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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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I. COMMERCIAL VEGETABLE PRODUCTION

A. Irrigation -- Value In Watermelon Production In 1977

For many years, we have advised growers in Florida not to attempt vegetable production without an adequate irrigation system. Watermelon growers as a group, more so than any other, have failed to heed this advice. This is especially true in central, north and west Florida. The 1977 season, one of the driest springs on record, will probably cause many growers to have second thoughts before attempting to produce watermelons without irrigation in future years.

A tour of watermelon plantings grown on sandy soils from central to west Florida clearly demonstrated the benefits of irrigation. Many growers without irrigation experienced almost total failure. First-crop watermelons were small, badly bleached from lack of leaf cover and of poor quality. Non-irrigated fields showing poorly developed vines and small, misshapen and in many cases "soft-ended" or blossom-end rotted fruits were common. Many growers pruned undesirable melons from the vines in hopes of obtaining a later crop from late May and June rains. Considerable labor cost was incurred from this practice alone.

In contrast, the 1977 season proved to be a very good one for growers producing watermelons under irrigation. Yields in irrigated fields were excellent, quality and size good, and prices satisfactory.

In a series of meetings with watermelon growers last fall and winter, vegetable extension specialists tried to discourage the production of watermelons without adequate irrigation. We have been stressing the point that growers would be better off concentrating their efforts on less acreage with more intensive cultural practices. Growers who have tried irrigation together with proper rates, timing, placement and sources of fertilizer, adequate lime and good pest control feel that it paid off. Many have doubled or tripled their yields. High yields in most cases have helped to keep unit costs in a range which permitted growers to make a fair profit in most seasons.
Even under conditions of short droughts of 10 to 14 days, irrigation can pay. During the period of rapid fruit enlargement, adequate soil moisture is of utmost importance. A minor shortage at that stage of development can result in reduced fruit size and, possibly, shrivelled blossom-ends.

In summary, irrigation for watermelons has proved its worth this season and over the past decade. Growers presently not using irrigation should give it serious consideration for future crops.

(Montelaro)

B. Aids To Field Diagnosis: Portable pH and Soluble Salt Meters

In the field diagnosis of crop problems, a rapid assessment of soil pH and total soluble salts can be of great help to extension agents, commercial field men, and agricultural consultants. Light weight, reliable, portable pH meters and soluble salt meters are now available at fairly low cost. There are several different types of portable meters available, but we have only procured and field-tested the pH meter manufactured by Corning Scientific Instruments Company and a soluble salt meter from the Myron L. Meter Company. Mention of these two products does not constitute endorsement. Names and addresses of manufacturers of portable pH and salt meters will be furnished on request by writing G. A. Marlowe, Jr., Vegetable Extension Specialist, UF/AREC/Bradenton 33508.

Both meters are relatively simple to operate. The validity of results depend on the preparation of the sample and thorough knowledge of the meter and its capability. Agents interested in a soluble salt meter should try to procure a model which reads directly in parts per million (ppm) because most of the I and B results reported in IFAS research are in ppm and a conversion multiplication from micromhos to ppm can be eliminated.

The samples most frequently encountered are likely to be irrigation waters, sandy soils, and plant growing media. Each salt meter should be calibrated, using a standard solution of known concentration. A standard solution can be prepared
using a chemically pure (CP) or reagent grade salt, a good balance, and distilled water. Remember that 1 mgm of a salt (such as KCl) in 1 liter of water equals one part per million. A KCl standard of 2000 ppm (made by dissolving 2000 mgm (2 gms) in 1000 ml (liter) of distilled water) has been very useful in calibrating meters in the southwest Florida area.

1. Well water samples can be read directly on both meters. The pH meter discussed has a temperature correction knob which should be adjusted for the temperature of water. These meters correlate quite well with the laboratory pH meter and the Wheatstone Bridge, respectively. The circuit test button should be checked before reading samples on the portable salt meter. The pH meter should be tested against a known pH standard solution. A small quantity of a pH standard is usually provided with each pH meter.

2. Moderately moist sandy soil samples should be prepared with distilled water by mixing two volumes of soil to one volume of water, stirring for about one minute. Enough of the liquid portion should be poured into the salt meter test chamber to cover the upper metal contact point.

   The sample reading should be multiplied by a correction factor of 5 to give results similar to the laboratory equipment for testing soluble salts. The pH reading can be made directly on this 2 to 1 solution.

