

# CROP PROTECTION BY MODIFIED AGRICULTURAL METHODS.

## PART III. GENERAL CONSIDERATIONS.

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As I have already told you this morning, one of the outstanding examples of crop protection by modification of existing agricultural methods was undoubtedly our recommendation to estates in bad blister blight areas to adjust their pruning programmes so that recovery took place during the driest and most mist-free period of the year.

Mention of this recommendation naturally leads on to the subject of the type of pruning that should be adopted in the face of the blister blight menace. For my part I am completely convinced that a fairly light type of pruning is much the best in our present circumstances. Many of you will have visited "The Loss of Crop Experiment" on St. Coombs and I think you will agree that the bushes there have recovered extremely well. This field was given a comparatively light prune in December 1949, with almost no cleaning out. All fringe branches were, of course, left.

In my opinion cleaning out is entirely undesirable in the present state of much of our up-country bushes and, owing to the Tamil labourers fondness for the knife, merely leads to an undue number of branches being removed from the centre of the bush. In fact I have been into pruning fields where it has been easy to put my hat, and it's quite a big one, down in the centres of many of the bushes without covering a single point. This vacant area must inevitably lead to the production of hollow bushes and consequent loss of crop. In any case there appears little need to worry about cleaning out twigs. Those which are too weak will die anyway, while the stronger ones will thicken up and form useful frame branches before the next pruning. Some cleaning out will probably be necessary after a cycle or two but this operation can well be deferred until we have restored our debilitated frames and have developed wood fit to prune on.

At the present time there is an imperative need to increase the size of our bushes and restore that continuous cover of tea, which I am credibly informed, once characterised the upcountry plantations. Blister-blight has undoubtedly done its share in debilitating our bushes and starch deficiency is now of common occurrence at quite high elevations. However, I am not prepared to accept the contention that blister blight is solely responsible for the greatly reduced size of many of our bushes today. Too hard clean pruning in the past has undoubtedly done its bit in bringing about the present sorry state of affairs. When I see an upcountry field pruned in this matter today, I am forcibly reminded of the serried ranks of gravestones in a cemetery and, gentlemen, the comparison is not altogether an inapt one, since if this wanton destruction of valuable frame wood is persisted in, many of the victims will indeed soon be dead.

Well, let us leave the dead to bury their dead and pass on to the subject of tipping. As you are all aware it is the leaf, and only the leaf, that is responsible for the manufacture of carbohydrates and all those other elaborate organic compounds which go to maintain the plant body and provide the material for fresh growth. The early provision of an adequate canopy or healthy maintenance foliage is thus of paramount importance if our bushes are to be able to withstand repeated blister blight attacks and still retain sufficient vigour to give us crop when the incidence of blister blight subsides. One of the best ways to obtain a good canopy of blister resistant maintenance foliage would obviously seem to be to tip high. However, a single high tipping generally results in a "leggy" type of bush and does not seem to give the same number of plucking points as a normal tipping. This procedure may therefore be expected to lead to loss of crop during the cycle. One way to overcome this difficulty would seem to be to tip in two stages at two different levels. Accordingly, with the co-operation of Mr. Garnier, we are proposing to carry out a small scale tipping experiment on Kataboola at the conclusion of the main 200 acre spraying experiment. The treatments to be compared include :—

- (1) Tipping once at 4"
- (2) Tipping once at 8"
- (3) Tipping once at 12"
- (4) Tipping twice at 4" and 8".
- (5) Tipping twice at 6" and 12".

It is hoped that as a result of this experiment it will soon be possible to make definite recommendations on this somewhat controversial subject.

If the best results are to be obtained from improvement in either our pruning or tipping technique, then protection against blister blight with a copper fungicide is obviously desirable. This morning I left you with the question as to whether spray protection during recovery from pruning was an economic proposition or not? To my mind there can be only one answer to this question. In areas badly affected by blister blight it cannot be anything else but economic. In giving you this answer I do not necessarily mean to imply that the cost of such protection will always be met out of increases in current revenue. What I do mean, however, is that, in the more badly affected areas, if crop protection methods are not introduced, the bushes will continue to deteriorate and their capital value will be seriously reduced.

There is nothing novel in an agricultural industry finding it necessary to make annual provision for the cost of crop protection. On the figures quoted earlier today the tea industry is still comparatively fortunate in this respect. In this connection I would like to remind you that some 50 per cent. of the cost of production of apples in England is accounted for by crop protection.

There is, of course, another solution to this problem of continuing deterioration in badly affected areas. This is replanting with high yielding blister blight resistant clonal material. The Institute is strongly in favour of this policy and a start has already been made at St. Coombs by clearing an area of four acres of old tea for replanting in 1951 and 1952. In addition an initial programme has already been drawn up in which it is proposed that some 60 acres, or approximately one fifth of our tea acreage, will be replanted over the next ten years. There are many good clones now available on estates and I see no reason why the replanting of a percentage of their acreage every year should not become a matter of normal policy for estates in the badly affected areas.

Finally a word or two about "hard" or fish leaf plucking. As you know this has been the recommended practice for some time past during periods of

severe stem attack. That this method of plucking not only reduces the incidence of blister blight infection very markedly but also increases the yield is very apparent from another small scale experiment carried out at Kataboia this year. Here an acre of tea in one of the worst blister blight areas, last pruned in November 1949, and tipped at 12" in April this year, was continuously hand plucked on 10 day rounds from the beginning of June until the end of October. Over this 5 month period this plot has yielded some 241 lbs. per acre as compared with the estate average, for tea in plucking only, of 181 lbs. per acre.

An integral part of this recommendation, however, is that the bushes must be rested for several rounds as soon as the severity of the attack has declined. Accordingly the plot is being rested from the 31st October onwards until such time as additional maintenance foliage has been put on. This is most important as continued fish-leaf plucking will inevitably result in deterioration of the bush and consequent decline in yield. This is well brought out in the results from one of the long term field experiments on St. Coombs. Here fish-leaf plucking over a 3 year cycle resulted in an increase in yield of 476 lbs. per acre. However, when normal plucking was resumed in the following cycle, the plots previously fish-leaf plucked showed a drop in yield of some 581 lbs. per acre as compared with plots plucked normally in both cycles. Thus the increased crop obtained during the first cycle by fish-leaf plucking has been more than swallowed up by the loss sustained in the second cycle. The deterioration produced by a lengthy period of fish-leaf plucking has thus been proved to persist for years afterwards.

In conclusion let me paraphrase the old latin tag "*mens sana in corpore sano.*" This may be very freely translated as "*a healthy bush in healthy soil.*" Keep your soil in good heart by giving it all the humus forming material in the shape of green manure, compost, etc., that it requires, apply the right quantities of artificial fertiliser, and you will have gone a long way towards producing vigorous healthy bushes which can stand up to the ravages of a disease such as blister blight.

