

## EFFECT OF ETHEPHON ON BARK WOUND HEALING IN *HEVEA BRASILIENSIS*

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Wound healing of ethephon-treated and untreated bark of *Hevea brasiliensis* was studied using microscopy. Cell wall lignification of wound margin appears earlier and more lignified cells occur in treated bark. The first cell divisions leading to the formation of callus and wound periderm are postponed by ethephon treatment. The sequent periderm is formed beneath the first periderm around the wound of ethephon-treated bark, while no such periderm occurs in untreated bark. The significance of the results is discussed in relation to the ethephon-induced resistance of *Hevea* bark to black stripe, a wound disease.

*Key words:* *Hevea brasiliensis*, Wound healing, Ethephon, China.

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### INTRODUCTION

Since *Hevea* bark is subjected to regular tapping, a comprehensive knowledge of the anatomy of wound healing is of importance. Wound healing has a close relation to bark regeneration and development of tapping panel diseases, like black stripe. Bobillioff (1923) has briefly described the wound healing during normal tapping in which the cambium is not injured, and bark regeneration when the cambium is injured. Studies have also been made on the effects of stimulants containing 2, 4-D, 2, 4, 5-T and ethephon on tapped bark and its regeneration by De Jonge (1957), Gomez (1964) and Hao *et al.* (1980). However, little is known about the early events of wound healing and the effect of ethephon on them. The finding that ethephon application enhances the resistance of *Hevea* bark to black stripe (Hao *et al.*, 1981; Zhang *et al.*, 1982) makes the study of wound healing of ethephon-treated bark more relevant. The information on wound

healing is essential for understanding the ethephon-induced resistance as the pathogen gains entrance through wounds.

The present investigation covers anatomical and histochemical observations on wound healing of the bark with and without ethephon treatment and gives emphasis to the early events of wound healing.

### MATERIALS AND METHODS

Three year old rubber trees, *Hevea brasiliensis* (Willd ex Adr. de Juss.) Muell. Arg., clone RRIM 600, grown in the experimental field of the Academy at Hainan Island were used for the studies. The wounding experiments were made on the main trunk which was about 18 cm in girth. The average atmospheric temperature was 27°C with a maximum of 33°C and a minimum of 23°C in June 1991 when the experiments were carried out.

The wounding experiment with ethephon application was carried out as shown in