

## CONFERENCE ON LEAF SCORCH PROBLEM\*

ADDRESS BY Dr. M.L.M. SALGADO

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Mr. Chairman and Gentlemen,

It is my duty and privilege to make a short statement regarding the History in chronological order about the disease of coconuts which has appeared in the Southern Province a few years ago, which is the subject of our discussion today.

At least seven to eight years ago during my visits to the Gonapinuwela area of the Southern Province, Mr. F.W.A. Soysa, owner of Annasigala Farm, Gonapinuwela, brought to my notice the existence of a disease which was affecting his palms, the symptoms of which he described to me and which I checked for myself. The middle whorls of fronds (leaves) prematurely withered, and on examination it was noticed that withering started from the tips of the leaflets and spread to the lower end of the leaflets attached to the petioles (or branch). Gradually nut production also became less, as the female flowers aborted. The length of the fronds and their number were reduced; width of the leaf base narrowed down. The shape of the nuts became elongated and there were cases of these diseased palms which in a few years may have, according to my recollection, died off within five to six years or even earlier.

Subsequently Mr. H.F. Goonewardena who was appointed as the first Crop Protection Officer visited the area and carried out a few trials purely on an empirical nature, which consisted of certain manurial trials such as liming, cattle manuring, use of a few trace elements etc. These treatments however did not seem to affect any visible improvements on the diseased palms or control the disease.

With the departure of Mr. Goonewardena on overseas study leave to America, and his subsequent resignation from service, Mr. J.K.F. Kirthisinghe, the Officer-in-Charge of Crop Protection and myself made several visits and noted that this condition was observed in more than one estate and several reports were subsequently made from a number of estates within a range of two to three miles from Gonapinuwela-Hikkaduwa Junction.

Our resources were limited and as the Officer-in-Charge of the Crop Protection Division was mainly engaged in the perennial problems of control of the Coconut Caterpillar pest which was breaking out not only in the Eastern Province but even in the Ganewatte and Kurunegala

\* This conference was held at Hotel Taprobane, Colombo on 23rd September 1963, on the occasion of the visit of Dr. Karl Maramorosch of the Boyce Thompson Institute.

District, it was not possible for us to devote our full time to the investigation of this disease, especially in view of the distance from our Headquarters at Bandirippuwa.

In 1960 while on a tour of inspection of this area we had the good fortune to meet at the Hikkaduwa Rest House, Dr. M.T. Hutchinson, Nematologist, of the Tea Research Institute of Ceylon and while discussing the problem he was good enough to volunteer to visit the area and also take soil and root samples for the examination of possible harmful nematodes. Dr. Hutchinson was also kind enough to train Mr. Kirthisinghe in the technicalities of nematology and subsequently visited the Research Institute and participated in a Research Conference at which Senator T. Amarasuriya, was himself present though he was not the Chairman of the Board at that time but only a member of the Board.

Our nematological studies were of an empirical nature, and have been reported in considerable detail in the 1961 Annual Report of the Coconut Research Institute. In our nematological investigations it was not possible to carryout detailed studies owing to the nature of the techniques of such investigations which were time consuming and which our limited staff could not be called upon to undertake at the sacrifice, of immediate work.

I would be failing in my duty if at this moment I do not thank Dr. Gunn, Director, Tea Research Institute for granting permission for training Mr. Kirthisinghe at the T.R.I. Laboratories, and also occasionally lending the services of Dr. Hutchinson who always extended to us the hand of friendship and co-operation that was necessary from one well equipped Research Institute which may be called the "Cinderella" of the Crop Research Institutes of Ceylon.

Since the appointment of Mr. Ekanayake as Crop Protection Officer in February 1963, it was possible to step up the tempo of research by a distribution of labour and co-operation between Mr. Ekanayake and Mr. Kirthisinghe and myself and I am happy to record that Mr. Ekanayake now reports to me that in May 1963, *a parasitic nematode was at last found which we have sent for identification to a foreign Institute.*

At the same time I have to record the exemplary co-operation of the Pathologist of the Department of Agriculture, Dr. J.W.L. Peiris, (now the Deputy Director of Agriculture, Research), who is with us today and who accompanied us on this tour with Dr. Maramorosch and also in particular his successor Dr. Abeygunawardene, who is training my newly recruited Technical Assistant and has himself visited the Gonapinuwela area on more than one occasion. I understand from Mr. Ekanayake that our observations regarding this parasitic nematode has been confirmed by similar observations by Dr. Abeygunawardene at Peradeniya.