3. Plant growing media samples are quite different from sandy soil samples. With moderately moist media samples a proportion of one volume of media to two volumes of distilled water is desired. The media should be stirred for about a minute in the distilled water. The liquid portion should be separated for the pH or salt tests. The pH samples can be read directly, but the total salt reading should be multiplied by a factor of 5 to correlate with laboratory equipment.

   Both pieces of equipment are relatively durable if proper care is taken. The probe for the pH meter should not be used as a stirring rod! The probe should be inserted into the liquid sample before turning the pH meter on, and
be rinsed with distilled water between samples. When not in use the probe should be soaked in distilled water if possible.

Crop problems in the field are not necessarily solved by a pH or soluble salt reading, but these bits of information can contribute to an orderly approach to the diagnostic process.

(Marlowe)

C. Herbicide Registration for Minor Crop Uses

Several persons have requested information pertaining to herbicide registration for minor crop uses or for changes in label approval of modified application methods. The comments of Ms. Mary C. Harris, Division of Inspection, Florida Department of Agriculture and Consumer Services; Mr. James E. Brogdon, UF IR-4 Liaison Representative; and Dr. Richard L. Lipsey, UF Pesticide Chemical Coordinator are summarized below:

Determine first if a residue tolerance level has been established in the crop for the herbicide in question. Examples of established tolerances are where the herbicide is already registered in another state for use in the same crop, or when a changed use pattern is preferred, such as aerial versus ground application methods.

Special local need registrations - If residue tolerance limits exist, applications for a "special local need registration" (sometimes referred to as a "24(c) label" from FIFRA, Section 24(c)) may be requested from the Division of Inspection, Florida Department of Agriculture and Consumer Services in Tallahassee. Preferably, the basic manufacturer should be encouraged to seek the 24(c) label for use within Florida. However, some basic manufacturers are unwilling to assume the liability associated with registering an herbicide for many minor crop uses.
Any organization or individual can apply for a "special local need registration". Distribution of these 24(c) labels is the responsibility of the registrant and may be limited to use within the organization or by the individual listed as the registrant. If other organizations or individuals wish to become registrants for exactly the same chemical, application methods, etc., they may also apply for a 24(c) label with their name listed as registrant. Implications of liability pertaining to registrants other than the basic manufacturer are not yet clearly defined. For example, one law states that the basic manufacturer is still responsible even though they may not be consulted or even in agreement with the 24(c) labelling of their product by another party.

In addition to completing and submitting the request for a "special local need registration", scientific data including weed control efficacy and phytotoxicity data, crop yields, etc., must be submitted for evaluation and approval purposes. The information may be supplied by the applicant, by authorized governmental agencies, or both. Testimonials are not considered scientific data.

IR-4 registrations - If tolerance levels have not been established for the crop and herbicide in question, an IR-4 registration may be sought. In this case, the IR-4 Liaison Representative, Mr. James E. Brogdon, should be consulted because both efficacy data and tolerance data must be obtained and the basic manufacturer must ultimately seek the label registration. Obviously, fewer chemicals will be registered using this procedure due to the increased data requirements and basic manufacturers' decisions related to estimated profit/risk margins associated with the chemicals used in that crop.

For additional information, you may contact any of the persons mentioned in this article including myself. Application forms and related information can be obtained from the Division of Inspection, Florida Department of Agriculture and Consumer Services, Tallahassee, Florida.
A. Timely Gardening Topics

Four timely topics on vegetable gardening are offered each month to assist Extension agents in developing periodic (weekly) radio and newspaper shorts.

1. 'Floramerica' - A New Tomato Variety for the Home Gardener -- A new improved variety of tomato, named 'Floramerica', has been developed by the University of Florida and should be available to home gardeners by spring of 1978. It has received and will continue to receive much publicity due to its Bronze Medal Award winning performance in the 1974 All-America Vegetable Variety Trials. This award means that 'Floramerica' is adapted to a wide range of growing conditions, since it received good ratings in many states.

In many ways, the new variety resembles 'Walter' which has become the standard variety in Florida. Both are bush or ground (determinate) tomatoes, meaning they have bushy growth habit rather than tall, vining habit of indeterminate varieties such as 'Floradel'.

Under suitable conditions, 'Floramerica' loads up with fruits, usually from 15 to 25 fruits on the plant at one time. Fruit-size is generally large, with some fruits on each plant measuring over three inches in diameter. While overall fruit quality is good, fruits tend to be a bit soft at full maturity. In taste, 'Floramerica' is comparable to 'Walter'.

