

## DEVELOPMENTAL ANATOMY OF GERMINATING SEED OF HEVEA

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Developmental aspects of germinating embryo of *Hevea* were studied with emphasis to the growth changes at the pre-emergence stage. The shoot pole of the mature embryo is a dome-shaped meristem consisting of a unilayered protoderm, a hypodermal region, the procambium and ground meristem. Prolificifer initials are distributed in all the three zones below the protoderm and in the cotyledons. The root pole is blunt and undifferentiated.

Vascular differentiation is basipetal in the shoot axis starting with laticifer differentiation followed by sieve tube and xylem formation in the order. Primary laticifers are articulated and anastomosing. Root differentiation is irregular. Lateral root development advances before the initiation of tap root development.

Key words : *Hevea*, Embryo, Germination, Laticifer, Seed.

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### INTRODUCTION

*Hevea* fruit is a regma which dehisces, when mature, along the septae. The testa of a mature seed is highly mottled and of varied colour from chestnut brown to darker shades. It is hard and impermeable except at the micropyle. The hylar region is depressed and covered with two thin layers of cuticle. The tegma is many layered, papery and light and is tightly placed in between the testa and the endosperm. The embryo is oriented inside the endosperm tissue with root pole facing the micropyle. There are two veined cotyledons situated dorsiventrally inside the endosperm. The cotyledons remain close together and crumpled, inside the seed.

Germination of *Hevea* seed has been dealt with in detail by researchers (Calvert, 1887 and Gomez, 1982) and little contro-

versy exists regarding the general aspects. Information on the sequence of developmental changes is insufficient and controversy exists on the origin of laticifers. This work was taken up to study the developmental changes of the zygotic embryo of *Hevea* during germination with special emphasis to the growth changes at the pre-emergent stage.

### MATERIALS AND METHODS

Fruits of *Hevea brasiliensis* were collected at the yellow-brown pericarp stage when the seeds are fully mature (Premakumari, 1975) and the seeds were collected by mechanically breaking the pods. Seeds of a single clone, RR11 105, were used for this study. Immediately after collection the seeds were put for germination in petridishes filled with moist river sand and the moisture level was retained by sprin-