

MOISTURE RETENTION CHARACTERISTICS OF SOILS UNDER *HEVEA* IN INDIA

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A study on the moisture retention characteristics of soils under *Hevea* in India had been carried out. The soils belong to the orders Alfisol and Ultisol. Profiles representing the major rubber growing regions in the traditional rubber growing tract in the South Western coast of India were collected and analysed for the moisture retentive capacity.

The moisture retentive capacity of the soils had been found to vary. The moisture retention at -0.033 MPa ranged from 19.50 per cent in the profile from Calicut to 37.80 per cent in the profile from Goa, in the surface layers. Nevertheless, the available water storage capacity (AWSC) did not show much variation as a result of the concomitant increase in the moisture retained at -1.5 MPa. The moisture retention at the above two tension ranges were found to be influenced by clay, sesquioxides, silt and organic matter, in consortium. The moisture retained at -1.5 MPa was more than 0.4 times clay, suggesting that clay is either not well dispersed or some water is held by gels. Silt has been found to play an active role in conjunction with clay in the moisture retention at -1.5 MPa suggesting colloiddally active nature of silt in tropical soils. The study on the moisture retention points that the soils in general have high retention potential and this is of high practical significance in a rainfed crop like rubber. The data reveal that 36 per cent of the available moisture is desorbed at -0.1 MPa and 75 per cent at -0.5 MPa indicating that the tension ranges could be of relevance to the water availability to *Hevea*.

Key words:—*Hevea brasiliensis*, Alfisol, Ultisol, Available water storage capacity, Moisture tension range, Soil analysis.

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INTRODUCTION

Hevea brasiliensis, the principal source of natural rubber, is grown in India predominantly in the south west coast. The crop totally depends on annual rainfall for its moisture requirements. The economic produce is rubber, which is contained in the latex, a fluid obtained by the controlled injury of the bark of the tree. The yield of latex is intrinsically related to the plant water

status which in turn is related to soil moisture. Soil moisture retention character is dependent upon soil texture, structure, bulk density, organic matter and mineral makeup of the clay complex. Grass as well as forest organic matter show a positive relation with soil moisture retention characteristics (Gupta *et al.*, 1983). Hillel (1971) stated that water retention character is controlled by soil structure and the effect of texture becomes predominant at high