VI. AN ESTIMATE OF THE EXTENT OF CROP LOSSES ON ST. COOMBS FOLLOWING THE ARRIVAL OF BLISTER BLIGHT (*EXOBASIDIUM VEXANS*) IN CEYLON.

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Arising out of discussions at the 1951 Crop Protection Courses, it occurred to the writer that an examination of the yields of the long term field experiments on St. Coombs offered what was perhaps the only possibility of making a reliable estimate of the extent of the crop losses occasioned by blister blight in one specific locality. Full yield records are available for these experiments, which probably represent the only areas of tea in Ceylon where cultivation and manuring treatments have remained unchanged for a long enough period for their effects to be eliminated from the estimate.

Blister blight was first reported from the Dimbula district, in which St. Coombs is situated, in November 1946 and by early 1947 had to all intents and purposes, spread over all the tea area in Ceylon (1). On St. Coombs, therefore, it may reasonably be assumed that the disease would not have begun to cause damage until the south west monsoon season of 1947. Accordingly, as blister blight damage is likely to have a cumulative effect during the course of the

cycle, it was necessary that any experiment selected for comparison purposes should have started a new cycle early in 1947. This condition was fortunately fulfilled by the Cultivation and Weeding Experiment on St. Coombs No. 9 field.

This experiment was laid down in 1936 and has a cycle length of 4 years. The treatments compared are :—

Cultivation — Normal versus Intensive.

Weeding — Clean versus Selective.

Manuring — Single versus Double dose.

where the single dose is equivalent to the following annual application rates :—

40 lbs. Nitrogen as sulphate of ammonia.
30 lbs. Phosphoric acid as saphosphosphate.
20 lbs. Potash as muriate.

There are 8 treatments replicated 6 times in blocks = 48 sub-plots of 1/24 acre each.

Although it is hoped, in due course, to statistically analyse all the individual sub-plot yields, and thus obtain a reliable estimate of the errors involved; for the purpose of the present article only the main yields of the experiment as a whole will be considered. For various reasons the first cycle is not strictly comparable and it is therefore omitted from the yield comparisons given in Table 1.

Table 1. *Cultivation and Weeding Experiment, St. Coombs No. 9 Field.*

Mean yields in lbs. made tea per acre.

Year	2nd Cycle 1939—43	3rd Cycle 1943—47	4th Cycle 1947—51
Pruning date	March, 1939	March 1943	March 1947
1st	247	248	431
2nd	832	906	843
3rd	1,070	1,140	824
4th	1,128	1,174	601
Cycle mean	819	867	675

The 4th cycle of the experiment was subject to blister blight throughout, whereas both the 2nd and 3rd cycles can be considered to have been completed almost entirely before the advent of blister blight in Ceylon. On the assumption that the Cycle yields for the experiment would have otherwise remained reasonably steady the decline shown in the 4th cycle must be attributed entirely to blister blight damage. The extent of this effect is set out in Table 2.

Table 2. *Cultivation and Weeding Experiment, St. Coombs No. 9 Field.*

Effect of blister blight on yield.

Cycle	Mean Yield lbs./acre	Decrease in 4th Cycle	
		lbs.	Percent.
4th	675	—	—
3rd	867	192	22
2nd	819	144	18
		Mean decrease = 20%	

On St. Coombs, therefore, there is reasonably reliable evidence that, over the past four years, the loss of crop resulting from blister blight attack has averaged 20%. If anything this estimate is probably too low rather than too high since it will be seen from Table I that there appeared to be a slight tendency for the cycle yields to increase with time rather than to remain static. Furthermore, as St. Coombs is by no means situated in one of the worst blister blight areas, it is reasonable to suppose that much greater crop losses will have occurred on more badly affected estates.

The St. Coombs No. 9 Field Crop Protection Experiment (2) has now been in progress for a sufficient length of time for the crop returns to afford valuable confirmation of the accuracy of the estimate of blister blight losses deduced from the yields of our Cultivation and Weeding Experiment. The yields from the No. 9 Field Crop Protection Experiment are given in Table 3.

Table 3. *St. Coombs No. 9 Field Crop Protection Experiment.*

Treatment	Yield of Made Tea in lbs./acre 23-7-49 to 20-7-51	Decrease on Weekly Protected	
		Lbs.	Percent.
Protected weekly	1805	—	—
Protected fortnightly	1717	88	4.9
Unprotected	1380	425	23.5

On tht assumption that weekly spraying, under the conditions prevailing on St. Coombs, gives almost complete protection it will be noted that the loss of crop due to blister blight damage amounts to an average of 23.5% over the first 2½ years of the cycle. This figure is extremely close to the figure of 22% given in Table II for the difference in yield between the 3rd and 4th cycles of the Cultivation and Manuring Experiment and thus amply confirms the deductions previously drawn from the yields of this experiment.

These results, for losses of crop due to blister blight, lend strong support to the explanation advanced by Mr. Lamb (3) that the overall yields of Ceylon tea have only been maintained at the expense of much increased fertiliser applications.

References.

(1) A Report on Blister Blight Disease in Ceylon Tea Plantations. *Tea Quarterly* XX, p. 149, 1949.

(2) Loos, C. A.—Crop Protection during Plucking. *Tea Quarterly* XXI, Part IV, p. 16, 1950.

(3) Lamb, J.—Crop Protection Courses, 1951. I. Introductory Lecture, *Tea Quarterly* XXII, Part II, page 55, 1951.