Disease resistance contributes to its potential as a good Florida home garden variety. While it is not immune from attack by all common diseases in Florida, it is resistant to such notorious ones as Fusarium wilt and gray leafspot.

Gardeners wishing to try 'Floramerica' should have little trouble finding seeds or plants by the spring of 1978. Most major seed companies likely will offer seeds for sale in their 1978 seed catalogs. Likewise, due to the widespread publicity, many garden supply stores around the state should have transplants available about February through April.
2. Blossom-end Rot of Tomatoes -- To say that the long drought of this spring has adversely affected gardening in north Florida is certainly a gross understatement. While the results of drought are many, one which should be blamed on the dry weather is blossom-end rot of tomato (also affects others such as peppers and watermelons).

Tomato fruits are most commonly affected by this non-parasite disease when they are one-third to one-half grown. However, they may be affected at most any stage. The first sign is a darkened, slightly depressed spot near the blossom-end of the fruit. The spot becomes brown and enlarges until as much as one-third to one-half of the fruit surface is covered. As it becomes large, the surface of the spot becomes flattened, almost black, and quite leathery. There is no soft rotting of the spot unless it is invaded by bacteria or fungi.

The basic cause of the disorder is an inadequate supply of calcium to the developing fruit. Proper liming helps maintain an adequate level of calcium in the soil. Yet, even with sufficient soil calcium, other conditions can and often do bring on a lack of calcium in the fruit, resulting in blossom-end rot. Infrequent watering or fluctuations in the water supply (going from dry to wet, or vice versa) tend to increase blossom-end rot. Applications of other fertilizer materials which interfere with the uptake of calcium by the plant also contribute to the disorder. Since calcium does not readily move about in the plant from older to younger tissues, any temporary disruption of its constant supply results in injury to the developing tissue at the blossom-end. To avoid the disorder, make sure the soil is well supplied with calcium, then maintain a steady, uniform moisture level in the soil.

Once the disorder starts to appear, it is usually too late to correct by applying soil applications of lime or gypsum (calcium sulfate). Further development on unaffected fruits can be decreased by spraying the foliage with calcium chloride solutions. Mix in water at the rate of 4 tablespoonfuls per gallon of water. Spray 1 gallon per 400 square feet. On an acre basis, mix 4 pounds calcium chloride to 100 gallons of water. Do not exceed these rates, as leaves can be
burned with excessive amounts of the chemical. Spray once a week for minimum occurrences, or twice weekly for severe cases. Avoid prolonged use (over 3 weeks). The salt may be mixed with most commonly available fungicides and insecticides. Calcium nitrate may also be used where available; calcium sulfate, however, is too insoluble for application by spraying.

3. Gardening Conversions -- Quite often label directions for use of both liquid and dry materials suggest amounts in measurements not easily made by the average home gardener. Therefore, it becomes necessary for the gardener to make conversions based on his size garden and application methods. For example, directions on a pesticide container may suggest 4 pounds per 100 gallons per acre. The gardener, however, wishes to use a lesser amount for his small plot, so must make mathematical conversions. The following table should help gardeners with some of the more basic and frequently used conversions.

1 teaspoon (tsp. level) = .17 fluid ounce
1 tablespoon (level) = 1/2 fluid ounce
3 teaspoons (level) = 1 tablespoon (level)
2 tablespoons (tbs. level) = 1 fluid ounce
8 fluid ounces = 1 cup
2 cups = 1 pint
2 pints = 1 quart
454 grams = 1 pound
1 cup ammonium nitrate = 7 ounces
1 quart ammonium nitrate = 28 ounces or 1 3/4 lbs.
1 pint hydrated lime = 11 ounces
1 quart dolomite = 25 ounces
1 ounce Captan (WP) = 3 1/2 tbs.
1 ounce copper sulfate (soluble powder) = 1 2/3 tbs.
1 ounce Chlordane (WP) = 3 tbs.
1 ounce Kelthane (WP) = 5 tbs.
1 ounce Malathion (WP) = 4 tbs.
1 ounce Methoxychlor (WP) = 4 tbs.
1 ounce pyrethrum (powder) = 5 tbs.
1 ounce Sevin (WP) = 6 tbs.
1 ounce Sulfur (WP) = 3 tbs.
1 ounce Toxaphene (WP) = 3 tbs.
1 ounce Zineb (WP) = 3 2/3 tbs.

