BLISTER BLIGHT IN RELATION TO PLANTING AND SUPPLYING TEA*

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With the advent of Blister Blight, planting new clearings and the very important work of supplying in old tea — never a simple matter — has now become much more complicated and difficult over a large area of the S. W. districts lying above 2,000 feet for the following reasons :—

(1) Seed-at-stake — an inexpensive and efficient method of supplying in most districts and on most estates — has now become a thing of the past as the tender young seedlings are attacked by Blister Blight and killed off as soon as they appear above ground.

(2) Ball plants (seedlings with a ball of earth) too are just as vulnerable as seed-at-stake and also must be ruled out.

(3) Pencil thick stumped plants are very vulnerable to repeated defoliations by Blister Blight when recovering from stumping.

They might, of course, be stumped in the nursery and sprayed with "Perenox" while recovering. In the opinion of the writer, recovery in a crowded nursery, with fierce root competition, is not likely to be as good as it should be and is not recommended.

* The Institute does not necessarily endorse the views expressed in papers from contributors other than members of the staff.

(4) Basket plants are suitable if grown to a height of 15 to 18 inches, at which size they have a sufficient length of brown wood with old foliage to ensure resistance to, and recovery from, Blister Blight when the tender young top section is attacked and dies back. Old foliage should not be removed.
The objection to baskets, however, is that by the time the plant is 15 to 18 inches high the basket is usually too rotten to be moved to the field without disintegrating. There are other disadvantages to the basket, *e.g.* One's suppliers sometimes fail one and during periods of congestion the railway very rightly gives more important goods priority.

(5) In the writer's opinion the best method of all is to plant the tea seeds at 6 inches by 6 inches and use the Hersall Transplanter which he has found, after many years' experience of it, to be the most satisfactory method of all for supplying tea or planting new clearings.

The above methods deal with plants grown from tea seed which means that weekly sprayings with "Perenox" or "Bordeaux" have to be done in the nurseries if the plants are to be protected from Blister until large enough to go out into the field, and when planted out they are still liable to continuous attack, owing to which development will be greatly delayed and they will be long in coming to the bearing stage.

Supplying by means of tea plants grown from seed should now be regarded in the S. W. districts as merely an interim method to carry us on until such time as a sufficient number of plants for supplying and planting can be grown from internode cuttings taken from mother bushes *Immune* to Blister Blight.

It is probable that most estates have these immune bushes.

The best way to quickly find a number of immune bushes is to offer a generous reward—say Rs. 5—for every immune bush found.

The best stage in which to find the immune bush is in fields 6 to 12 months after pruning.

When found the bushes should be fenced round with "Warratchies" (Gliricidia does very well) and put under a month or two's observation during wet weather.

The wily ones will try to claim the reward by clearing a partially immune bush of all leaves and stalks attacked by Blister Blight—hence the need for fencing and a month or two's observation before paying the reward.

We have here a few beds of internode cuttings taken from mother bushes which have remained 100 per cent immune from Blister for many months past, and which are growing satisfactorily so far, without the protection of spraying.

The technique of growing internode tea cuttings has been frequently described in the *Tea Quarterly* — the Journal of the Tea Research Institute of Ceylon — so that it is unnecessary or should be for me to do so here. The T. R. I. and others have proved that high yielding clones can be brought to the bearing stage without difficulty.

It will suffice if I recommend that beds be deep — to encourage good rooting — that soil be good and well drained, and that the

internode cuttings be handled with great care so as to prevent bruising and fractures of the leaves which allow moulds and other fungi to gain entry.

The cuttings should be spaced 6 inches by 6 inches to permit of the plants being easily lifted by the Hersall Transplanter.

I would remind prospective growers that the first step is to test each mother bush for fermentation, by withering and handrolling a small sample of leaf. If it does not ferment normally it should be discarded as a mother bush.

Obviously there would be little point in selecting an immune bush merely because it was immune — it should be a good yielder in addition.

Doubt has been expressed by some as to the practicability of supplying old tea or planting new areas with plants grown from internode cuttings from mother bushes immune to Blister Blight — owing to the time factor involved.

