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I. NOTES OF INTEREST

A. Course Offering

Production technology of the major vegetable crops in Southwest Florida will be offered at Bradenton AREC in the spring semester. It will be held on Wednesdays 4:30-7:30 p.m. beginning on January 4. Contact George Marlowe for details.

B. Hunter Johnson Visiting the Department

Hunter Johnson-Extension Vegetable Specialist, University of California, Riverside is spending a sabbatical leave with the Vegetable Crops Department in Gainesville for 6 months.

Hunter is interested in Greenhouse vegetable production, cucurbit production and general production, especially mulch culture in the state. He is planning on traveling to the various vegetable production areas in the state during his stay. We welcome him to Florida.

C. In-Service Training and Planning

Commercial Vegetable Extension In-Service Training and Planning. Manatee County Extension Office, 1303-17th St. Palmetto, FL Nov. 28-30, 1983 (Contact S. P. Kovach, Bradenton AREC, for details).

D. Allied Industry Workshop

The 6th Allied Industry workshop will be held at Manatee County Extension Office, Palmetto Florida December 15, 1983. The workshop is designed for farm service and supply and extension personnel. The program this year will be a thorough coverage of disease diagnosis of vegetables and will run from 8:30 to 3:00 p.m.

For more information contact Dr. Phyllis Gilreath, Extension Agent-Vegetables 813-732-4524.
II. Pesticide Update

A. Methamidophos (Monitor 4) on Chinese cabbage, escarole, endive and parsley.

A section 18 specific exemption has been granted for the use of Monitor 4 to control aphids, lepidopterous larvae and leafminers on Chinese cabbage, escarole, endive, and parsley. This exemption expires June 30, 1984 and is limited to 13,443 acres in Martin, Seminole, Brevard, DeSoto, Lake, Palm Beach, Sarasota, Orange and Charlotte counties. A maximum rate of 1 1/2 pt. (0.75 lb a.i.) per acre per application, with 4 pts. maximum per crop is specified. For more information and specific restrictions, read the label.

B. Permethrin on Fresh Market Tomatoes.

A section 18 specific exemption has been granted for the use of permethrin (Ambush, Pounce) on Fresh Market Tomatoes in Florida. Tomatoes treated with this product may not be used for processing. The products may not be used on small fruited varieties less than one inch in diameter, such as 'Small Fry' or 'Red Cherry'. Consult the labels for changes from last years section 18 exemption.

(Stall)

III. Commercial Vegetable Production

A. Soil Fertility Management under Plastic Mulch

Three presentations on soil fertility management were given at the 1983 Florida Tomato Institute. The articles from these presentations are published in Vegetable Crops Extension Report VEC 83-3. The information is presented on tomatoes, but can be applied to other crops grown under the mulch system. One of the reports for fertility management using seep irrigation is reprinted this month. The overhead irrigation article will be in next month's Vegetarian.

(Stall)
B. Soil Fertility Management for Tomatoes
Using Seep Irrigation And Plastic Mulch

When discussing fertilizer management the following factors must be considered; (a) fertilizer rates, placements and sources, and (b) water control. When using the full-bed plastic mulch system most of the above factors as well as the management required are magnified because each factor must be managed as a part of the overall system and not as individual components. Management decisions on most, if not all, of the factors must be made prior to planting. Once the crop and system are established it is difficult to change any of the components. In the following discussion comments will be made on the various components or factors and their relationship to the overall system.

Fertilizer Rates: In general, basing the total amount of fertilizer on the number of expected harvests is a good rule-of-thumb. The number of harvests can vary according to cultural practice (stake or ground culture), season (spring, fall, or winter), marketing overlap with competing areas, etc. A nitrogen (N) fertilization guideline for single crop tomatoes based on 7,200 linear bed feet/A is:

(a) 1 or 2 harvests 180-220 lb N/A
(b) 3 or 4 harvests 240-275 lb N/A

In a double cropping sequence, increasing these N rates by 30% seldom improves production of first crop, but it can increase yields of the second crop.

