

THE VEIN-BANDING VIRUS DISEASE OF THE DADAP TREE (*ERYTHRINA LITHOSPERMA*)

D. Mulder

Introduction

Newton and Peiris (1953) described a vein-banding virus disease in dadap trees standing as shade trees in cacao plantations. This disease is also present on many tea estates and therefore of interest to planters. Because of its stunting effect on older dadap trees it diminishes the value of this species as a shade tree or green-manure crop and shortens its lifetime.

Proper selection of healthy trees, and propagation by taking cuttings only from these healthy trees, will be the only way to improve stands of dadap on tea estates.

Symptoms

The symptoms of vein-banding in dadap are a yellow discoloration in the leaves along the veins. In fully-grown, mature, dark-green leaves the discoloration is indeed restricted to a narrow band along the veins; in smaller, younger leaves developing on a pruned tree the whole colour of the leaf is more or less yellowish and a certain leaf deformation accompanies this symptom. The leaves may be dwarfed also. On a pruned tree die-back of young shoots may occur; this indicates that, on a lopped tree, symptoms are much more severe—on the other hand symptoms may be almost absent on a tree that is allowed to grow out freely.

Old dadap trees that have carried the virus disease for a long time show a bad recovery each time they are lopped and finally die with a number of small stunted shoots on the lopped branches. A certain amount of stunting and die-back can be due to boron deficiency.

In more detail, the symptoms of this virus disease in dadap consist of—

1. vein-banding;
2. vein-clearing;
3. oak-leaf pattern;
4. bulging of the leaf between the veins; and
5. dwarfing of leaves and shoots.

The first three symptoms are only variations of the effect of the presence of the virus on the distribution of the chlorophyll. Depending probably on the stage of growth at which the virus exerts its influence, the result is either a yellow band at a small distance on either side of the main veins (vein-banding) or a yellow colour immediately surrounding the veins (vein-clearing) or a yellow pattern at a considerable distance from the main veins (oak-leaf pattern).

The two latter symptoms (4 and 5) are a result of the restricting influence of the virus on the growth of the leaf. The growth of the veins is hampered more



Figure 1. Stunted branch showing leaf twisting.



Figure 2. Stunted branch showing leaf deformation and vein-banding.



Figure 3. Healthy branch for comparison.



Figure 4. Diseased leaf showing vein-clearing and vein-banding.

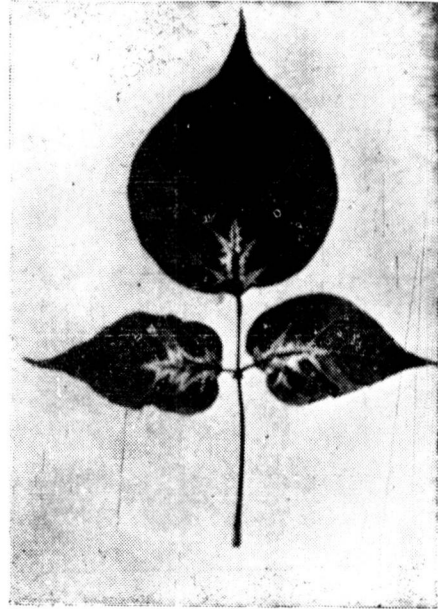


Figure 5. Diseased leaf showing oak-leaf pattern.



Figure 6. Diseased leaf showing bulging between the veins.

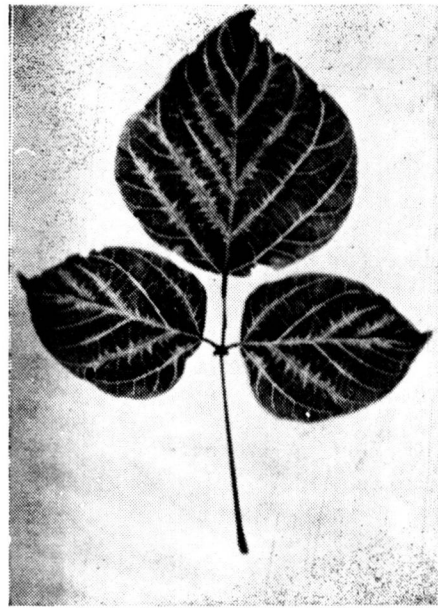


Figure 7. Diseased leaf taken from the base of a healthy-looking shoot showing mild symptoms of vein-banding.

than that of the leaf lamina with the result that the leaf bulges in between the veins. Another result is that the contour of the leaf is more rounded. In the extreme case the whole leaf is dwarfed. Trees that are ring-barked before felling show very severe symptoms of this virus disease if they were infected earlier. The reason is that while growth slows down under the effect of the ring-barking the invasion of the top of the shoot by the virus goes on and symptoms develop on the youngest leaves.

Control

Virus diseases cannot be cured by spraying or manuring or any cultural measure, but they can be prevented in various ways from taking too great a toll.

They are specially liable to spread rapidly when vegetative propagation of a crop is used. Transmission through the seed is rather rare but, through cuttings and tubers, virus diseases can and do spread rapidly.

In the case of the dadap, each time the loppings of a diseased tree are used for cuttings to be planted out, the disease is distributed more widely. Therefore, selection of healthy mother trees should be the basis of the control of this disease.

The trouble is that it is fairly difficult to recognize the disease in rather young trees in full growth. Hence, it might be advisable to start from healthy cuttings obtained from a reliable source. In this way, diseased material on an estate could be gradually replaced with healthy stock.

Reference

NEWTON, W. & PEIRIS, Y. W. L. (1953). Virus diseases of plants in Ceylon. *F.A.O. Plant Protection Bull.* 2 (2): 17-21.