Twelve high-yielding bushes here allowed to run up unplucked, in order to produce internode cuttings, gave an average yield of 211 cuttings per bush at one harvest of cuttings. It should be possible to get three harvests of cuttings per annum or say in round figures 600 cuttings per bush per annum (One immune bush here yielded 1,087 cuttings at one harvest).

To be on the safe side let us assume that only 400 cuttings per bush will be available per annum from a unit of say 10 immune bushes, and let us see what the potential production of immune planting material will be in say 7 years — 1948-1954.

10 immune bushes by 400 cuttings per annum	...	4,000
@ 80% successes	...	3,200

The internode cuttings will require to be in the nurseries 18 to 24 months before they are fit to plant out in the clearing or multiplication area — to be on the safe side let us say 24 months. That will mean that 3,200 plants will go out in the clearing in 1950, and the same number each year thereafter up to 1954. It is estimated that after the plants have been 2 years in the New Clearing they should be capable of giving 50 internode cuttings each per annum or a total of 160,000 cuttings at 80 per cent successes — 128,000.

Given correct soil conditions in the nursery and carefully selected cuttings 80 per cent of successes can be achieved.

It is suggested that bad jat tea be cut out and used as a multiplication area — planted at 3,500 plants to the acre.

In 1954 the 134,400 plants put out in the New Clearing in 1952 should be capable of yielding 50 internode cuttings each per annum or a total of 6,720,000 @ 80% successes — 5,376,000 plants.

SUMMARY OF POTENTIAL IMMUNE PLANTS IN 7 YEARS

1948	...	3,200
1949	...	3,200
1950	...	6,400
1951	...	6,400
1952	...	134,400
1953	...	262,400
1954	...	5,382,400
Grand Total		5,798,400

At 3,500 plants per acre 5,798,400 plants are sufficient to plant up 1,656 acres of tea. Surely the effort and the time involved in order to overcome the scourge of Blister Blight are worth while?

ISOLATION SEED-BEARER GARDENS

As soon as it is possible to do so — Isolated Tea Seed Bearer Gardens should be established grown from planting material immune from Blister Blight. The State should release suitable land for the purpose.

STATEMENT

	1948	1949	1950	1951	1952	1953	1954
Cuttings in Nurseries ...	3,200	3.200	3,200	3,200	3 200	3,200	3,200
Planted in N. C. ...			3,200	3,200	3,200	3,200	3,200
From bushes in N.C. @ 2 years old @ 50 cuttings per bush per annum @ 80 % successes ...					128.000	256,000	5,376,000
	3,200	3 200	6.400	6,400	134,400	262,400	5,382,400

Note by Editor :—

The order of priority suggested for selection is firstly, for immunity or high resistance to blister blight infection, secondly, for high apparent yield capacity and good habit, thirdly, for fermentation, fourthly, for ease of rooting, and fifthly, on the basis of more extended observation in the multiplication plots. Of these, the first three can be applied to the mother bush in the field, the fourth to the cuttings from it in the nursery, and the fifth to the clone resulting from the growth of cuttings.

Mr. Cameron's figure of 80 per cent success is feasible provided strict selection for easy rooting is carried out and nursery conditions are favourable. In 1946, the average rooting from 20,248 cuttings of 138 clones was 40.7 per cent. Some of the clones gave nil, some 100 per cent rooting. It is thus probable that only a few of Mr. Cameron's twelve bushes will prove "easy rooters," but this factor is of rapidly decreasing importance as the programme proceeds. The real "limiting factor" is suitable nursery space, though this could be increased by cutting out existing tea in suitable areas.

The Institute at present envisages the interim goal of the use of resistant clones for supplying, rather than for replanting to obtain large acreages of tea resistant to blister blight. The latter may well prove practical, however, provided that future conditions allow of such a programme being economically feasible.

Seed gardens composed entirely of resistant bearers are unlikely to result in as high or as uniform a degree of resistance in the progeny as can be obtained from clones, but might well give an increased proportion of resistant seedlings. If the formation of such seed gardens is undertaken, the saving of time achievable by the transplanting of selected mature bushes from the field to the bearer area, or by the budding of existing bearers, should not be ignored. The isolation factor can be over-emphasised. Recent work on contamination of seed crops by "wild" pollen suggests that a *commercial* standard of purity can be relatively easily achieved, although a much higher degree of isolation is necessary to give a negligible expectation of crossing from outside sources.