/2 &quot;</td>
</tr>
<tr>
<td>11 &quot;</td>
<td>5 &quot;</td>
<td>1/2 &quot;</td>
<td>1 &quot;</td>
</tr>
</tbody>
</table>

Keep in mind:

(1) Acre = 43,560 square feet.

(2) Pint = 2 cups, or 32 tablespoons, or 96 teaspoons.

(3) Timely Topic for week of June 30-July 6.

Question

I have a chance to obtain sufficient quantities of chicken manure nearby to use as fertilizer in my garden. Is it advisable to use it?
Chicken manure is an excellent fertilizer and soil conditioner for Florida vegetable gardens. While the actual composition of chicken manure varies with such factors as age of manure, amount and type of litter used, feeding program, etc., aged chicken manure produced in Florida under various conditions averages about 2.26% nitrogen, 1.42% phosphorus, and 2.08% potassium (on moisture-free basis). It also contains many other plant food elements such as calcium, magnesium, copper, manganese, zinc, chlorine, sulfur and boron.

Since it contains 60 to 80 percent organic matter (again on a moisture-free basis), it is beneficial to your garden due to improvement of the soil's tilth, texture, water holding capacity, and nutrient holding ability.

Keep in mind when using chicken manure that it should be worked into the soil at least one to two weeks before planting in order to prevent injury to seedlings from ammoniation burn. Ammonia is produced rapidly in the first few days after manure is added to a warm moist soil. Nitrate production, most beneficial to crops, is highest about four weeks after the manure is applied. About one-half the total nitrogen in the manure will become available to the plants in the first six weeks after application. You can sidedress with manure later on using moderate amounts as long as you keep it off the plants.

One method for using the manure is to open a furrow six inches deep and four inches wide the desired length of your row. Place one loosely packed bushel (30 pounds) of manure per 50 feet of row in the furrow and cover with soil. Plant a row of vegetables 2 to 3 inches to each side of this band of chicken manure.

(4) Timely Topic for week of July 7-13.

Question

This year my cucumbers are bitter. What have I done wrong?

Reply

All the reasons for bitterness in cucumbers are not known at this time, even though tests have been conducted to determine the causes. While bitterness is genetic and thus can be inherited, it can vary in degree even within a given variety. This indicates that certain environmental conditions tend to affect it. Since the bitterness factor is associated with the peel of the cucumber, growing conditions which tend to thicken and toughen the peel seem to increase bitterness. However, frequency of irrigation had no effect on bitterness, even though less frequent irrigations tend to produce fruits with thicker skins. Therefore, about all that can be said is that bitterness is unpredictable, and varies from year to year. The bitterness does not penetrate too deeply so bitter cukes are usable by cutting off more of the peel, especially at the stem end.

(Stephens)
B. Know Your Vegetables - TAMU Tex Sel

TAMU Tex Sel is the properly designated name for a selection of mustard collards, Brassica carinata (reported in last month's issue of the "Vegetarian") released by the Texas Agricultural Experiment Station in 1972. Since the mustard collards introduced from Ethiopia was widely variable in plant type, leaf shape, stem color and dates of bloom, a food type plant was reselected and developed from this heterogenous population and is now called TAMU Tex Sel.

Tex Sel is a leafy green plant similar in growth characteristics to mustard and collards. The plants in early growth develop a rosette of leaves from a very short stem. As the plants mature, a single seed stem develops, ending in a flower cluster. At full height, the plants are 3 to 5 feet, with many upright branches. The green oval three to five inches long leaves are smooth with a few hairs on the ribs, and are borne on slender petioles.

Since Tex Sel grew so well in Southern Texas, it appears to be suited for production in Florida. It is suggested for trial in the fall, winter and spring. In Texas, it matured an average of 16.6 tons of greens per acre in 53.5 days.

(Stephens)