

BLISTER BLIGHT CONTROL: RECOMMENDATIONS TO ESTATES

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Introduction

Blister Blight (*Exobasidium vexans* Masec) on tea has been controlled very successfully for many years with copper-based fungicidal formulations. In view of the rising costs of copper in the world market, the continued spraying of 4-6 oz per acre of copper-based fungicidal formulations containing 50% W/W of metallic copper throughout the monsoons would, therefore, seem to warrant reconsideration. A reduction in the cost of blister blight control can be achieved by any one of the following procedures, *provided the spraying is carried out carefully*.

- 1 — By reducing the dosage of fungicide where feasible
- 2 — By using fungicidal formulations containing *less than 50% W/W metallic copper*
- 3 — By using non-copper formulations which are cheaper but adequately effective

Each of these methods has advantages and disadvantages and it is the purpose of this article to discuss them. Suggestions for the use of new fungicides are given.

1 — Reducing the dosage of formulations with 50% copper

The Institute has for many years stated that formulations containing 50% W/W metallic copper (either as cuprous oxide or cuprous oxychloride) when applied at the rate of 6 oz per acre controls Blister Blight even under rather severe monsoon conditions when applied correctly and with proper frequency. While we still reiterate that this is the best method of control available, it is possible to obtain *adequate* control by using quantities smaller than 6 oz per acre, for the greater part of the blister blight season.

In experiments carried out in 1964 and 1965 at St Coombs (de Silva 1965a ; 1966), it was found that the 4 oz rate was very satisfactory and that the 2 oz rate was adequate except under severe monsoon conditions. It is not possible to suggest a general rate of application to all up-country estates and expect equal efficiency of control. Each estate, depending on its location and elevation, would have to work out its programme on the basis of past experience. Estates in Dimbula, Maturata, Pussellawa, Dickoya and Pundaluoya would do well to investigate rates of application of 2-3 oz per acre, the high rate being for generally wet periods. Estates in Uva could get by with 2 oz per acre for much of the season, while estates in the Nuwara Eliya and Kandapola districts may have to use 3 oz per acre for much of the season and increase this rate during particularly bad periods. *It must be emphasized that the above comments apply to formulations containing 50% metallic copper.*

2 — Copper-based formulations with less than 50% copper

It is possible to obtain on the market, formulations containing less than 50% W/W copper, which should be used at the normal rate of application *viz* 4-6 oz per acre. Copper-based formulations containing 20% or 25% copper are available.

It must be remembered that copper is by far the most expensive ingredient of copper-based fungicidal formulations. It is reasonable to assume that the cost of a formulation must, therefore, bear some relationship to the quantity of copper it contains. To elaborate, we would not expect one pound of a fungicide containing 50% copper to cost the same as one pound of a fungicide containing 25% copper—the latter must necessarily be cheaper. *It must be emphasized, however, that the fungicidal effect accrues to a very great extent, if not entirely, from the copper itself and not from other ingredients.*

The method of formulation of the fungicide is also of some significance but this aspect of the fungicide is generally very satisfactory in most fungicides now available on the market. Two types of formulations are available at present. One is the wettable powder form and the other is the suspension of fungicide in liquid (sometimes called colloidal fungicide). Either type of formulation is satisfactory, and each has no specific advantage over the other if the copper content is the same. Two proprietary fungicides, Perezin (a wettable powder) and Colloidox (a suspension in liquid) have been used in recent experiments.

Perezin has given satisfactory control of Blister Blight in experiments carried out on St Coombs (Kerr 1964; de Silva 1965a ; 1966). It contains 25% W/W copper in the form of cuprous oxide and 30% W/W zinc in the form of zinc oxide. The fungicidal effect of zinc is not significant and we can assume that it is the copper *alone* which has fungicidal properties. Of course, zinc has other advantages, Tolhurst (1962) has pointed out the need for zinc applications to correct zinc deficiency. Recently Tolhurst, Fernando & Tillekeratne (1966) have obtained worthwhile yield responses to the application of up to 20 lb zinc sulphate per acre per annum. They firmly recommend this rate of application. They also state that zinc oxide is as effective as zinc sulphate at equivalent zinc rates in providing yield responses. Zinc contents of the sulphate and oxide are given below :

	Rate of compound per acre per year	% Zinc	Total quantity of Zinc/acre/year
Zinc sulphate ($\text{ZnSO}_4 \cdot 7\text{H}_2\text{O}$)	20 lb	22.5	4.5 lb
Zinc oxide (ZnO)	6 lb	80.3	4.5 lb

Perezin can conveniently be used as a source of zinc. *The quantity of zinc applied as Perezin would depend on the rate of application as well as the number of spraying rounds.* Table 1 gives a ready guide to the quantity of zinc which would be applied depending on the rate of application and the number of spraying rounds. For instance, from Table 1 we see that if 20 rounds are applied at the rate of 4 oz Perezin per acre, $1\frac{1}{2}$ lb of zinc would have been applied on the tea. Supplementary applications of zinc would be necessary in most estates and should be applied in accordance with the recommendations of the Institute (see Tolhurst *et al* 1966).

TABLE 1—Guide to the quantities of zinc obtained with varying rates of application and numbers of spraying rounds of Perezin—Quantities are given in pounds metallic zinc

Rate of application of Perezin per spraying round (oz)		4	5	6	7	8	
Number of spraying rounds		Quantity of zinc (lb) obtained from Perezin					
1	0.07	0.09	0.11	0.13	0.1	
5	0.37	0.4	0.56	0.65	0.7	
10	0.75	0.9	1.12	1.31	1.5	
15	1.12	1.4	1.6	1.9	2.2	
20	1.5	1.87	2.25	2.62	3.0	
25	1.87	2.34	2.81	3.28	3.7	
30	2.25	2.81	3.37	3.9	4.5	
35	2.62	3.28	3.9	4.59	5.2	
40	3.0	3.75	4.5	5.25	6.0	

Colloidox contains 20% W/W metallic copper. The use of low dosages can only be adopted where Blister Blight is not severe and even so, it must be done with caution.

3—Fungicides not based on copper

Many formulations based on zinc, manganese, organic compounds, phosphorus *etc* have been tested from time to time for the control of Blister Blight, and have been found to be unsatisfactory. Nickel chloride is the only substance apart from copper-based fungicides, which is acceptable for blister blight control.

Nickel Chloride hexahydrate

It has been explained earlier (de Silva 1965a) that nickel chloride is an eradicant fungicide whereas copper fungicides are protectants. Nickel chloride at the rate of 4 oz per acre controlled Blister Blight adequately on experiments at St Coombs in 1964 and 1965 (de Silva 1965a and; 1966). Estates are provisionally advised to use this compound according to the instructions given earlier (de Silva 1965b) which still remain provisional and unchanged.

References

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