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# **Brown Bast**

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Brown bast is a physiological disorder affecting the tapping cut and bark in *Hevea* and resulting in a gradual or sudden reduction and ultimate stoppage of the flow of latex. This disorder is prevalent in all countries where *Hevea* is cultivated. During the years 1913 to 1923, it caused great alarm in India, Malaya and Indonesia. Soon after the introduction of Ridley's tapping system, there was a certain amount of over tapping and the disorder became conspicuous. In the early years there was a suspicion that it was caused by pathogenic organisms either fungi or bacteria. But further investigations have shown that no pathogen is involved and that the disorder is closely linked with the tapping intensity. In some quarters there is still a suspicion that bacteria may be responsible. After the commencement of tapping large numbers of bacteria are noticed in the latex vessels.

The earliest symptom indicating the development of brown bast is the falling off the d. r. c. of latex. Late dripping is also prevalent. This is followed by the drying of a part or whole of the tapping cut. Sometimes the outer rows of latex vessels alone may go dry while the inner ones continue to yield. In the affected portions the tissues of the bark turn dark brown in colour and become succulent. As the disease progresses the flow of latex ceases and the tree goes 'dry.' The discolouration of the bark



*Damage to bark at the base*

extends downward and laterally along the latex vessels into the tissues below the cut. Wound gum deposits can be observed around the affected latex vessels. The spread of the disorder may be limited to a short distance below the cut or may extend to the base of the trunk. In advanced stages short or long cracks are developed in the outer bark, preliminary to scaling. Hard woody burrs and swellings may also develop. In some trees, the basal portion is irregularly swollen reminding of elephantiasis. In rare instances clusters of hard outgrowths mostly in the bark region may be seen from the upper

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*Irregular swellings at the base of stem*

portions of the stem. Several layers of cork may be seen superimposed on one another due to the formation of repeated layers of meristematic cells in the bark. Secondary cambium is formed near the latex vessels and new tissues are produced resulting in the thickening of the bark, formation of burrs and hard swellings.

Different forms of the disorder can be recognised :

1. reduced d. r. c. of latex ; reduced or irregular flow and stoppage of latex.
2. besides reduction in latex or its stoppage, formation of cracks in the bark below the cut associated with necrosis of bark.
3. cessation of latex flow and formation of woody growths on the stem or swelling of the basal portion.



*Peculiar outgrowths on diseased plants*

In the affected tissues, tannins and crystals of calcium oxalate can be seen in plenty. Stone cells occur in large numbers in the soft bark. Depletion of starch from the cells is also evident.

In most of the *Hevea* plantations some trees go 'dry.' There is no need to worry if the incidence is low. The dry trees can

be rested for some months. All clones and seedling trees are liable to be affected to a greater or lesser degree. High yielding trees are more prone to this disorder than low yielding ones. Among the clones liable to be affected to a greater extent are Gl 1, BD 5, 10, CH 30, CH 31, AVROS 255, RRIM 628. On account of the high incidence of brown bast, Gl 1 has now been withdrawn from among the recommended clones in Malaya. Proneness to brown bast is inherited. Seedlings are also liable to be affected. Higher incidence is common during dry seasons. Symptoms akin to those of brown bast have been observed on some trees which have not been tapped.

Since the discovery of the close relation between brown bast and the tapping intensity, the disorder is sought to be avoided by adjusting the intensity of tapping. Tapping clonal seedlings through a half spiral cut alternate daily results in a high incidence of brown bast. But when tapped every third day the incidence is kept low. In some holdings in this country, daily tapping is followed with the result that brown bast appears within a year of the commencement of tapping.

When the incidence of brown bast exceeds ten per cent of the population, the tapping practice in the holding will have to be completely changed so that further extension of the disorder may not occur. The length of the cut has to be reduced from half to one third of the circumference or in other ways. The frequency of tapping is to be lowered from alternate daily to third daily. The affected trees are to be rested for three to six months or more, depending on the intensity of the disorder. When the affected



*Layers of tissues on proliferated parts*

bark is left on the tree, the disorder may spread to adjacent areas. Hence it is advisable to tap away the affected bark if it is limited. When the area is extensive it is recommended that this may be isolated by cutting deep grooves on either side and then removed. The exposed area is protected by applying petrolatum products to hasten healing. The treated trees may recover in course of time. When the bark is swollen and large burrs or swellings have developed at the base, the trees are beyond treatment. In such cases, tapping of the bark higher up the stem with the help of inverted cuts may be adopted. In several holdings this method

is being followed to collect latex from such trees. Tapping on the bark opposite the affected part may also give latex. Rest is the most important factor in the treatment.

In Indochina, copper sulphate is injected into brown-bast-affected trees which do not exhibit trunk distortion. Four grams of

copper sulphate are given per tree. Holes are made with an augur and the material kept in the hole and then plugged. With two or three repetitions of this treatment at intervals of six months each, the trees are reported to be cured. But the response varied from tree to tree.

#### References

SHARPLES, A.

1932 Diseases and pests of the rubber tree,  
Macmillan & Co., Ltd., London.

PLANTERS' BULL.

1957 Rubb. Res. Inst. Malaya—Bull. No. 29.

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