

UNIVERSITY OF FLORIDA
GAINESVILLE, FLORIDA

AGRICULTURAL EXPERIMENT STATION

45th ANNUAL REPORT
FOR THE FISCAL YEAR ENDING
JUNE 30, 1931

**STUDIES RELATIVE TO PLANT PATHOLOGY PROBLEMS IN THE
EVERGLADES**

State Project No. 124

H. H. Wedgworth, Leader

Under this project a number of different phases of the work have been organized during the year which have a direct bearing upon the control of plant diseases under field conditions. As reported under Project No. 86, the Pathologist is also cooperating with other members of the staff in certain phases of the soil fertility work, particularly for the unusually important part some of the nutritional factors appear to play upon the incidence of infection of a number of plants by certain pathogenes.

Powdery Mildew of Beans

Several sulfur and other fungicides, including bordeaux mixture, were used in two separate tests, one in the lake region and the other here at the Experiment Station. A total of 11 different preparations were used in these studies. All of the fungicides gave excellent control of the disease in one of the series. Barium silicofluoride failed quite completely, however. In the second experiment mildew did not develop, however, and data were not obtained, therefore, on the control of the disease. Contrary to belief of many growers in this section, the application of sulfur fungicides did not improve the yield or quality of the beans in these experiments.

Bacterial Leaf Spot and Early Blight of Celery

A regular 4-5-50 bordeaux mixture gave better results in the control of early blight and a bacterial leaf spot of celery than any of several combinations of copper with zinc, nickel or manganese or with the use of a preparation containing only zinc. Comparison was also made with copper-lime and certain other preparations, but none of them equaled the regular bordeaux in effectiveness. Spreaders and stickers were not found of particular value upon this plant under the conditions of the experiment.

In varietal studies with celery a marked variation was noted in their susceptibility to early blight as well as bacterial leaf spot. Old Golden was the most susceptible to the bacterial leaf spot of any of the varieties studied. The "Special" varieties were more susceptible to early blight. It is hoped to repeat these tests during the coming year and extend them somewhat, if possible.

Early and Late Blight of Potatoes

Due to a number of conditions, the results obtained during the past season from the spraying and dusting experiments for the

control of the potato blights were inconclusive. Under the conditions of the experiment, however, copper-lime dust seemed to be as effective as bordeaux mixture in the control of the diseases. Nickel "bordeaux" was found to cause a severe burning of the foliage at the strength applied.

In certain of the fertility plots a marked correlation appeared during the season between the susceptibility of potatoes (variety Red Bliss used in this particular experiment) to infection with early blight and their fertilization with potash. Plants growing upon plots receiving 180 pounds of potash per acre remained relatively free from early blight much longer than those upon plots receiving less potash. Plants upon the plots receiving no potash were severely infected with early blight and died about three weeks before time of harvest. Those upon the plots receiving potash, and especially those receiving the higher quantities, were quite green, however, throughout the entire period of their growth right up to the time of harvest.

Leaf Blight of Carrots

Macrosporium leaf blight of carrots is a very severe disease during certain seasons of the year in the Everglades. Entire fields of this crop may be entirely destroyed under certain conditions. The application of bordeaux mixture every 10 days gave excellent results in the control of the disease, whereas sulfur fungicides, either as dusts or sprays, failed entirely. During the past season, spray preparations made by the substitution of nickel, zinc or manganese for copper in bordeaux mixture were not found as effective for this purpose as treatment with regular bordeaux.

In carrot variety studies carried out in connection with this work, no great amount of variation in susceptibility was observed as among the more popular, commercial varieties. There was some indication of a rather pronounced correlation between the availability of potash and the resistance of the plants to this disease, however. This latter phase of the problem will be given considerably more attention in future work upon this and other diseases.

Leaf Spot of Peanuts

Application of copper fungicides at weekly intervals gave good control of leaf spot of peanuts caused by *Cercospora personata*. Studies upon the influence of spreaders and stickers were inconclusive, largely due to weather conditions prevailing through the period of the experiment.

A marked relation has been observed to exist between the availability of potash and the susceptibility of peanut plants to this disease. Plots which have been cropped so heavily that practically all of the potash has been removed from the soil are observed to produce plants which are severely injured by the attack of this disease. It appears that infection readily follows the initial breaking down of the leaf and stem tissues brought about by potash deficiency.

Potato Scab

Rather extensive studies upon the relation of soil treatment to the occurrence of scab infection upon potatoes have been under way during the year. These as well as others upon varietal susceptibility have produced little of value, however, due to failure in the development of the disease even upon the control plots. The plantings upon all plots were inoculated with infected soil.

In connection with certain soil treatments for the control of the disease, severe injury was observed to follow the use of ethyl mercury phosphate and ethyl mercury arsenate upon saw-grass soil.

Everglades Source-of-Seed Trials with Potatoes

Rather extensive tests were conducted during the year upon potato seed from various sources, especially through the Middle West. Comparative results of exceptional interest were obtained from these studies in relation both to the amounts of the various virus diseases they contained as well as to their yielding ability. The plantings were made upon a good grade of "Okeechobee" muck and no fertilizer treatment was given.

The highest yield was obtained from a certified lot of disease-free seed which produced 229.6 bushels per acre. In contrast with this the lowest yielding sample produced only 95.6 bushels per acre and had 49% of the plants infected with mosaic and leaf roll. An unusually wide variation in quality was found in the seed from various sources that were brought together for test in this way.

INVESTIGATIONS RELATIVE TO THE SO-CALLED "YELLOW" DISEASE OF BEANS

State Project No. 125

H. H. Wedgworth, Leader

Investigations relative to the so-called "yellows" and "root-rot" diseases of beans, with particular reference to areas adjacent to