A NOTE ON SUN-SCORCH OF BUDGRAFTS

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FOREWORD

IN a previous report [1] a brief description was given of damage due to sun-scorch of the callus bark near the union of young budgrafts, this form of injury having occurred on several estates during the exceptional drought experienced in January and February 1932. During the hot weather of March 1933, similar symptoms were observed on a number of budgrafts two to four years of age at the Experiment Station, Nivitigalakele. In most cases a cavity due to the decay of the stock snag had been filled some months earlier with a plastic mixture of Colas and sand, and it appeared that this filling, which absorbs a considerable amount of heat when exposed to a hot sun, had contributed to and accentuated the damage. The use of this Colas-sand filling has been tentatively advocated in previous reports [1] [2] and the purpose of this note, therefore, is to describe this manifestation of sun or heat-scorch and to qualify the recommendation.

SYMPTOMS AND OCCURRENCE

The injury starts as an irregular cracking of the raised bark growing over the cut end of the stock, the cracks developing approximately at right angles to one another. In mild cases only the outer bark is affected and no damage results. More generally, however, the bark dies back to the wood and there is a more or less complete ring of dead discoloured bark around the stock snag. At this stage there is the danger of parasitic fungi gaining entrance, and in several instances *Botryodiplodia Theobromae* has extended the damage several inches up the scion, and into the wood. In the cases examined there was no question of the fungus having gained entrance via the dead stock since the typical bluish-grey discolouration of the wood was isolated from the union by healthy tissue. The majority of affected trees at the Experiment Station, however, have not become invaded by Diplodia and show signs of rapid recovery by renewed callus growth.

Sun-cracking of this nature has only been observed in Ceylon where the raised portion, often described as the "elephant foot", is exposed to the direct rays of the hot mid-day and afternoon sun. No plants which were budded on the south-westerly side of the stock, and whose callus bark on the opposite side is therefore partly shaded at the time of day when the sun is hottest, have been found affected. This suggests that the trouble could be obviated by placing the bud on the south or west side of the stock, and this matter is further discussed below. Under normal conditions sun-scorch is only likely to occur when large stocks are budded since in such cases a delay in covering the stock snag is inevitable, and a relatively large area of callus bark is exposed in a plane nearly at right angles to the direct rays of the sun.

In the majority of cases on the Station a cavity due to the decay of the stock snag had previously been filled with a mixture of Colas and sand in the proportion 1: 2. This is a plastic filling which is gradually extruded by the in-growing callus so that unless it is removed, or until it falls off, the excess lies on the callus bark. The mixture appears to absorb sufficient heat when exposed to the sun to accentuate the scorching. Without a controlled experiment it is impossible to be sure to what extent the Colas-sand mixture has contributed to the damage, but it appears significant that the majority of severe cases are associated with this filling.

TREATMENT

The treatment of affected trees calls for little comment, and only where the damage has been extended by the invasion of Diplodia is any treatment considered necessary. In such cases all diseased bark should be removed and discoloured wood excised with a chisel. The exposed wood surface, which should be of a healthy colour, is then painted with a 20 per cent. mixture in water or Brunolinum Plantarium (or disinfectant of similar strength), and covered with a waterproof mixture such as Skene's pruning mixture.

PREVENTION

The obvious means of avoiding sun-scorch is either to orientate the bud so that the callus bark is partly shaded by the stem during the time of day at which the sun is hottest, or to provide an artificial or living shade. The first alternative is subject to the possible objection that it would be necessary to

bud on to the south or west side of the stock whereas it is considered preferable on general grounds to place the bud on the shady side of the stock. Provided the bud and young shoot are well shaded, however, there would appear to be little objection to budding on the sunny side.

The provision of a living shade, consisting of a few plants of an erect green manure planted close to the budgraft on the south side, is the best means of preventing sun-scorch. By sowing seed of a quick growing species a few months before hot weather is anticipated a good shade can be provided until the union of stock and scion has been completed. Where large stocks have been budded this measure can be recommended whether or not the Colas-sand filling has been used, since callus growth is in any event favoured by moist, shady conditions. The provision of shade is clearly of considerable importance in districts where a long period of hot dry weather is annually experienced.

Filling mixtures are now being used experimentally in which the sand is replaced by (1) saw dust and (2) coir dust, and it appears that these mixtures absorb less heat. It will probably be desirable, however, to inspect all treated trees prior to anticipated hot weather and remove any excess filling which has been extruded so as to lie on the callus bark.

REFERENCES

1. Murray, R. K. S.—Diseases of Rubber in Ceylon, 1932, Rubber Research Scheme (Ceylon) *Quarterly Circular,* Vol. 10, Part 1, 1933.

2. Pieris, W. I.—Notes on the After-treatment of Budded Rubber Stocks.—Rubber Research Scheme (Ceylon) *Quarterly Circular* Vol. 9, Parts 3 and 4, 1932.