

# COFFEE DISEASE IN THE WESTERN HIGHLANDS

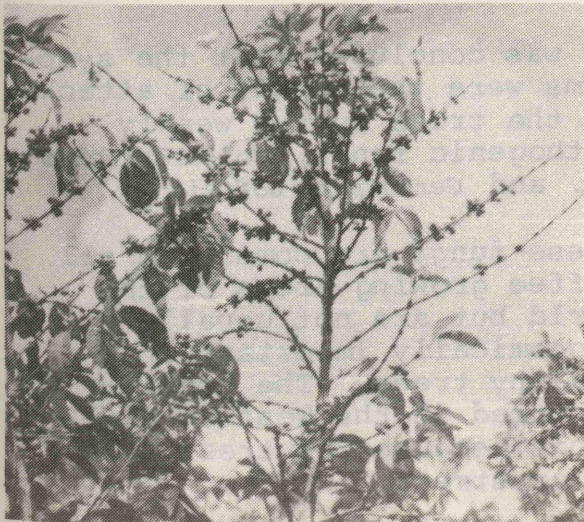
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## INTRODUCTION

In the first half of 1980 there was a lot of publicity about a disease of coffee which many people thought was new. This disease was reported to be seriously affecting coffee trees in the Whagi Valley, Western Highlands Province. This article has been written to explain the situation and to show that the disease was neither new nor particularly serious.

## SYMPTOMS

Symptoms of the disease were only seen on side branches bearing fruit. Generally, the tips of these branches and the cherries on them were dead or dying. Occasionally, the cherries were seen to be infected with fungus.



Overbearing die-back symptoms

The resulting brown-black, sunken areas were most obvious on mature cherries but were also sometimes seen on green, immature fruit.

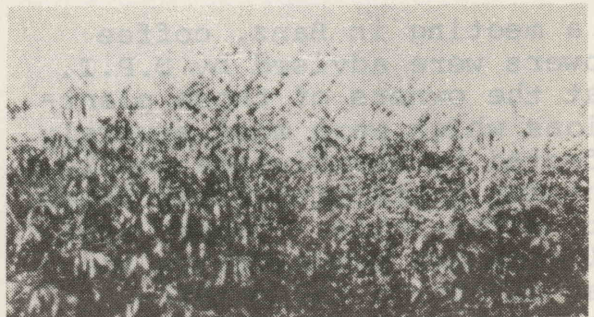
When diseased tissue was examined under the microscope, two types of fungi were found:- *Colletotrichum* sp. and *Cercospora coffeicola*.

The bearing branches of badly affected trees lost all their leaves and this led some people to confuse the disease with lightning strike. However, in lightning strike, only the branches right at the top of the tree are affected.

The wood of affected branches was often stained brown-red under the bark and another fungus, *Fusarium solani* was often found in this wood.

## D.P.I. INVESTIGATIONS

In January, 1980 two specimens of diseased coffee were sent to the Plant Pathology Section at Konedobu.



Trees affected by lightning strike



Two fungi were found on these specimens: *Colletotrichum* sp. and *Fusarium* sp. We found that both of these fungi are saprophytic or only weakly pathogenic. This means that they can only attack plants which are already unhealthy. This was confirmed by experts from the Commonwealth Mycological Institute (C.M.I.) in the United Kingdom.

D.P.I. plant pathologists visited the Whagi Valley after further reports were received showing that plantation owners were very worried that the disease would seriously harm their trees. A detailed survey of affected sites was carried out including both plantations and smallholder blocks.

During the survey, it was found that many trees were in poor condition and so more likely to be attacked by saprophytic or weakly pathogenic fungi. It was concluded that the problem was widespread and needed watching carefully but that it was not a new or serious threat to the coffee harvest.

More diseased specimens were collected at various sites and sent directly to C.M.I. and to Konedobu for further investigation. From their work on these and later specimens, scientists at C.M.I. concluded that the type of *Colletotrichum* which causes Coffee Berry Disease was absent and that only saprophytic species were present.

At a meeting in Banz, coffee growers were advised by D.P.I. that the owners of those plantations which were most severely affected by the disease should consider protecting their trees with a fungicide. Copper oxychloride was suggested as the most effective and readily available chemical for this treatment.

It was also explained at the

meeting that one cause of the disease problem was the unusually heavy crop since it was weakening the trees and making them more susceptible to fungal attack.

#### FURTHER INVESTIGATIONS

Some of the larger plantations invited overseas coffee disease experts to look at the problem as well as the D.P.I. staff, and to give their opinion of the causes of the outbreak. These private experts all agreed with the D.P.I. findings that the major cause of the stress in the coffee trees was the very heavy crop. They also agreed that the type of *Colletotrichum* which causes Coffee Berry Disease was absent.

Another factor which the overseas pathologists felt was adding to the stress on the coffee trees was their poor state of nutrition. This poor nutrition was found in trees on very large areas of coffee and was thought to be due to plantation owners removing shade trees without increasing fertiliser application to make up for the resulting loss of nutrients.

#### CONCLUSIONS

It was concluded that the symptoms were the result of attacks on the trees by two weakly pathogenic fungi, *Colletotrichum* sp. and *Cercospora coffeicola*.

These fungi are common in all coffee growing areas of the world but are not usually economically important on healthy trees. The problem occurred in the Western Highlands because the trees were under stress.

There are several possible reasons for this, including:-

- 1) the unusually heavy crop,



- 2) the failure of the growers to carry out control by pruning the excess cherries earlier in the season,
- 3) the removal of shade trees,
- 4) the failure to compensate for shade removal by increasing fertiliser applications.

In order to deal quickly with any future coffee problems, it is important that close contact is maintained between the Government and the private sector and that high levels of co-operation continue. One possible joint venture which has been suggested is the establishment of a Coffee Research Institute in the Western Highlands Province.