

# ANTIMUCIN—A NEW WATER MISCIBLE FUNGICIDE FOR THE CONTROL OF BLACK STRIPE

By

**Alfred Riggensch**

## **Introduction :**

The incidence of the bark rot or black stripe disease of the rubber tree (*Hevea brasiliensis*) caused by *Phytophthora palmivora* has considerably increased in recent years, and has become in many districts an economically serious affliction of the tapping panel ; badly affected trees have to be taken out of tapping for considerable periods. The greater activity of the disease in recent years is undoubtedly the result of denser and better canopies and the parallel increased development of the *Phytophthora* leaf disease. The most susceptible clones are PR 107, Wag 6278, MK 3/2 and PB 86.

As a result of the considerable economic importance which must now be attached to bark rot, all the commonly used fungicides as well as some new fungicides were carefully tested with regard to their fungicidal efficacy against *Phytophthora palmivora*. These investigations became particularly necessary when it was found that a number of products in wide use did not satisfactorily prevent or cure the disease, despite regular applications. This was subsequently confirmed in careful laboratory and field experiments.

## **Testing Methods:**

In the laboratory two groups of tests were carried out, and each test was replicated at least three times to preclude any possible errors.

In the first group the various fungicides were admixed in carefully measured quantities to the growth medium, Corn Meal Agar, which was then inoculated with a piece of a pure culture of the fungus *Phytophthora palmivora*, isolated previously from a bark rot lesion. The petri dishes were then kept at constant optimal growth temperature, and the growth rate of the fungus measured after 2, 4, 6 and 8 days. The better the fungicide the smaller the rate of growth or, at best, complete inhibition of growth.

In the second group the fungus, *Phytophthora palmivora*, was allowed to grow on the same artificial medium in petri dishes from the centre towards filter paper discs impregnated with a given concentration of fungicide. If the fungicide is at all effective, a growth inhibition is formed around this paper disc, and the degree of effectiveness is determined by the radius of this circle. With maximum inhibition, *i.e.* effectiveness, the fungus does not grow towards the treated filter disc at all ; on the other hand, if the fungicide is entirely ineffective, the fungus will even grow over the treated filter paper disc.



DIAGRAM A.

Left Petri dish : Left disc : Antimucin solution (0.1% active material) inhibits growth of *Phytophthora palmivora* completely.

Right disc : Izal solution (1% commercial material) has no inhibiting effect on growth of *Phytophthora palmivora*.

Right Petri dish : Left disc : Antimucin solution (0.1% active material) inhibits growth of *Phytophthora palmivora* completely.

Right disc : Brunolinum Plantarium (1% commercial material) has practically no inhibiting effect on growth of *Phytophthora palmivora*.

SCM

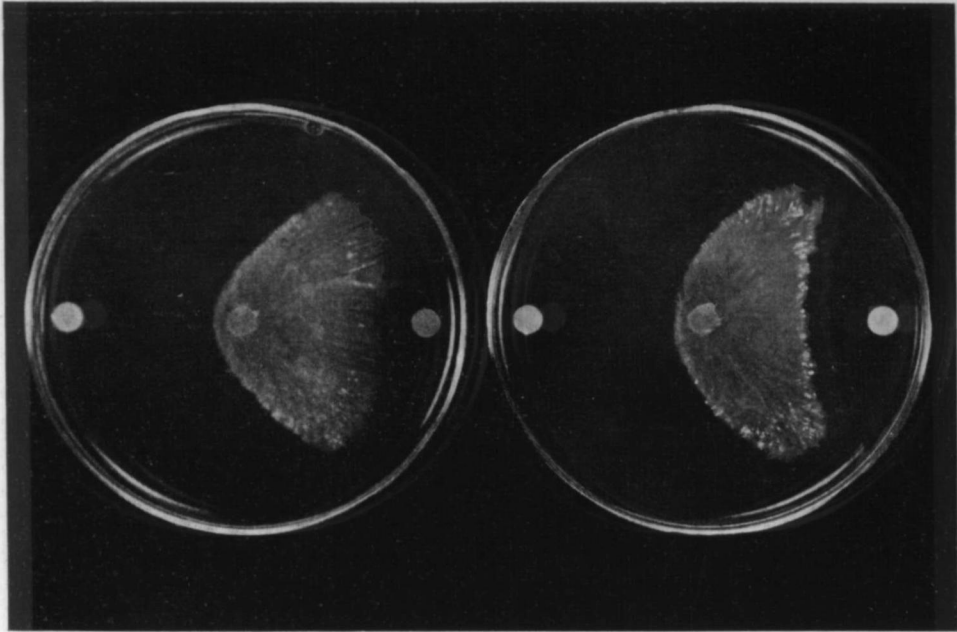


DIAGRAM B.

Left Petri dish : Left disc : Antimucin solution (0.1% active material) inhibits growth of *Phytophthora palmivora* completely.

Right disc : Fylomac 90 solution (1% active material) has only slight inhibiting effect on the growth of *Phytophthora palmivora*.