Potassium (K₂O) can be applied at 1.5 to 2.0 times the amount of N. There is evidence that the 1 to 2 ratio of N to K₂O is beneficial when using tomato varieties that are inclined toward graywall, yellow shoulder, and/or blotchy ripening. On land that has been farmed for several seasons and where soil tests indicate medium to high levels of available phosphorus, this element can be supplied by the addition of 50-100 lb P₂O₅/A. The micronutrient requirement of a tomato crop can be met in most cases, by applying 0.5-1.0 lb/A of B and Cu; 1.5-2.0 lb/A Mn and Zn; 3.0-5.0 lb/A Fe and 0.01-0.02 lb/A Mo. These can be in the form of oxides, frits and/or sulfates.
Fertilizer Placement: This component of the overall system is very closely associated with fertilizer salt injury and leaching. There are two distinct fertilizer placements when using the plastic mulch-seep irrigation system. One placement is for the starter fertilizer and one is for the main part of the fertilizer that is needed to carry the crop to maturity.

There are several terms used in the industry to identify the starter fertilizer. Some of these are cold mix, bottom fertilizer, in-bed fertilizer, etc. Regardless of the term, it should refer to a small amount of fertilizer applied to get the seedling off to a good start. Three placements of starter fertilizer currently being used are described below:

(a) Surface applied- Starter fertilizer (N and K) is spread in a 20" - 24" wide band on the surface of the finished bed. Bed surface at time of application must be moist and as smooth as possible. If the surface is dry, benefit from the starter is reduced or in some cases eliminated. If the surface is rough the fertilizer will concentrate in depressions. If these depressions coincide with the planting hole, salt injury is likely to occur.

(b) Wide Band Method- Starter fertilizer (N-P-K) is spread in a 24" - 30" wide band either on the flat or a low pre-bed and then bedded-over. This method keeps the fertilizer in good contact with moist soil, but increases the risk of salt injury if application rates are too high.

(c) Broadcast- Starter fertilizer (N-P-K) is spread uniformly over the entire area prior to bedding. During the bedding operation the fertilizer is incorporated throughout the bed. Advantages and disadvantages with this placement are similar to the wide band method.

Regardless of the placement used, only about 10-15% of the total N and K₂O should be applied as a starter. With the surface placement, all of the P₂O₅ and micronutrients should be applied and incorporated during bedding, because phosphate materials are relatively insoluble and surface application is not feasible. With either of the other two placements P₂O₅ and micronutrients should be applied as part of the starter fertilizer.
The remaining 85-90% of the N and K\textsubscript{2}O is placed in narrow bands 9-10 inches to each side of the plant row. These bands can be placed directly on the bed surface or in shallow (1"-1 1/2") furrows. Surface placement, as with the starter fertilizer, requires that good moisture be maintained at the bed surface at all times. If the soil surface becomes dry, capillarity is broken and there is no way to move soluble plant nutrients from the fertilizer bands into the root zone. When this happens the plants will gradually appear as if they are “running out” of fertilizer. This problem is often attributed to insufficient fertilizer, when in reality it is caused by improper water control.

The in-furrow method is more commonly used, because it gives better contact between fertilizer and moist soil, and allows more flexibility with regards to water control. The furrow depth should be no deeper than 1 1/2". Any deeper, the banded fertilizer will be more exposed to leaching by vertical movement of water in the bed. With current technology, it is extremely risky, because of possible salt injury and leaching, to place all of the fertilizer in the plant bed.

Fertilizer Sources: Nutrient sources for the starter fertilizer will depend on the placement used. If the starter is incorporated into the bed some water insoluble N, either slow release or natural organics, may be used. However, it is usually best to limit these to about 25% of the total N in the starter fertilizer. If the starter is placed on the bed surface only water soluble sources should be used.

In the fertilizer (85-90% of total N and K) that is banded on or near the bed surface only water soluble sources should be used. A fertilizer that has proven successful is a mixture of potassium nitrate and ammonium nitrate to give a ratio of about 70% nitrate-N and 30% ammoniacal N. Since excess ammonium can contribute to blossom-end rot of tomatoes, the ratio of nitrate to ammoniacal nitrogen in the total fertilizer (starter + top-band) should be given careful consideration when planning a fertilizer program. In calculating this ratio, sources such as urea, slow release N materials containing urea and natural organics must be considered as ammoniacal-N, because these materials are converted to ammonia when added to the soil.
Water Control: This component of the seep irrigation-plastic mulch system is of prime importance in its relationship to fertilizer management. There are several concepts that should be remembered when using seep irrigation:

(a) Water is supplied by capillarity from a perched water table and the direction of water movement (except when draining) is upward. When high rates of fertilizer are mixed in the beds, water soluble fertilizer salts can cause salt damage by moving into the root zone or around the plant stem. This is why it is suggested that only a small amount of starter fertilizer be mixed in the bed.