NOTE: These measurements will vary slightly with differing formulations, but they should be helpful to gardeners making necessary conversions.

Finally, here are two rough approximations for use when no better figures are available.

1.) For each pound of wettable powder suggested for 100 gallons, use one level tablespoon in one gallon of water.

2.) For each pint of liquid (concentrate or emulsion) suggested for 100 gallons of water, use one level teaspoon in one gallon of water.

4. Summer Vegetable Garden - Summertime in Florida is probably the most difficult time of the year to grow a vegetable garden. By late June, most of the vegetables that were planted in February and March will have been harvested or soon will be nearing that stage. Particularly, most of the cool season vegetables will be long gone, except for some late cabbage, Bibb lettuce, collards, second crop mustard, and perhaps some lingering rutabagas. Fast growing and maturing warm-seasoned crops, like beans, summer squash, and cucumbers usually are harvested. Sweet corn, lima beans, tomatoes, peppers, eggplants, southern peas, sweet potatoes and okra are providing most of the late June activity.

But what to plant behind all those matured crops? Hot, wet weather will narrow the choices to the following: Collard greens, mustard, New Zealand spinach, okra, sweet potatoes, cherry tomatoes, peppers, eggplant, butter beans, and lots of southern peas. Southern peas are an especially good choice even if they don't produce a lot of peas when planted in June. They make a good summertime cover crop producing a lot of vine that can be plowed under. Spring planting of eggplant and peppers may produce through the summer and ending in a fall crop. So for those who are willing to brave the frequent, heavy cloudbursts, long hot days with their effect on fruit set, and innumerable insects and diseases, there is still a lot of good activity to be had in the Florida garden in the summertime.
For those who are closing out their garden until the fall or later, there are certain chores needing attention.

Clean up and put away gardening tools, equipment, and materials. Remove caked soil and rust from rakes, hoes, plows, trowels, and other soil-contact tools. Using an oily rag, coat all metal surfaces. Be especially mindful to clean and oil sprayers and fertilizer spreaders, as these are extremely susceptible to rust and corrosion. Sprayers should be dismantled and parts such as nozzles, screens, and gaskets washed in kerosene or mineral spirits. A sprayer which has been used for chemical weed control should be used only for that purpose since most weed killers are hard to wash out of a sprayer. Sensitive vegetable plants later may be injured by a mere trace of the chemical remaining in a sprayer.

Dusters should be wiped clean and moving parts cleaned. All tools and equipment should be stored out of the weather and each should have its own place for safety and convenience.

At the end of the gardening season, there usually are several opened bags of chemicals, such as insecticides, fungicides, and baits lying around; some without identification. Play it safe and completely dispose of chemicals which cannot be positively identified. Make sure the others are properly bagged, labeled, and stored. Many of the chemicals are poison and should be treated as such. Store them where pets, livestock, and children cannot reach them. Leftover seed which have been treated with a chemical are also poisonous and should be either disposed of or stored in a safe, dry place. Small batches of seed should be discarded and new seed bought the following season, for seeds improperly stored lose their viability and the cost of good, new seed is good insurance for a successful garden.

As a final thought, keep the garden plot in good shape during the summertime by either leaving it fallow (no plants) or by growing a cover crop.

(Stephens)
B. Know Your Vegetables - Ornamental Gourds

Ornamental gourds are the gaily-colored, oddly-shaped, squash-like fruits of plants belonging to several genera and species of the Cucurbitaceae family. They are closely related to the edible squashes and pumpkins, and belong to such genera and species as Lagenaria siceraria, Luffa cylindrica, Benincasa hispida, Cucurbita pepo var. ovifera and Cucurbita maxima.

It is usually the fruit that is considered ornamental rather than the growing plant. These fruit are generally most useful and attractive as ornaments when the pulp dries and the shell becomes hard. There are many, many shapes and colors of these fancy gourds -- some are warty, some are smooth, some long, some round, some striped, and some banded. For the most part, they are not considered edible; however, some are edible if eaten at an immature stage, such as the luffa gourd sometimes called running okra. Furthermore, a few of the edible squashes are quite ornamental when mature. Two such examples are the yellow crookneck squash and the turban (Turk's-cap) squash.

Most all of the fancy gourds have long, climbing, creeping stems. They can be grown on trellises, arbours, or fences, thus making rather attractive display plantings.

