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AN INTEGRATED APPROACH TO THE CONTROL OF WHITE ROOT DISEASE

CAUSED BY RIGIDOPORUS LIGNOSUS ON HEVEA IN SRI LANKA

By

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A B S T R A C T

The importance of pre-planting control is of utmost importance in relation to WRD control. The basic steps should be taken not at the time of uprooting but at least 4-5 years before. This would enable one or more of the several substitute crops with a benefit/cost ratio of more than one to be planted as found successful in this study. This will maximise land utilization and bring an income which can be further channelled to control procedures at the time of planting and thereafter. Substitute cropping will increase the chances of inoculum detection and inoculum degeneration with the frequent cultivation of the soil. Several fruit crops, grasses (cover crops) and even indicator crops were found useful over this period of time when compared to leaving the land fallow. Fertilizer usage with these substitute crops could amend the soil to a favourable N/C ratio which in turn has a secondary effect on WRD control.

Proper control procedures adopted at the preplanting stage would reduce the inoculum left behind to cause infection, to a minimum level. Uprooting has to be supervised strictly to ensure that infected tree roots are not left behind in the soil. Addition of the recommended dose of sulphur will be useful as a precaution. However, in this study no correlation was established between levels of infection and increase in fungal populations as a result of sulphur application. Addition of urea enhanced inoculum decay in a pot experiment. There was an initial decrease in the microflora with urea application. Subsequently the

bacterial population increased while the fungal population did not show a marked increase. An increased N/C ratio may bring about a favourable microbial population for WRD control. An increased nitrogen content of the soil also enhanced the growth of Hevea. For the above reasons the application of additional doses of urea at planting may be beneficial in the long run. Further experimentation is needed to verify this. In one experiment the addition of basal fertilizer alone compared very well with sulphur and urea individually and with a combination of these treatments.

Post planting treatments depend on the successes of control at the earlier stages. Water miscible fungicides were useful as a precaution on suspected areas as a regular monthly spray. Infected trees have to be treated with Shell Collar Protectant (SCP) which was found to be the most effective water immiscible fungicide. Calixin Collar Protectant was tested out and also found to be as effective. Treatment of pre-tappable and tappable trees was found to be economically feasible. Up to 90% of pre-tappable trees can be saved even if they show disease symptoms as it was revealed in this study.

So far chemical methods and a few biological and cultural methods have been used at different times of the planting cycle to control WRD. This study shows how they can be integrated to the economic and pre economic life span of the crop by a disease control calendar which should be the quickest and the most effective way to control it. If left unchecked now, this disease can be a threat to rubber cultivation in Sri Lanka, when the prospects for the industry are not bright.

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