

## COMPARATIVE CYTOMORPHOLOGICAL STUDIES ON A DIPLOID, A TRIPLOID AND A TETRAPLOID CLONE OF *HEVEA BRASILIENSIS* (WILLD. EX ADR. DE JUSS) MUELL. ARG.

C. K. Saraswathyamma, M. A. Nazeer, D. Premakumari, J. Licy and A. O. N. Panikkar

Saraswathyamma, C. K., Nazeer, M. A., Premakumari, D., Licy, J. and Panikkar, A. O. N. (1988) Comparative cytomorphological studies on a diploid, a triploid and a tetraploid clone of *Hevea brasiliensis* (Willd. ex ADR. de Juss) Muell. Arg. Indian J. Nat. Rubb. Res. 1(1): 1-7

Cytomorphological observations were made on an induced tetraploid clone, an evolved triploid clone and a diploid clone of *Hevea brasiliensis* (Willd. ex ADR. de Juss.) Muell. Arg. Both the tetraploid and the triploid had varied number of leaflets, large floral parts and stomata and thicker leaflets compared to those of the diploid. In growth and morphological features at the early stage of growth, the triploid appeared to be intermediate between the diploid and the tetraploid. Meiotic studies of the tetraploid showed large number of bivalents, while frequency of univalents, trivalents and quadrivalents was comparatively low. The triploid exhibited univalents, bivalents and trivalents. Anaphase I showed unequal segregation and formation of laggards and micronuclei in the tetraploid and the triploid, the frequency of their occurrence being more in the triploid. Pollen stainability was very low in the triploid.

**Key words** – *Hevea brasiliensis*, Diploid, Triploid, Tetraploid, Meiosis, Amphidiploid.

C. K. Saraswathyamma (corresponding author), M. A. Nazeer, D. Premakumari, J. Licy and A. O. N. Panikkar, Rubber Research Institute of India, Kottayam-686 009, India.

### INTRODUCTION

Cytogenetical studies on *Hevea brasiliensis* (the Para rubber tree) and the other eight species of the genus are limited. Detailed knowledge on the cytogenetics of *H. brasiliensis*, are however, important in inducing genetic variability by artificial means as the genetic base available within the species in the East is very limited.

With a view to broadening the genetic base, induction of genetic variability by the application of mutagenic agents had been attempted (Shepherd, 1969; Markose, 1975; Zheng Xuequin et al, 1980). The Rubber Research Institute of India has succeeded in inducing tetraploidy by the application

of colchicine in a diploid clone RR II 105 and also in evolving a triploid subsequently by crossing the diploid as female with the induced tetraploid as the pollen donor (Markose, 1975; Saraswathyamma et al, 1980). This communication deals with the comparative cytomorphology of the diploid, the triploid and the tetraploid, and is the first report on the meiotic observations of a triploid evolved in *H. brasiliensis*.

### MATERIALS AND METHODS

Vegetative progenies of the diploid (clone RR II 105), the tetraploid (RR II 105) and the triploid [G1 1 (2x) x RR II 105 (4x)] were established through budgrafting. The budgrafts were raised in polybags and