(b) Maintain the water table at a constant level (usually 15"-18") below the bed surface. Avoid, as much as possible, fluctuating the water table. Moving the water table up and down increases the leaching of fertilizer. In-bed fertilizer is more exposed to this type of leaching than surface applied fertilizer.

(c) Avoid over-draining. Drain until the water table has been lowered back to the 15"-18" level. Lowering the watertable past this point increases pumping cost and waste water. If drainage is excessive the soil near the bed surface may become so dry that nutrients from the top-banded fertilizer can no longer be used by the plant.

(P.H. Everett)
IV. Home Vegetable Gardening

A. Vegetable Gardening Calender for South Florida

The following is an outline of the most frequently occurring activities happening in most vegetable gardens throughout warm South Florida. Some individual gardeners may be doing all of these at any one time, while other gardeners will be doing only part of them in that particular month.

The calendar begins with the fall garden in September and ends in August. Gardeners should consult the "Planting Guide for Vegetable Gardens" for specific crop information.

September

(1) Layout garden according to your plan. Establish boundaries and rows, mark with labels.

(2) Make basic application of fertilizer, then construct beds for planting.

(3) Apply black plastic mulch, then whitewash top to cool the soil.

(4) Sow warm season vegetables such as beans, southern peas, squash, cucumbers, and sweet corn. Sow cool season radishes, turnips, and mustard. Use plants to start collard greens and kale.

(5) Set out such warm season vegetables as tomato, pepper, eggplant. Potatoes can be planted now, also.

(6) Place cutworm shields around transplants. Place organic mulch such as hay, straw, or chips around the transplants.

(7) Set up irrigation system, and establish proper drainage pattern for excess rainfall. Order strawberry plants from nursery.

(8) Thin young seedlings to proper stand, replant skips or use thinnings for transplanting skips.

(9) Start seedbed or sow into transplant containers the following vegetables: bulbing onions, cabbage, kohlrabi, broccoli, cauliflower, collard and lettuce.
October

(1) Construct more beds or rows for the planting of additional vegetables.
(2) Sow seeds of the following: edible podded peas, rutabagas, carrots, beets, and spinach, along with others according to your planting guide.
(3) Set out plants of vegetables not planted in September.
(4) Plant green onion sets; set out bulbing onion plants. Mulch with straw or hay.
(5) Set out strawberry plants on mulched beds.
(6) Check plants for signs of insect and disease injury and treat as needed.
(7) Hoe or pull weeds emerging in the beds and rows established in previous month.
(8) Make sidedress applications of fertilizer to growing vegetables planted earlier.
(9) Stake or trellis tomatoes and pole beans. Prune and tie staked tomatoes.
(10) Harvest radishes, turnips, mustard, and leaf lettuce. Harvest sweet potatoes and cocoyams.

November

(1) Big harvest month-enjoy your produce.
(2) Continue to water, weed, and feed your growing vegetables.
(3) Clean gourds and pumpkins, store in a cool dry place such as airy, open garage or shed.
(4) Plant vegetables not planted earlier, or replant rows already harvested. Last months to set out strawberry plants and bulbing onions.
(5) Add compost or other forms of organic material to fallow areas in garden in preparation for spring planting.
(6) Get soil testing instructions from county agricultural extension agent, then sample soil for testing for spring garden.

December

(1) Continue harvesting and enjoying your fall and winter garden.
(2) Continue to water, weed, and feed your growing garden.
(3) Set out cool season vegetable plants, and sow seeds of others as needed.
(4) Cleanse and scrape gourds, paint, shellac, and decorate them when properly prepared.
(5) Order seed company catalogs. Make plan for spring garden, then order seeds accordingly.
(6) Check all tools and equipment; clean, repair and replace as needed.
(7) Check condition of compost pile; continue to add to it.
(8) Refer to August calendar of events, repeat or perform for spring garden as for fall.

