MR. COUNTY AGENT:

For you boys looking for that slack season in Florida vegetable production...let me know when you find it. You might have wound-up some phases, but in my book, it's a three-ring circus!

We've heard some fine Research reports to the industry lately...here are some of them, credited to individuals, dealing mostly with insect and disease control.

Mr. Norman Hayslip, Entomologist
Indian River Field Laboratory, Ft. Pierce

WIREWORMS--aldrin and heptachlor superior.

W. H. Thames, Jr., Entomologist at Belle Glade, has continued his work with wireworms on the neat and muck soils. He has found aldrin and heptachlor superior to chlordane.

Wireworm damage can be reduced but cannot be eliminated when there are heavy infestations. Control is satisfactory when the population of wireworms is light to moderate.

Present work with corn consists of studies of banded versus broadcast treatments, and the proper time interval between applying the treatment and planting the crop.

INSECTICIDE COMBINATIONS--combat insect resistance.

W. G. Genung, Entomologist at Belle Glade, has found the imported cabbageworm to be resistant to DDT. He obtained good control using a mixture of 1/2 pound 15 percent wettable parathion plus 1-1/4 pounds of 40 percent wettable toxaphene per 100 gallons of spray.

Mr. Genung is finding insecticide mixtures such as this one very effective in controlling most of the insects attacking cabbage. Mixtures of parathion and DDT have also proved effective. (DDT plus parathion is proving to be a very useful mixture for the control of tomato insects.)

EARMOTH CONTROL--refined.

Refinements in the use of DDT for the control of corn earworms are being worked out by Entomologists J. W. Wilson, Sanford (spraying methods), W. H. Thames, Jr., Belle Glade (time and number of applications), and Norman C. Hayslip at Ft. Pierce (formulations).

To date, the best spray combination for severe infestations is 4 quarts of 25 percent DDT emulsion mixed with 2.5 gallons of white mineral oil. This mixture is added to water to make 50 gallons of spray, and applied to one acre.

Four flat fan nozzles per row which deliver a coarse spray at about an 80-degree angle have given good results. The nozzles should be directed into the silking zone from slightly above. The first application should be made one day after the first silks appear, with 4 additional treatments every 48 hours.

For light to moderate corn earworm infestation (usually in the fall, winter and early spring) 3 to 4 quarts of 25 percent DDT emulsion will give a high percentage of worm-free ears without the addition of mineral oil. The use of mineral oil should be restricted to late spring plantings when the earworm infestations have been most severe.

Dr. Robert A. Conover, Plant Pathologist
Sub-Tropical Experiment Station, Homestead

NEW FUNGICIDE--experimental L0 738

In fungicide experiments on tomatoes L0 738 gave control of late blight and
yield of fruit equal to that obtained with nabam-zinc, or zineb sprays. The same was true in Dr. Ruehle's potato experiment—equal control and yield. On sweet corn, with northern leaf blight present (H. turcicum), disease control was again equal as was the yield. In none of these experiments was any indication of plant injury observed.

ANTIBIOTICS—streptomycin and bacterial spot.

Three sprays of streptomycin sulfate, applied to tomato and pepper seedlings at 5 day intervals, gave excellent control of bacterial spot until the plants reached transplanting size. Obviously, these experiments are strictly preliminary; much further work must be done before this control method can be used effectively and economically. Other preparations of streptomycin and judicious use of the treatment may reduce its present high cost so that it can be used in plant beds.

It is felt that, as far as the Lower East Coast is concerned, the control of this disease in tomato and pepper plant beds would sharply reduce the incidence of the disease in the field. In this area, plants are usually infected when set in the field thus setting the stage for a flare-up should hard rains occur. Elimination of this source of the disease should go far toward reducing losses in the field, except perhaps during prolonged rainy periods.

SWEET CORN FUNGICIDES—a case of injury.

