COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS

STATE OF FLORIDA

COLLEGE OF AGRICULTURE, UNIVERSITY OF FLORIDA, AND UNITED STATES DEPARTMENT OF AGRICULTURE, COOPERATING

Vegetable Crop Specialists

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TO: COUNTY AGENTS

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ELECTROSTATIC DUSTING OF VEGETABLES

Electrostatic dusters are being sold and used in Florida by vegetable growers. The claim is that efficiency of pesticidal dust treatment is increased and therefore, less material can be used.

Casselman, Thayer and Genung tested electrostatic on beans at Belle Glade. They found that electrostatic dusting was significantly better in the control of bean rust than non-charged dusting. Except for leafhoppers, electrostatic dusting was not significantly better than the standard method of application for insect control. Deposition of negatively charged particles was greater than postively charged particles.

DIMETHOATE (CYGON) ON TOMATOES

This material was approved for use as a foliar spray on tomatoes last year and proved to be quite effective for leafminer control. It is approved for use up to 1 pint of the 4 pound emulsion formulations 21 days before harvest.

Baranowski has found that drenching the soil at $\frac{1}{2}$ pint per acre gives control of leafminers for about 3 weeks at Homestead. Drenching is not approved for use as yet. We will let you know as soon as it is approved.

GUTHION INTERVAL SHORTENED ON SOME CROPS

Limitation requirements for Guthion on potatoes have been reduced from 14 to 7 days between last application and harvest. On tomatoes the time interval was cut from 3 days to no time limitations (NTL). These changes are for rates of 0.75 actual per acre.

BUD NEMATODES IN STRAWBERRIES

Stunted, heavily-bronzed, crinkled strawberry plants may be infested with bud nematodes. Locascio and Perry have found light

infestations in central Florida and some heavy infestation in north Florida in nursery stock.

Control methods are being worked on now. No solid recommendations as yet, but if you suspect nematodes, send a plant sample for identification and we will try to suggest a control.

PEBC (TILLIAM) "PULLED" FROM TOMATOES

This material gave variable results last year according to the manufacturer. As a consequence, they are pulling it from the market on direct-seeded tomatoes until further notice. It can be bought by signing a release to the company.

NOTE: Make this change in your "Vegetable Weed Control Guide".

BACTERIAL LEAFSPOT OF CABBAGE

A bacterium has finally been identified as causing the small brown spot on cabbage causing serious loss to this crop in some seasons. It is usually found on the wrapper leaves but sometimes affects the inner leaves as well. Cross sections of the stem usually show darkened vascular bundles, indicating that the disease may be systemic.

Wehlburg identified the bacterium as Pseudomonas cichorii. He and Thayer report that this organism attacks ornamental chrysanthemums, celery, escarole as well as cabbage. Growers suspecting this disease on cabbage may try the controls suggested for bacterial blight of celery.

USE OF PHOSPHORUS

Proper use of phosphorus in the fertilization programs for vegetables is not so simple as often believed. It has been our observation that this part of the fertilization program is often mismanaged to the detriment of the whole program. Considerable basic knowledge has been accumulated on the behavior of phosphorus in soil. It is extremely important for anyone recommending or managing a fertilization program for vegetables to understand and apply these basic facts to insure the desired results.

First, let's review some of the recent research conducted on phosphorus here in Florida. Secondly, let's list the basic facts known about behavior of phosphorus in soil in simple terms so that they may be easily remembered and applied to modify a fertilization program as needed.

A. Research Reviews

(1) Fixation By Different Soil Types.

At Gainesville, Breland and Locascio found that Kanapaha soil "fixed" larger amounts of phosphorus than Ona soil. This means that phosphorus is less available on Kanapaha than on Ona soil and should, therefore, receive larger amounts of the element to supply the needs.

(2) Accumulation of Phosphorus Reserves.

Forbes and Westgate found that phosphorus reserves totaled as much as 7,000 pounds per acre on the sandy soils at Sanford that have been fertilized for 50 to 60 years. Over an eight-year period, a total of 10 crops grown showed no response to addition of phosphorus.

(3) Response of Peppers to Phosphorus.

Ozaki obtained a significant response from phosphorus on peppers. Surprisingly, 22 pounds of phosphorus was as good as 44 pounds per acre. Splitting these amounts into two applications showed no added benefits.

(4) Calcium - Phosphorus Relationships.

Hortenstine and Stall working with tomatoes on sandy soil at Fort Pierce found phosphorus increased vine growth, calcium increased fruit size. They observed that increasing phosphorus rates decreased calcium intake. A decreased calcium intake has been reported to induce "nutritional leaf-roll". How this may be brought about is explained by these workers and Volk as follows:

> "Phosphorus reduces soil pH which in turn reduces nitrification - Low nitrification would result in low nitrate - Nitrogen with a concurrent lowering in calcium intake by the solanaceous crops (tomato, eggplant, pepper and potato). Nitrate - nitrogen apparently has the effect on mobilizing calcium into the plant".

(5) Phosphorus On Old and New Land.

Hensel reported that potatoes responded to phosphorus in each of a three-year test at Hastings. On old continously cropped land, response to phosphorus was found when rates up to 200 pounds of P_2O_5 were used. On new land, potatoes responded to rates up to 400 pounds of P_2O_5

B. The results presented in these short reviews substantiate some of the basic facts already known about the phosphorus and its' use. Following are some "rule of thumb" facts with which a person should become familiar if he is to modify a phosphorus fertilization

program as needed.

(1) Phosphorus does not move appreciably in the soil.

(2) Phosphorus accumulates (from continual fertilizer applications) in the upper foot of soil.

(3) Most of the total supply of phosphorus in a soil is tied up chemically.

(4) Soil phosphorus is low in solubility in water or the soil solution.

(5) Acid soils contain excess iron and aluminum, both readily combine with phosphates to convert them into sparingly soluble compounds.

(6) Alkaline or calcareous soils contain calcium which combines with phosphates to form sparingly soluble compounds.

(7) In general -- availability of phosphorus is at a maximum between pH 6.5 and 7.0.

(8) As soluble phosphorus is removed from the soil by plants, it is replaced from the fixed forms.

(9) Low soil moisture lowers the solubility of the fixed forms of phosphorus.

(10) Mixing phosphates with the soil increases fixation.

(11) Banding phosphates retards fixation.

(12) Organic matter in general increases availability of fixed phosphorus.

(13) Rapid microbial growth may cause temporary "drop in phosphorus" availability.

(14) Maximum benefits from maintaining high phosphorus fertility are not realized unless other nutrients are supplied at proper levels.

(15) Plant in the early stages of growth have an extremely high need for phosphorus (as much as 50% of total phosphorus uptake occurs when plants have developed only 20% of total growth.

(16) Plant species vary widely in their ability to extract phosphorus from the same soil.

(17) Soils vary in their ability to fix phosphorus.

(18) Water-soluble phosphorus will move about one inch from the point where it is applied in the soil.

(19) Less than 20% of phosphorus applied is utilized by the crop the year of application.

(20) Placement of phosphorus in close proximity to seed and young seedling is especially important. Phosphorus is necessary for rapid root development.

(21) Many species of plants (especially seedlings) cannot forage for phosphorus very satisfactorily in cold soils. Close placement of a water soluble P is very important during winter months.

Yours sincerely,

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