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MOISTURE RETENTION CHARACTERISTICS OF RUBBER GROWING SOILS OF MEGHALAYA, INDIA

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A study on the moisture retention characteristics of the rubber growing soils of Meghalaya indicated wide variation among different locations of the major rubber growing areas. The moisture retention in the surface layers at -0.033 MPa ranged from 21.05 per cent in Rongara (South Garo Hill district) to 36.08 per cent in Mendipathar (North Garo Hill district). However, the available water storage capacity (AWSC) did not show any variation as a result of the concomitant increase in the moisture retained at Byrnihat, -1.5 MPa. The moisture retention at the two tension ranges was found to be influenced by an aggregate effect of clay, sesquioxides, silt and organic matter. 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 the gels. Silt was found to play an active role in conjunction with clay in the moisture retention at -1.5 MPa suggesting the colloidally active nature of silt in sub tropical soils. In general, rubber growing soils in Meghalaya have high water retention potential and this is of high practical significance for a rainfed crop like rubber. The data revealed that, about 31.4 per cent of available moisture is desorbed at -0.033 MPa and about 20.6 per cent at -1.5 MPa indicating that, this tension range could be of relevance to the water availability to crops like rubber grown under rainfed conditions.

Keywords: Available water content, Available water storage capacity, Field capacity, *Hevea brasiliensis*, Rubber growing soils, Soil moisture

INTRODUCTION

Natural rubber cultivation is expanded to North Eastern states of India to meet the increasing demand of natural rubber for the industry. Meghalaya is the third largest state as per the area under rubber cultivation in North East India. Meghalaya state, comprising of three main Hills *viz.*, Khasi Hills (East, West Khasi Hills and Ribhoi districts), Garo Hills (East, West and South Hills districts) and Jaintia hills located in seven districts. Rubber cultivation is mostly confined to East (now North), West and South Garo Hills, Ribhoi and Jentia Hills, covering more than 11,875 ha. (Rubber Board, 2014). Rubber is mostly grown as a rainfed crop and the soils under rubber cultivation belong to the soil orders Inceptisol, Ultisol and Entisol (Bhattacharya *et al.*, 1996).

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