At the same time the Soil Chemist, Dr. Nethsinghe, carried out simple manurial trials with the use of trace elements on one estate where the incidence of this disease and the incidence of casualties have been very high. We therefore approached the problem from the angle of possible nutrient deficiencies such as those due to lack of trace elements, such as Boron, Zinc, Molybdenum and Copper. The results so far do not lead to any hopeful developments, but with a perennial crop such as the Coconut Palm it is difficult to expect restoration of nutrient imbalance and produce results within a short time.

The next step which we have taken was when Prof. T.A. Davis, formerly Plant Physiologist of the Indian Central Coconut Research Station at Kayangulam in Kerala, happened to visit us to collect data on another problem in which he was interested where we could be of assistance to him. We took the opportunity of his experience with the Coconut Wilt of Kerala on which he had been working for almost a decade or more; to get the benefit of his views, myself, the Soil Chemist and Mr. Kirthisinghe visited the Gonapinuwela area in particular and the Southern Province in general with Prof. Davis who had also further discussions with us on the possible causes of this disease. Prof. Davis at our request submitted a report which will soon be published with our own observations. It may be that we do not entirely agree with all the views expressed by Prof. Davis, but in any case he has at least given us in writing in his report the credit for having taken every step that was possible to initiate the investigations in as many angles, as could be tackled with limited staff.

The Botanist also carried out a few anatomical studies of the root system, but were inconclusive.

The Crop Protection Officer, Mr. Ekanayake has made detailed anatomical and histological studies of the leaves of the affected and unaffected leaves to look for possible causes which may lead to useful clues.

In this connection we have to report the presence of a fungus which has been found to enter the Xylem vessel, but we have not been able to culture and identify it. This may be of a saprophytic or parasitic nature, that is it, may be a secondary factor or it may be the causative factor.

At the same time a Statistical Sample Survey of the incidence of the disease has been carried out which has been repeated under the immediate supervision of Mr. Abeywardene the Biometrician a month ago. The results of this survey are being analysed and are being studied.

in considerable detail. Mr. Abeywardene in due course today will follow me with a report on his observations based on the second analysis of the statistical data we have last month collected on the basis of a sampling surveys.

For the co-operation of Dr. Hutchinson in arranging an opportunity of obtaining the services of Dr. Holmes of the Rockefeller Institute on his way to Philippines for his investigations in the Kadang-Kadang disease, we are most grateful. It so happened that Mr. Kirthisinghe was with Dr. Hutchinson when Dr. Holmes visited the Tea Research Institute and on his way back to the Airport he visited Gonapinuwela area and made his own observations.

Further we have been most fortunate in having Prof. Walter Kubienna an eminent Micropedologist who had worked on the relation between disease and Micro Pedology (or the use of Microscopic studies of soil structures). He visited us with his assistant Dr. Schmidt and inspected the Gonapinuwela area and took away soil samples to Hamburg. We are awaiting his report on the soils of the diseased area.

It has been a great pleasure and a privilege to have Dr. Karl Maramorosch of the Boyce Thompson Institute, an international figure in the field of Virology and on the insect transmission of the virus diseases of plants who has visited the area and discussed with us the problems and given us the benefit of his advise.

I have at the same time to thank Dr. Fagundes, Head of the Perennial Crop Section of the F.A.O. at Rome whom I had the good fortune to meet here after the last Technical Conference on Coconut Production, Protection, and Processing at Trivandrum in 1961 who responded generously to my earnest appeal to give priority to the programme arranged for Dr. Maramorosch who is on a world tour studying the comparative aetiology of unknown diseases of the Coconut palm in different parts of the world. It is such a pity that a period of only 2 days have been left in his programme to be with us; but these two days have been like two months and we have found his deep and wide knowledge and experience of great benefit to us.

We are happy to take him this afternoon to our Research Institute to have further discussions and I hope the proceedings of this meeting will not be too long so that Dr. Maramorosch will have some time at our disposal for further discussion on Technical Points.

Making these statements are not in the nature of a defence of what we have done or not done during the last two or three years with limited resources, but we stand here to state that we have done our best and hope that the Government of this country as well as foreign bodies come to our aid to help us to solve the problem that has been forced upon us.

We will welcome questions and hope you gentlemen will participate in our deliberations.