January

(1) Locate top soil if needed.
(2) Gardens to be fumigated for soil problems may be treated now.
(3) Time to establish spring garden. Follow steps outlined for September for garden layout, fertilizing, bed formation, seeding, and planting. Follow planting guide for vegetables to plant.
(4) Purchase seeds and plants not ordered from catalogs.
(5) Use mulch, both natural organic and black plastic. Do not white wash black since soils now need to be warm.
(6) Harvest strawberries and other vegetables. Protect tender vegetables from severe cold snaps.
(7) Cultivate (weed, water, and feed) all growing vegetables planted earlier.
(8) Still time to make applications of organic materials and slow release natural fertilizer to garden soil if not done in December. Wait 3 weeks before planting. Last chance to get soil tested for spring garden benefit.
(9) Fumigate infested soils if not done in December.
(10) Establish irrigation system, and make allowances for good drainage.

February

(1) Planting month for warm season vegetables. Make second planting of vegetables planted in January of some items to prolong season where space permits.
(2) Establish spring garden if not done so in January. Follow guidelines for January. Most herbs may be planted now.
(3) Continue to harvest cool season and other maturing vegetables.
(4) Be prepared to protect tender vegetables from cold snaps.
(5) Stake and trellis viny vegetables planted in January as needed.
(6) Check and tie cauliflower heads to whiten.
(7) If garden soil needs liming, last chance to do so for spring garden benefit.

March

(1) Still time to plant the spring vegetable garden. Follow steps outlined for January and February if garden is just being established.
(2) Replant skips in rows planted earlier. Thin out excess plants to obtain proper stand (plant population/area).
(3) Continue to harvest strawberries and other items coming or continuing into production.
(4) Insect and disease problems increasing; continue to watch for them and to treat for them as necessary.
(5) Weed, water, and care for all established plants.
(6) Check progress of bulbing onions. Keep soil pulled up around roots to prevent greening.
(7) Stake, trellis, and tie tomatoes, pole beans, and edible podded peas.

April

(1) Major harvest month for most all warm season items and some cool season. Peak harvest for coco-yams.
(2) Still time to plant southern peas, summer squash, okra, eggplant, radish, turnips, collards, mustard, cucumbers, sweet potatoes, coco-yams, and peanuts.
(3) Care for all growing plants; watch for problems and solve accordingly.
(4) Continue to maintain compost pile.

May

(1) Continue harvesting spring garden. Yields and quality decline toward end of month in a seasonal pattern.
(2) Keep compost pile maintained.
(3) Grade out potatoes and onions, discarding rotten and spoiled.
June

(1) Seasonal decline brings end to most garden production during June during onset of warm and rainy season.
(2) Remove old plant debris and place in compost pile. Destroy plants if heavily diseased. Great month to start a compost pile.
(3) Spade or plow garden, then seed with a cover crop such as cowpeas.
(4) Clean up, check for repairs, and properly store all tools, equipment and left-over supplies.
(5) While still fresh on your mind, write down major problems encountered for later researching. Read gardening articles and obtain literature.
(6) If summer garden is desired, plant sweet potatoes, southern peas, and okra.

July

(1) Off-season month for most vegetable gardeners, from a stand-point of production.
(2) Clean-up and repair fencing, tools and equipment.
(3) Order seeds for fall garden.
(4) Start plants of tomato, eggplants, and peppers for early planting. Prepare beds and set out these plants in late July for early fall harvest.
(5) Begin preparations for fall garden.
(6) Test soil, and apply lime if needed.

August

(1) Select site for fall garden, and make preparations.
(2) Build boxbeds and fill with topsoil.
(3) Apply organics (manure, compost, and plant materials).
(4) Continue to turn and add to compost pile in process.
(5) Apply slow fertilizers such as rock potash.
(6) Apply lime if needed.
(7) Test soil if not done earlier and if not done in past 3 years.
(8) Spade under weeds and vegetative growth.
(9) Check and repair tools and equipment, replace wornout parts and purchase needed ones.
(10) Make fall garden plan.
(11) Order seeds from seed catalogs.
(12) Treat soil with vapam if needed.
(13) Start seedbeds or seed into containers for transplant production.
(14) Prepare for the fall garden.
(15) Check wooden borders for deterioration; remove weeds grown up over summer along borders.
(16) Design irrigation systems and purchase pails.

(Stephens veg. 11-83)

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