While the number of varieties is almost unlimited, with new kinds being constantly raised from seed, the following kinds are probably more common.

Turks Cap -- This 5-10 pound edible turban squash has a round orange bottom with top one-third a protruding cream colored "acorn" or "navel". Rind is relatively soft and fairly smooth.

Club Gourds -- Are shaped somewhat like a bowling pin.
Luffa Gourds -- Also called running okra and dish-rag gourd. Pods have sharp ribs running lengthwise; from 1 to 3 feet long; best eating quality when 1 to 2 inches diameter; when mature, pulp dries to consistency of rag.

Siphon Gourds -- Have a large, 8 to 12 inches broad base and a long neck which curves back alongside the base toward the ground. These should be grown on the ground rather than trellises to prevent breaking the neck.

Calabash Pipe Gourds -- Are shaped much like a summer crook-neck squash, but are smooth skinned. They are often painted and made up into penguin figures.

Bird House Gourds -- These jug-shaped gourds are often made into bird houses.

Pear Gourds -- Most of this kind are pear-shaped, but differ in color and markings. Some are white and smooth; some have dark and light green stripes; some have two colors, one half of which is yellow and the other green; some with two colors have bands; others may be found with these different variegations in various combinations.

Apple and Orange Gourds -- These are round with slightly flat ends, smooth textured, and either white or orange colored.

Flat Fancy Gourds -- These pumpkin shaped gourds are small, only 2-3 inches diameter, and are striped or marbled with various shades of green.

Warty-skinned Fancy Gourds -- Small round gourds with warty surfaces colored white, green, yellow, or orange.

Bottle Gourds -- Typical shape is a combination of a broad round base, a bottle-neck, then a smaller round neck. There are many sizes, some holding as much as two gallons.
Culture

Where grown -- Since they are so closely related to squashes and pumpkins, ornamental gourds may be grown throughout Florida, they may be planted September through March.

Planting time -- In north and central Florida, plant as soon as the danger of killing frost is past; in south Florida, they may be planted September through March.

Seeding -- If a trellis is to be used, hills (1 to 2 seed each) may be spaced every 12 to 24 inches at base of trellis. If planted in open garden, allow 4 feet between vines in the row and 4 feet between rows. Plant seed 1 to 2 inches deep. Gourds do best if grown on a trellis.

Fertilization -- In addition to organic or animal manures used, apply at planting time about two pounds of 6-8-8 fertilizer per 100 square feet of area planted. You may broadcast this amount over the entire area and work well into the soil; or, you may distribute it around each hill in a ring about 4 inches out from the plants.

Diseases -- It is probable that the diseases downy mildew and powdery mildew will be encountered while growing these plants; in fact, these two diseases may even determine the success of growing these gourds in Florida. To control downy mildew (yellowish brown spots on leaves), dust or spray with maneb or zineb. To control powdery mildew (infected areas on leaves show whitish, powdery substance on surface), spray or dust with Karathane.

Insects -- At some time or other various insects might attack the leaves, blossoms, and fruit. Lindane or Malathion (dust or spray) should be used, preferably on a preventive basis. Since bees are needed for pollination, apply these insecticides late in afternoon to avoid bee injury.
Harvesting and Curing

Unlike edible squash which are picked in an immature stage, gourds should be allowed to mature and dry on the vine if possible. Use sharp shears to harvest the gourds; never twist them from the plant. Cut specimens with a few inches of fruit stem attached.

Once harvested, the fruits may be washed in mild, warm soapy water; then rinsed and dried. Lay gourds out to dry in a warm, sunny, well-ventilated place.

Uses of Gourds

As ornaments, the gourds may be used with natural colors and shape unchanged; or, they may be sanded and painted in imaginative colors and designs. Odd shapes of gourds often inspire certain modifications making them into figurines (for example the calabash gourd is often called penguin gourd since it is easily made into a penguin figurine). In addition to ornamental value, fruit bowls, dippers, smoking pipes, bird houses, and toys are some of the practical uses made of them.

Preparing Gourds for Decorations

Shells should be dry and rough spots sandpapered. During curing, the thin film-like outer skin may be scraped off. Sometimes during curing, mold growths form on the shell in attractive patterns and may be left on.

More Information

One of the best publications available on gourds is "Gourds of All Types for Garden and Market", by J. A. Martin, South Carolina Research Series No. 64, March, 1965, Clemson, South Carolina.

(Stephens)

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