

## BUD ROT OF COCONUTS

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### (ADDRESS TO THE KURUNEGALA PLANTERS' ASSOCIATION)

Last year the Director of the C.R.I., Dr. Salgado asked me whether I could give some attention to the problem of bud rot of coconuts which was said to be causing concern in the coconut plantations in this area. Although in the Department of Agriculture we have our hands more than full with disease problems of the crops that we deal with, I agreed to do so especially as I was also dealing with a disease of cacao which is caused by a fungus *P. palmivora* and the bud rot of coconuts is also known to be caused by the same organism.

The term bud rot is now regarded as being applied only to those diseases in which the rot of the bud is the result of a primary infection in or near the bud tissues. Many of the early workers have demonstrated that the bud of coconut palms could be induced to rot by inoculation with species of bacteria and certain weak fungi like *Mucor sp.* *Thielavia sp.* and *P. palmivora* when the bud tissues are wounded. This technique of inoculation by wounding is however regarded by many workers as insufficient proof of parasitism. Many workers notably Mc Raie in India, Reinkeng in Phillipines have shown that *P. palmivora* which has been isolated from rotting coconuts buds could infect healthy buds of coconut seedlings without wounding and so far this fungus is the one associated with the bud rot of coconuts. In Ceylon Gadd showed the *P. palmivora* can cause bud rot of coconuts when it is inoculated on the tissues of the bud after wounding with a sterile knife. During the last few months we have been able to isolate a culture of *P. palmivora* from a palm infected with bud rot at Moorock Estate and have successfully inoculated with it many coconut *seedlings* without any wounding bringing our evidence of the causal agent of bud rot up to date with those of Mc Raie and Reinking.

The fungus *P. palmivora* is known to cause a number of disease of plants in Ceylon. It causes bud rot and nut fall of coconuts, stem canker and pod rot of cacao and stem diseases, pod disease and abnormal leaf

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fall of Rubber. Because of this, till recently we were apprehensive about our cacao which was underplanted to rubber. Work of Orellana in our Division has shown that the strain of *P. palmivora* on cacao does not attack rubber readily and vice versa so that our fears on this account have receded. Our recent cross inoculation experiments agree with the observations of Reinking, Ashby and Gadd in that the *P. palmivora* from coconut can attack cacao pods only with difficulty. However, the cacao strain is capable of attacking coconut although not as readily as the coconut strain. This would therefore indicate that there is a possibility for the disease to pass from diseased cacao to the neighbouring coconut palms.

The foregoing is perhaps academical although not without applied interest.

### Control of the Disease

Although many workers have investigated the problem of coconut bud rot there does not appear to be any fool proof control measures found for this disease. I may briefly mention the control measures so far recommended (Reinking).

1. Tree when once severely infected never recover. Systematical inspection, detection and burning of all diseased crowns must be carried out.
2. Spraying Bordeaux mixture on palms within 25 yards of the infected trees.
3. Interplanting of coconut with cacao should be avoided.

I understood from the Superintendent, Moorock Estate that spraying with copper and mercurial fungicides have been carried out without advantage. Once the disease has attacked the tender tissues of the bud it is not possible to control this disease with sprays. The only chance of saving a tree is if the disease is detected at the very early stages at which time the rot has not reached the bud which could be saved by cutting out the diseased tissues. However in practice the disease is noticed only when it is well advanced. The usual methods of spraying with fungicides are laborious and during rainy weather when the fungus can be expected to be most active the fungicides may be washed off to a large extent. The cost of spraying too frequently is also prohibitive. Perhaps, it is for these reasons that field hygiene and destruction of infected crowns by fire is still our major line of control and spraying has to be confined to the apparently healthy trees, in the immediate vicinity of the affected palms.

Owing to the attendant difficulties of spraying I was considering the possibility of preventive treatment in another way. If we could find a chemical produced in pill or pellet form which could be placed between the young leaves of the central shoot and which will slowly release the chemical with the rains it is possible that the bud could be protected. The chemical has to stand up to at least 10-15 inches of rain and the chemical should be released at a sufficient concentration to inhibit the germination of the sporangia of the fungus. By these means we would be immediately using rain which has been our enemy in this respect to do the spraying for us.

We have tested by a laboratory bioassay technique a considerable number of chemicals and have found that some organo mercurials are effective in regarding spore germination of the fungus even after 14 inches of artificial rain. The most promising of them is a Phenyl mercury urea compound. These compounds are in the form of a powder and an experiment has been laid out at Moorock Estate to test these in the field. We are using 10 grams of each in small cloth bags which are wedged between the youngest leaves of the crown. Five fungicides are altogether tested with untreated controls. However this experiment was upset by an unexpected factor. The crows have been curious about the bags and have removed some of them. We have now repeated this experiment and tied up the bags to the leaves with string this time. However if the chemical works as I stated before it should be available in pellet or granular form and I have asked certain firms whether they could formulate such a compound.

I must emphasise that the evaluation of a chemical on the control of a disease like bud rot in the field is very difficult owing to the very low percentage of infected plants compared with the healthy plants. For the last one and a half years the records of Moorock Estate show that only 105 palms have been infected out of a total of 14,525 palms and all the infected palms were the underplanted seedlings. A better controlled experiment with seedlings using artificial inoculation and fungicides is contemplated at Peradeniya. That Mr. Chairman and Gentlemen is the position we have so far reached with regard to this problem.



Young palms affected by Bud Rot