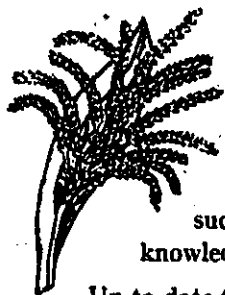


PROBLEMS ENCOUNTERED IN THE CONTROL OF PESTS AND DISEASES OF COCONUTS

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A legacy left to the coconut grower by past workers, who worked on pests and diseases at various times in years gone by (I refer to people such as Hudson, Petch, Henry et al), has provided the grower with knowledge of what pests and diseases he might encounter in his plantations.

Up-to-date the recorded pests and diseases of coconut are as follows :

1. PESTS:

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|-------------|--|
| Coleoptera | (a) <i>Oryctes rhinoceros</i> (Black Beetle). |
| | (b) <i>Rhyncophorus ferrugineus</i> (Red Weevil). |
| Hemiptera | (a) <i>Aspidiotus destructor</i> (Coconut Scale). |
| Orthoptera | (a) <i>Aularchis milliaris</i> (Spotted Locusts). |
| Lepidoptera | (a) <i>Nephantis serinopa</i> (Coconut Caterpillar). |
| | (b) <i>Psyche albipes</i> (Bag Worm). |
| | (c) <i>Parsa lepida</i> (Stinging Caterpillar). |
| | (d) <i>Elymnias fraterna</i> . |
| Isoptera | (a) <i>Cyclotermes redemanni</i> . |
| | (b) <i>Hypotermes obscuriceps</i> . |
| | (c) <i>Coptotermes</i> sp. |
| Hymenoptera | (a) <i>Dorylus orientalis</i> . |
| Chiroptera | (a) <i>Pteropus</i> sp. (Bats). |
| Rodentia | (a) Rats. |
| | (b) Squirrels. |
| | (c) Porcupines. |
| Aves | (a) Birds (Wood Pecker . . .). |

2. OTHER PESTS:

- | | |
|---------|---|
| Weeds | (a) Illuk— <i>Imperata cylindrica</i> . |
| | (b) Couch— <i>Panicum repens</i> . |
| Animals | (a) Cattle. |

3. DISEASES (Organic):

- | | |
|--|---|
| | (a) <i>Pestalozzia palmarum</i> (Grey Blight). |
| | (b) <i>Ceratostomella paradoxa</i> (Stem Bleeding). |
| | (c) <i>Phytophthora palmivora</i> (Bud rot). |
| | (d) <i>Helminthosporium</i> sp. |

OTHER CONDITIONS:

Tapering of palms is a common condition in coconut growing areas. It is not known whether this condition of the palm is due to a disease causing organism. Some physiological conditions such as 'wet feet' hard pan, etc., can cause tapering of palms. Hence at this juncture it is not possible to type this condition.

Detailed knowledge of pests and diseases—Is it wanting?

From what has been said above, it will be evident that the first problem we encounter in the control of the pests and diseases of coconut is one of a lack of up-to-date knowledge of pests and diseases.

This problem can be solved only if fundamental research work is undertaken immediately. Should this work be postponed any longer, it is evident that it will not be possible to direct our attention exclusively to fundamental research into pests and diseases of coconuts that are already in existence, because with the upset of the biological equilibrium that will result from the extensive opening up of new lands, underplanting and re-planting, it is quite likely that new pests and diseases will crop up; these will warrant our attention too. We will be then wallowing in a mire of new and old pests and diseases, not knowing where to begin and where to end.

To overcome this problem we need trained personnel to tackle what pests and diseases there are in existence now, and these personnel can then be diverted to tackle what may crop up later.

Inavailability of suitable equipment, men and material for tackling pests and diseases in the field

The next problem is one of inavailability of suitable equipment for the control of pests and diseases. When one looks at a coconut plantation in Ceylon, one sees trees of varying sizes and ages. The cultural methods also differ on different properties. These two factors have to be taken into consideration in mapping out a Crop Protection Programme. Let us consider the first factor. The height of trees vary from 5 feet (dwarfs) to 50 feet or more and this variation is likely to be met on one and the same estate. It is therefore not possible to find a single sprayer or a duster that will meet the requirements for a control programme on such an estate. The cultural practices do not lend easily to the use of mobile power-driven vehicles carrying spraying equipment.

One has to content with such factors as trenches, rubbish heaps, uneven terrain, unequidistant planting—these all diminish the manoeuvrability of power-driven vehicles. These then are limitations to the use of such vehicles. Aerial spraying could be used to advantage when the treatment to the crown and leaves is warranted as in the case of the fungus diseases that manifest themselves on the leaves and leaflets of the coconut palm or in the case of insect pests that swarm on these parts of the palm.

