

THE COCONUT STEM BLEEDING DISEASE.

IMPORTANT ADVICE FROM THE GOVERNMENT MYCOLOGIST.

SIR.—Will you kindly publish the recipe for "Bordeaux Mixture," with the accompanying details and suggestions for treatment of the stem bleeding disease:—

BORDEAUX MIXTURE.

(1) Dissolve 6 lb. of copper sulphate in 25 gallons of water. This is best done by putting the copper sulphate in a coarse bag and suspending it in the water.

(2) In another vessel put 6 lb. of fresh lime, and add water slowly, say a quart at first, and when this disappears, another quart, and so on, until a smooth paste is obtained. When this is done, add water to bring the lime solution up to 25 gallons.

(3) When the copper sulphate is dissolved and the lime milk is cool, mix them by pouring them slowly together into another barrel, thus making 50 gallons of Bordeaux Mixture.

(4) Wooden or earthenware vessels must be used throughout. Iron or tin vessels make the mixture worthless.

A stronger solution may be made by reducing the water to 12½ gallons in each case instead of 25 gallons. *The mixture should not be made stronger than this.*

A barrel fitted with a pump and mounted on wheels is cheaper and more effective on coconut estates than the knapsack sprayers used in cacao disease. The Deeming barrel pump is recommended. The Bordeaux Mixture is only used to prevent infection. It is quite useless to spray diseased trees without cutting out the diseased parts. The fungus is inside the tree, and cannot be reached by any external wash.

CUTTING OUT DISEASED PARTS.

All the pieces cut out must be collected and burned. If left on the ground, the fungus will grow on them luxuriantly, and there will be far more danger of the disease spreading than there was before the tree was cut. A piece of sacking spread flat at the base of the tree will save some of the trouble of collecting. Where Bordeaux Mixture is being used the ground round the diseased trees should be lightly sprayed after they have been treated, in order to destroy the fungus on any chips which may have been overlooked.

When all the diseased tissue appears to have been cut out, cutting should be continued upwards and downwards for about an inch. This is especially important in dealing with young trees, because in soft tissues the diseased tissue thins out to an imperceptible thread and then expands again.

Bleeding does not occur until three months or longer after the tree has been infected. It is probable, therefore, that when the tree is first treated some infected spots will be overlooked because they are not bleeding. These will begin to bleed later. The trees must, therefore, be examined periodically. A mallet and a broad chisel are the best tools for general use. The long chisel used by Tamil coolies for cutting out red beetle is excellent, and can be used without a mallet.

SCORCHING THE WOUND.

If the torch used to scorch the wound is too large, it will damage the surrounding parts of the stem. A rag wrapped round the end of a stick or iron rod for a length of about two inches is sufficient. It should be dipped in the oil, and then lighted and passed over the cut surface. Kerosine is better than coconut oil. The main object is to dry the cut surface so that the tar will adhere properly. The tar should be applied hot; it waterproofs the wound and prevents decay as well as reinfection. Liquid fuel does not prevent the entrance of fungi and is not permanent. On large estates it would be more economical to scorch the wound with a blowpipe lamp such as is used by painters to remove paint from woodwork. One which burns kerosine should be selected.

NOTES ON SOME SUGGESTED REMEDIES.

Cutting a hole in the tree may diminish the bleeding, but it cannot stop the growth of the fungus: the latter continues to grow without giving so much indication of its presence. It seems to be forgotten that the fungus attacks the tree first and the bleeding is a secondary feature. If the hole is cut through the diseased patch, it provides a better exit for the spores of the fungus: if it is cut through the sound part of the stem, it provides a place where the disease can attack the tree more easily. Either way it is bad.

A bag of kainit hung round the tree has no effect until the kainit dissolves and reaches the ground. Then, it has only a manurial value and might just as well have been applied to the soil at first. A solution of kainit trickling down the stem does not affect the fungus in the slightest degree.

Inquiries made during last year showed that the disease occurs on estates where salt is regularly used as a manure as well as on estates where it is not used. It was impossible to base any recommendations as to the use of salt on the replies to these enquiries.

Finally, it is proposed to cut a hole in the stem near the top on the same side as the bleeding patch and to fill it with salt and camphor in the belief that these will dissolve and find their way inside the stem to the affected part. But the conducting fibres of the coconut stem run spirally from the base to the top, and, supposing that the solution could travel downwards, it would be practically impossible to decide where the hole ought to be cut. Moreover, the internal application of fungicides has never yet been successful.

T. PETCH.

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Those who have intelligently and systematically tackled the bleeding disease by cutting, burning and tarring are, we are glad to hear, well satisfied with the results, and have generally managed to keep their estates fairly clean. The difficulty has been where the disease has attacked young trees which do not permit of cutting to the same extent as old ones. Mr. Petch, we believe, is now fully satisfied that the disease is infectious, and, therefore, recommends as a preventive measure the application of Bordeaux mixture to the trees—equal parts of sulphate of copper and lime mixed with water to the thickness of paint or white-wash. This can be either applied with a brush or sprayed on. On one estate in the Chilaw district, we hear of a Superintendent noted for his efficiency, having a tank mounted on wheels with a hose attached, which is taken through the estate and with the aid of a pump every tree is thoroughly sprayed with the mixture. The point of attack is almost invariably about 6 or 7 feet from the ground so that if the trees are properly treated for about 10 feet from the ground the chances of attack are small, although, of course, the most effective and surest way of preventing infection is to do the whole tree. So quickly did the news of this preventive measure get about that we understand there is hardly an ounce of sulphate of copper left in Colombo! This is all very well in big gardens, and the intelligent planters may be depended upon to see the

work carried out, and we are pleased to hear that inspectors are to be shortly appointed to go round the districts and carry out the work on the small gardens of villagers. This is very satisfactory. The outlook is altogether brighter, but coconut planters are not yet out of the wood, and the most systematic and careful supervision of their properties must be persisted in.

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Feb. 14th.

DEAR SIR,—I was very much interested in Mr. T. Carry's letter published in your contemporary of 13th instant regarding the beneficial effects of salt on coconut trees. His opinion regarding the benefits of salt should not be underrated, and I feel sure that planters of experience like Mr. Wright, of Mirigama, Dr. Dias, of Heneratgoda, and Mr. Beven, of Veyangoda, will support him. I also saw an article in the last number of the "Tropical Agriculturist" dealing with the use of salt for agricultural purposes. The price of common salt is of course prohibitive, but the crude salt, kainit, referred to by Mr. Carry, is obtainable for practically one third of the price of common salt, and is quite as efficacious if not more so. I once tried an experiment on one of my plantations by suspending a bag containing 4 lb. of kainit to the most tender branch of a tree which appeared to be badly affected by some disease. The tree was about 6 feet in height, and apparently about 10 years old and had no nuts on it. After some months the tree assumed a healthy appearance, and later on commenced to bear well. I should mention, however, that the property had been somewhat neglected before I purchased it, and that in addition to the above treatment I had the soil turned up round the tree. But I feel no doubt in my own mind that the kainit was principally responsible for the improvement of the tree. I have also found it very useful to sprinkle a little kainit over cattle dung when applied to a tree, and that this prevents the breeding of beetles and other insects that do much harm to a coconut tree.—Yours etc.

E. O. FELSINGER.

[The use of salt for the coconut palm has been urged at intervals for 40 years back; and our pamphlet calling on Government to allow salt to be denaturalized for this purpose is many years old.—Ed.]