Some results of fungicide experiments on sweet corn probably should be circulated. Sprays containing manzate, or nabam and manganese, applied on a 5-day schedule, caused rather severe injury every time they were applied before tasseling. The injury occurred in the whorl and near leaf bases—in areas where the spray contacted meristematic tissue.

The manganese-containing dithiocarbamates should be used with great caution particularly on young corn, and their use in certain situations may cause severe injury. There is some evidence that certain varieties are more susceptible than others.

Dr. A. H. Eddins, Plant Pathologist in Charge
Potato Investigations Laboratory, Hastings

POTATO LATE BLIGHT—fungicides and varieties.

Different fungicides have been tested for the control of late blight of potatoes at the Laboratory for several years. Several materials have given good control of the disease including nabam, manzate and a new chemical known as LO-738.

A number of promising new late blight-resistant potato varieties and seedling selections developed by the U.S.D.A. and cooperating states are grown each year at the Laboratory. The object of this work is to find a blight-resistant variety that is superior in yield and market qualities to the blight-susceptible variety, Sebago, which is now grown on 95 percent of the Hastings acreage. Progress is being made as several new blight-resistant selections have proved equal or superior to Sebago and some of these may be increased for commercial production.

CORKY RINGSPOT OF POTATOES—a real puzzler.

Corky ringspot of potatoes which appeared in three fields at Hastings in 1946 has spread and is of major importance on farms in several localities in the area. This soil-borne disease disfigures the surface and discolors the flesh of tubers. It may ruin the salability of a substantial portion of an affected crop. It has been present in European countries for 30 years but its cause is unknown. Tests made at Hastings and in European countries show that it is not carried in the tubers.

No means of controlling the trouble are known and fields in which it has caused severe losses at Hastings have been abandoned for potato culture. Soil treatments with uramon, cyanamid, lime and sulfur have given no control.

Observations indicated that the physical condition of the soil may affect development of the trouble. This is being investigated. However, this year breaking the plowsole by chiseling the land gave negative results.
Different potato varieties and seedling selections have been grown in infested soil to determine their reaction to the disease. Results obtained thus far indicate that some selections are more resistant than others.

Dr. Eddins feels corky ringspot is the most puzzling potato disease he has encountered. It may be due to a fungus, bacterium or virus or it may prove to be due to a nutritional deficiency or to some unknown soil condition. Much work remains to be done to determine the cause of the trouble and to develop means of controlling it.

Dr. J. M. Walter, Plant Pathologist
Gulf Coast Experiment Station, Bradenton

MANALUCIE—panacea...no. Step in right direction.
In March the Gulf Coast Experiment Station released under the name MANALUCIE a new high-quality, large-fruited tomato with resistance to Fusarium wilt and to the following foliage diseases: gray leaf spot, leaf mold, early blight, and black spot.

Despite its hereditary resistances to this number of foliage diseases, this new variety, if found otherwise satisfactory by the growers, is not expected to allow them to omit any considerable number of applications of fungicides. It is definitely susceptible to late blight and bacterial spot. What we do expect is that the variety may greatly simplify the complex problem of the grower in deciding what fungicide to apply and when.

For example, it is very common for a tomato crop to be attacked by both gray leaf spot and bacterial spot during the month of September. Manalucie's resistance to gray leaf spot will allow the grower to concentrate on control of bacterial spot at such times. Copper fungicides, which are not effective against gray leaf spot, are the best means of defense we have now against bacterial spot.

PYTHIUM--possibilities cucumber growers might consider.
This disease, which affects only the portion of the fruit surface that makes contact with the soil, caused severe losses to the cucumber growers in all producing sections of the southern two-thirds of the State.

The disease has not been thoroughly studied, but, since some growers are losing from 65 to 75 percent of their fruits, it seemed high time to undertake a study of control of this soil fungus with the materials which are now on the market and certain new chemicals that have shown effectiveness against similar soil-fungus diseases.