Manufacturers of chemical and spraying equipment should be given an opportunity to familiarize themselves of the grower's requirements of a spraying or dusting machine and they in turn should take advantage of demonstrating these to the growers, through field days and such occasions. In this way new or existing inventions that they think would be suitable in pests and diseases control of coconuts could be shown to the grower. The grower could thus learn from the manufacturer as to what this machine can do and will do. This would surely be to the mutual advantage of both grower and manufacturer. The liaison between the grower,

the manufacturer and the research worker is totally lacking. Perhaps this state of affairs aggravated by the fact that growers are smallholders and therefore are not in a financial position to avail themselves, even if interested, of the latest in machinery and chemicals. But this can be rectified easily by the Research Institute in providing the grower this service.

The equipment we have presently available to us for this work has certain limitations, for example the Addison Rocker Sprayer is useful but its use is limited by the fact that it requires of the operator to be an adept tree-climber, and climbers are hard to come by in this country.

Secondly, because of the necessity to climb in order to spray, the rate of spraying is slow down. Power sprayers are expensive and therefore they can only be made available to the grower through the Crop Protection Service.

Does the grower do as much as he can in protecting his crop ?

The grower has also to be labelled as one creating the problems. Since the greater percentage of Ceylonese are Buddhists there is a religious bias against killing. For this reason we have had educated growers refusing to use chemicals against pests. Then there is a tendency, let a particular problem whether it be a disease or pest, to get out of hand by either neglecting it wholly or resorting to some method of control that a village friend or neighbour has advocated. We are advised of the grower's situation only when he has not had any effective results from his various treatments and the pest or disease is really causing him concern.

For example, we cannot get the same degree of *Oryctes rhinoceros* control through larval control as they get in South India, by treating artificial beetle traps, simply because our plantations are not kept clean as compared with those in Travancore-Cochin, and therefore there are plenty of natural breeding places. It might be said that good estate sanitation exists in South India because the holdings are smaller than those of Ceylon, the pattern of life and the economic conditions prevailing there are different to that of this country. Be these as they may, we cannot deny the fact that in South India some degree of control of *Oryctes rhinoceros*, through larval control, has been got because of very much better estate sanitation that prevails on holdings over the Palk Strait than on ours. This point of estate sanitation is one that could well be copied by the Ceylonese grower from his near neighbour. If he does so it will surely be to his advantage because he will by so doing control a common pest of coconuts.

Crop Protection Division and the Grower—What is its role ?

The obvious question one would ask after reading what is written above is, what is the Crop Protection Division of the Coconut Research Institute doing about it all. To this my reply will be this—organisation of this new Division comes first. Only when this process of organisation is complete can work of any consequence really be done.

It entails, first the getting together of Library and Laboratory that would permit research work and secondly research work and thirdly of providing the grower with a Crop Protection Service. We are now engaged in doing fundamental research on some pests, that are likely to be of consequence in Ceylon. In this way we hope in due course to bring our knowledge up-to-date on all pests and diseases. Side by side with this we have also laid out trials and field experiments for the control of certain pests. It is our hope that thus we will acquire simultaneously a knowledge of the control of the pest or disease under study and also all that there is to be known about the pest or disease itself.

chemical and biological control will be looked into. At the moment the only biological material that is used in Ceylon is *Trichosiphilus pupivora* for the control of *Nephantis*. This aspect of pest control will be developed further by using all available effective parasites of *Nephantis serinopa*. It is likely that we may also try out *Scolia ruficornis* in the control of *Oryctes rhinoceros* although this parasite has so far been reported to be successful, in the control of *Oryctes rhinoceros*, only in one coconut growing country.

It certainly warrants a trial on our shores as we may be lucky enough to successfully establish the parasite because we are blessed with an island climate. We may if we do establish the parasite rid this country of *Oryctes*. This programme of work if carried out as expected, should give the coconut growers of Ceylon a complete picture of the pests and diseases of coconuts and the satisfaction that in most cases we will have an up-to-date Crop Protection Service that will tackle most of the pest and disease problems that the grower may encounter.

Summary

The problems of Crop Protection in coconuts in Ceylon arise as a result of—

- (a) Lack of up-to-date knowledge of pests and diseases. Lack of trained personnel is further aggravating this problem.
- (b) Unavailability of suitable equipment to contend, with the nature of the crop and the multitude of cultural practices. The absence of liaison between the grower, the manufacturer of chemicals spray and dusting equipment, and the research worker.
- (c) The growers unconcern for pests and diseases of coconuts. This may be either through religious bias or ignorance or neglect. The manufacturers if they cannot market their products because of the growers unconcern or lack of capital to purchase their product cannot be expected to devote their time, energy and capital to turn out something that meet the growers needs.
- (d) The absence of a Crop Protection Service which will cater for the needs of the small-holder who finds it an uneconomical proposition to purchase expensive equipment for use occasionally.

No figures are available at the time of writing as to the losses of crop due to pests and diseases but this does not mean that losses do not occur as a result of depredation by pests and diseases. It merely indicates to us that the losses which do occur are only of small consequence to the growers because they are not aware, for want of figures, of the extent of the damage that is being caused by pests and diseases in Ceylon. Side by side with the drive for increased production through manurial treatments, selection of seed nuts, etc. there must also be a determined effort to eradicate the pests and diseases of coconut that we are now aware of and those that we will become aware of in the future.