Right Petri dish ; Left disc : Antimucin solution (0.1% active material) inhibits growth of *Phytophthora palmivora* completely.

Right disc : Captan solution (1% active material) has only slight inhibiting effect on the growth of *Phytophthora palmivora*.

scan

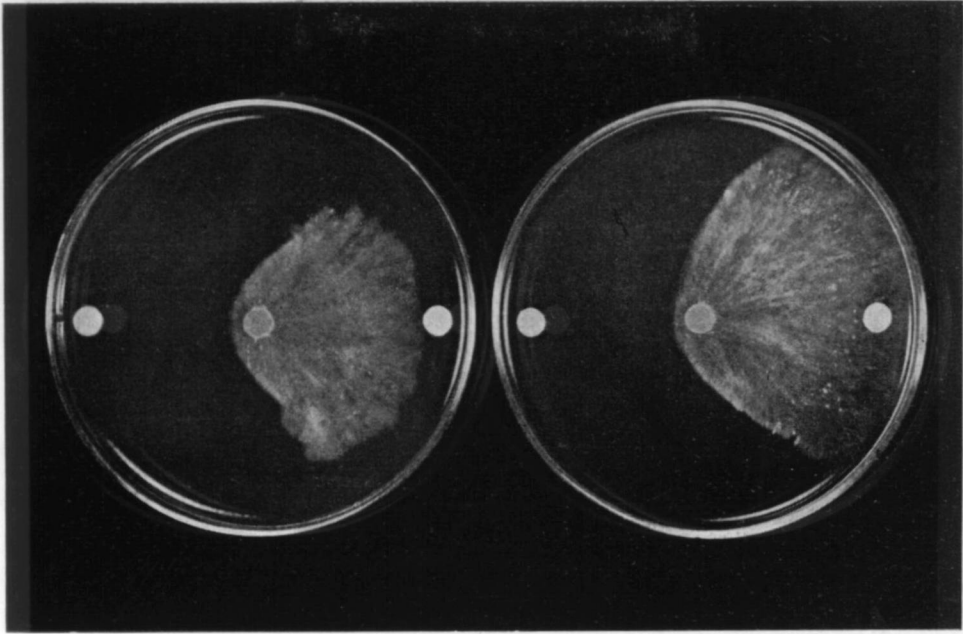


DIAGRAM C.

Left Petri dish: Left disc: Antimucin solution (0.1% active material) inhibits the growth of *Phytophthora palmivora* completely.

Right disc: Penta-chloro-nitro-benzol solution (1% active material) has practically no inhibiting effect on the growth of *Phytophthora palmivora*.

Right Petri dish: Left disc: Antimucin solution (0.1% active material) inhibits the growth of *Phytophthora palmivora* completely.

Right disc: Antiphy (1% active material) has no inhibiting effect on the growth of *Phytophthora palmivora*.

SCAN

A great number of sulphur, copper, mercury and carbamate fungicides, as well as Anti-phy, Brunolinum plantarium, Captan, Fylomac 90, Izal, Karathane, penta-chloro-nitrophenol and Thiuram were tested.

### **Results :**

In all these numerous tests, the mercury-based fungicide, Antimucin, proved to have by far the greatest fungicidal effectiveness against *Phytophthora palmivora*. Tillex, another mercury-based fungicide, was equally effective, but this product is less suited for the treatment of tapping panels. Considerably less but still fairly effective were copper sulphate and copper-based fungicides, which because of the danger of contaminating latex cannot, however, be recommended for use on tapping panels. Fylomac 90 and Captan were about as effective as copper fungicides. Practically ineffective are Anti-phy, Brunolinum plantarium, Izal, Karathane, Thiuram, and the sulphur-based fungicides.

In special tests, the more promising products were found to be non-phytotoxic in the concentrations in which they are to be used.

Field experiments have confirmed the above laboratory findings, and in large-scale use against panel diseases Antimucin has proved to be extremely effective.

The results show that of all the currently available fungicides used in these tests Antimucin is the product of choice for bark rot control in Hevea. The product as compounded has, furthermore, cellulose-fixing properties which prevent it from being washed off by rain. In the very low concentrations required for effective disease control in the field, Antimucin is also most economical and is practically harmless in use.

### **Suggestions for Practical Use :**

Antimucin, which is a liquid, should be used in concentrations of approximately 1 : 160 (1 fl. oz. in 1 gallon of water) to 1 : 320 (1 fl. oz. in 2 gallons of water) depending on the severity of the disease on individual estates, and on weather conditions. The material is best brushed on the panel immediately above the tapping cut at each tapping, prior to tearing off the scrap. When the danger of infection is less pronounced, application may be made at every second or third tapping only. In addition, it may be advisable to spray the panels once a month during the *Phytophthora* season. Cleaned out canker patches may also be brushed over with Antimucin solution prior to application of a sealing compound.

For further details reference should be made to R.R.I.C. Advisory Circular No. 64.