A trial on this question, now in progress, shows that on plots receiving no treatment whatever, the Pythium disease is making culls of approximately 45 percent of the fruits. In comparison with this, the nabam-zinc sulfate schedule recommended for control of downy mildew shows 25 percent of the fruits affected by Pythium. This fungicide schedule, which must be followed by the cucumber-grower in the West Coast area if he is to save his crop from fast-working downy mildew, is considered the standard of comparison in the current experiment.

The best soil treatments involving fungicides now available to the grower have reduced the percentage of infected fruits to approximately 15 percent. This saving of 40 percent of the fruits, that would otherwise be lost to Pythium, may be a possibility warranting consideration by the grower, but we are not in position yet to make a recommendation to growers.

The least expensive of the fungicides that gave this result is Copper A in a very heavy dose applied to the soil surface before the vines start running. An application amounting to 1250 gallons per acre of Copper A spray (Copper A at 5 pounds per 100 gallons) would cost the grower between $18 and $20 per acre. Further study of the problem will be required. Certain new chemicals under observation at present offer good promise for the future, but it will be some time before the necessary information can be obtained and these chemicals can become available to the growers.
Gray mold, caused by Botrytis cinerea, was very severe on the large acreages of sand land tomatoes grown by the Ft. Pierce style of culture during the past winter. Following this, ghost spot broke-out in mid-February, becoming very abundant in the Immokalee-Devil's Garden area by mid-February and making its appearance by the middle of April in nearly all other sections.

The growers of the Immokalee-Devil's Garden and Fort Pierce sections became greatly alarmed by the abundance of ghost spot, and since the 18th of March, Dr. J. F. Darby, Pathologist at the Indian River Field Laboratory and Dr. Walter have spent considerable time trying to determine whether ghost spot is caused by Botrytis cinerea. British plant pathologists reported 15 years ago that this is the case, but their work has not been accepted in the United States except possibly by Dr. Darby. Both Drs. Darby and Walter made as many inoculations of young tomato fruits as they possibly could, following the technique described by the British workers.

Results are unsatisfactory and inconclusive. The inoculations with Botrytis cinerea spores have resulted with fair regularity in the small necrotic specks typical of the centers of ghost spots as found on tomatoes in the field. Inoculated fruits have not proceeded to produce the silvery halos to a degree to match those on fruits as found in the field.

Other points of interest in connection with this problem are as follows:

1. Ghost spot appeared in considerable amounts on the tomatoes of the Homestead area by April 1. Drs. Conover and Walter made a careful search but could not find gray mold on the leaves, stems, and fruits of the tomato plants in that area.

2. Dr. Darby's results during the past two winters show clearly that phygon XL is effective against gray mold. However, this fungicide does not result in significantly less ghost spot than do other fungicides used in the same trials, the latter fungicides, of course, not being effective against gray mold.

Dr. John F. Darby, Plant Pathologist
Indian River Field Laboratory, Ft. Pierce

BOTRYTIS (gray mold) CONTROL RESULTS--phygon timing seems critical.

The most effective control of gray mold obtained during 2 years of study has been with the use of 3/4 pound of phygon XL per 100 gallons water.

The timing of the applications appears to be of critical importance. Consideration of all the experimental data and field observations suggest that the first application should be made before the plants fall over and while the lower and inner leaves can be completely covered with the spray.

Although a study of the size of the nozzle orifice has been somewhat limited, evidence indicates that this should be as large as possible so that the spray droplets will be large enough to push aside the outer leaves and wet the inner more susceptible leaves.

The number of applications of phygon XL necessary to control botrytis has not been determined; however, from field observations it would appear that at least 6 applications are necessary for control.

It also appears that phygon XL will not control gray mold after it has covered the lower, more inaccessible leaves. Data collected indicates that phygon XL is not sufficiently effective against gray leaf spot.

(CORRECTED copies of "The Effect of Fungicides on Yield and Disease Control of Grothen's Globe Tomatoes", distributed at the Indian River Field Laboratory's 1952 annual field day, will be supplied on request.)

Sincerely,

Forrest E. Myers
Assistant Vegetable Crop Specialist