PRELIMINARY STUDIES ON YELLOW LEAF DISEASE WITH TRACE ELEMENTS AND FERTILISERS

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ISOLATION of fungi from yellow leaf (Arecanut Journal, 1959) were carried out by the author at Agricultural College, Vellayani in 1959; the fungi were cultivated on oat agar and 2 year old arecanut seedlings were inoculated in the early part of 1959 with isolates. No symptoms similar to the yellow leaf disease were observed on the test plants kept under observations at this station from 1959-61. Imperfect spores of Ceriospora arecae Menon were re-isolated from the diseased leaves but no yellowing was observed.

In 1959 July, an experiment was laid out in the diseased garden of Malamari Estate, Peringammala; here palms, 25 years old and in a fairly advanced stage of attack by the yellow leaf disease were selected in randomised plots and replicated. Basal doses of farm yard manure was applied by the owner of the Estate at the rate of 1,000 Lbs. per acre. in basins around the palm; Sodium chloride at the rate of 2 bushels per palm and lime in the form of shells at 1/2 bushel per palm were also given by the owner before the experiment was taken up.

Foliar sprays of micronutrients were given to the palms; these sprays were timed so that the palms had a good rainfall a fortnight after the application of the micronutrients. The following trace elements were tried in the doses given against them.

Boron as borax	10gms in 5 litres for 10 palms.
Manganese as Manganese Sulphate.	Do.
Copper as Copper Sulphate	Do.
Molybdinum as Molybdic acid.	3 gms. in 5 litres for 10 palms.
Iron as Ferrous Sulphate.	5 gms. in 5 litres for 10 palms.
Zinc as Zinc Sulphate	10 gms. in 5 litres for 10 palms.

Observations were recorded a month after application, every month for the first 3 months and later in quarterly intervals, based on:—

Girth of the crown
No. of normal leaves
No. of affected leaflets
No. of partially affected leaflets (Fungi; scorched etc., separately noted).
No. of new leaves found
Yield of nuts
No. of button flowers.

Observations for the first 3 months did not show any obvious visible changes: but after 5 months there was a general decrease in the yellowing (as observed visually) in the case of Manganese Sulphate and Zinc Sulphate. But in the case of Copper Sulphate, the drying was more severe in the treated diseased plants as compared to the untreated, control diseased plants; records are maintained as to actual number of leaflets showing decrease in yellowing etc.

Based on these exploratory trials at Malamari Estate 2 more plots were taken up in the vicinity of the Research Station; in plots near Hospital, Palode, the following treatments were laid out in June, 1960. 5 palms, 7-15 years in middle stages of the disease were selected in randomised plots, and replicated 4 times.

Treatments were as follows

Trenches were made around the palms in the form of shallow basins; a basel dressing of farm yard manure at 1,500 Lbs. per acre was given to all treated palms; Ammonium Sulphate, Super Phosphate and Muriate of Potash were applied in combination as treatments at the rate of 600 Lbs., 400 Lbs. and 400 Lbs. per acre in 2 doses a year; lime was applied as another treatment, the rate of 600 Lbs. per acre. The dosage of lime was given after testing the acidity crudely at the station itself. Ash was also applied at the rate of 1/2 basket per palm. Controls were kept leaving border rows without any treatment.

Spraying trials were made in this garden with the following chemicals:

D. D. T. at the rate of 1 lb. in 25 gallons of H_2O $Mnso_4$ 5 gms. in 5 litres of H_2O for 1 palm. Boric acid 3 gms. in 5 litres of H 0 for 1 palm. Magnesium Sulphate 5 gms. in 5 litres of H_2O for 1 palm.

The sprayings were conducted in two separate doses of a day's interval.

Observations were taken regularly as in the previous case; it has been seen from 3 observations at intervals of 3 months that the number of affected leaves are numerically decreased by Manganese sulphate and Magnesium sulphate spraying. In the former case, 2 palms, whose crowns were completely destroyed, had recovered (palms No. 6 and 7) forming fresh crop of green leaves.

However, it has been felt that the observations may not be final and the experiments have to run for a period of years. Also it is not scientifically established at present whether in a recovered palm the disease might not reassert itself at a later stage. It is also felt that the dosages may be increased with no ill-effect in further trials in the third plot to be taken up at this station later this year.

The application of fertilisers also have shown a successive increase in the non-chlorotic leaves in the affected palms.

These 3 experiments are exploratory; it is suggested that after 2-3 years, it is worthwhile to see whether these palms will take up the yellow leaf by transmission through infected sap, vectors or soil inoculation.

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