FLORIDA AGRICULTURAL EXTENSION SERVICE
UNIVERSITY OF FLORIDA
INSTITUTE OF FOOD AND AGRICULTURAL SCIENCES

Vegetable Crops Department

VEGETARIAN

April 8, 1968

TO: COUNTY AGRICULTURAL AGENTS

NO: 80

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1. Poor Control of Tomato Late Blight

Reports from several tomato areas in Florida during early 1968 indicate that growers experienced considerable difficulty in controlling late blight on this crop. The first reactions to failure in disease control are to increase the amount of a fungicide each time it is applied, to combine two or more fungicides, to increase the number of applications, to look for other fungicides, or to combine two or more of these practices.

In many cases none of the above mentioned practices results in good tomato blight control. This failure, more often than not, is in the technique of application. This statement is supported by recent work conducted by Dr. Robert A. Conover, plant pathologist and head of the Sub-Tropical Experiment Station at Homestead, Florida. Dr. Conover tested several of the commonly recommended fungicides under conditions where every third row was left unsprayed to insure sufficient innoculum for a good test. He reported that unsprayed plots were almost completely defoliated by late blight. On the other hand, all of the recommended fungicides gave good protection of the sprayed plots.

Dr. Conover advises growers to check the whole spraying operation to be sure that the sprayer is properly calibrated and properly operated. He points out that too often speed is excessive, nozzle arrangement is poor and pressure so high that penetration into the center of the plant is inadequate.

If you are a tomato grower having trouble with control of late blight, check your spray operation carefully. It probably is not the fault of the fungicide but caused by poor spraying techniques.

2. Plant Row Orientation

Should a grower lay out vegetable rows in a north-south or an east-west direction? The answer to such a question is not an easy one. It would depend on a number of factors such as season, crop, use of single or double rows, etc.

The southerly slope of a row oriented in an east-west direction in winter is considerably warmer throughout the daylight hours than the northerly slope of the same bed. On a bed oriented in a north-south direction the east side is warmer than the west side in morning hours, but the reverse is true in the afternoon. In both cases, differences in temperatures are conditioned by the angle of incidence of sunlight to the bed.

As days lengthen and the sun moves directly overhead, the two sides of east-west beds are more uniformly heated than a similar row orientation in winter. However, the north-south orientation shows the same general heat pattern in summer as it does in winter.

On a raised, single row, bed a crop might well benefit from the increased heat accumulated on the south side of the bed during the winter months. On a two row bed an east-west orientation may be undesirable because differences in soil heat on the two sides may result in differences in growth patterns of the two rows of plants. This difference is often great enough to cause considerable changes in height and yield of one row over the other.

Sometimes the effect of bed orientation is directly on the plant. Tomatoes planted in an east-west direction in the early spring show more physiological leaf roll on the south side of the plant than on the north side. If, under the same growing conditions, tomatoes are planted in a north-south direction, the difference in leaf roll from one side of the plant to the other will be considerably less since the period of heating changes from morning to afternoon from one side to the other. From this standpoint a north-south direction may be desirable.

Briefly summarized, bed-orientation can have important effects on growth, maturity, yield, etc., of vegetables. The grower must decide which factors he considers most important and use a bed-orientation to fit this need.

3. Seeding in Furrow and Herbicide Use

Reports of injury to direct seeded tomatoes from the use of herbicides can be traced to the method of seeding according to Mr. D. S. Burgis, Assistant Horticulturist at the Gulf Coast Experiment Station at Bradenton. Tomatoes, as well as many other crops, seeded in a furrow are apt to be injured by herbicides if rains follow within 7 to 8 days of seeding and herbicide application.

Mr. Burgis explains that rains have a tendency to wash the herbicide-treated soils from the sloping side of the furrow to the center of the furrow where the seeds were planted. This results in a concentration of herbicides right over the seed drill where emerging seedlings may be injured from excessive amounts of an herbicide. Mr. Burgis recommends seeding so that the top of the row is left flat or sloping away to the water furrow.

4. Cabbage Looper Control

Dr. G. L. Greene of the Central Florida Experiment Station at Sanford reported some interesting observations on cabbage looper control. He observed that loopers develop faster and are more numerous when daily temperatures are above 50°F. He noted looper populations on cabbage plants vary according to the plant growth. Looper populations begin to increase 2 to 3 weeks after plants are set in the field and continue to increase until cabbage is about half grown. The almost grown, large larvae are commonly present at harvest.

Dr. Greene points this out to emphasize the importance of timing in looper control. Loopers are easiest to kill when they first hatch. A skip in spraying may permit a batch of larvae to increase in size and ultimately do considerable damage to cabbage.

The following table gives distribution of looper eggs and larvae on cabbage plants:

Cabbage Looper	Leaf Surface		Leaf Surface	
	Lower	Upper	Margin	Internal
Eggs	85%	15%	64%	36%
Larvae	69%	31%		

This data illustrates another important point and that is the importance of coverage. Nozzles must be directed to the lower as well as the upper leaf surfaces. An insecticide placed near the eggs is more apt to kill the young looper larvae than otherwise and since 85% of the eggs are deposited on the lower leaf surfaces, coverage of that area of the leaf is most important.

5. Lime Effects on Watermelon Wilt

Recent research studies by Dr. Everett and Dr. Blasquez of the South Florida Field Laboratory at Immokalee demonstrated a strong relationship between lime and Fusarium wilt in watermelons. These two researchers applied four rates of lime to virgin soil which was artificially innoculated with Races 1 and 2 of the watermelon Fusarium fungus. Resulting pH values were 4.6 (no lime), 5.5 (3,000 lbs. lime), 6.0 (6,000 lbs. lime) and 6.5 (9,000 lbs. lime). Stand counts varied from 6.2% on the low pH (no lime) plots to 85.5% on the pH 6.5 (9,000 lbs. lime) plots. Marketable watermelon yields ranged from zero at the lowest pH to 13.8 tons on the high pH plots.

Additional work from source and pH studies in the greenhouse indicates that the effect is the result of pH and not so much a response to calcium. However, this does not detract from the importance of calcium since research and experience attest to the importance of this element in the overall nutrition of the watermelon plant.

Although requiring more work, this research points quite strongly to the value of liming for watermelons. The lime-Fusarium wilt relationship combined with the nutritional requirements of calcium and magnesium by watermelons makes a good liming program for this crop gain greater importance than ever before.

6. New Leafspot Disease on Cucumbers

Dr. Blasquez of the South Florida Field Laboratory at Immokalee found a new leafspot disease on cucumbers last spring. The causal organism is a fungus identified as Cornynespora melonis (Cooke) Lindan. Preliminary spray tests indicate that maneb at 1 to 2 lbs/100 gallons of water per acre gives good control. Another material, Daconil, which is not approved for use as yet on cukes gave excellent control. No resistance was found among ten test varieties of cukes.

This disease as such is rather new to Florida and much has to be learned about it. Whether or not it will become a serious pest is not known. Growers observing leafspot diseases which are unfamiliar in appearance or in response to spray should contact their county agricultural agents.

Sincerely,

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