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## ABSTRACT

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Measurements related to the structure and the flow of water were taken on one soil type with high clay content, cunupia silty clay loam, at two sites, Las Hermanas and St. Helena, up to a 60 cm depth at each site. The soil was derived from alluvium weathered from Northern Range schists. The soil at Las Hermanas had been cultivated under cocoa whereas rice and more recently sugarcane were grown at St. Helena. The soil at St. Helena had a higher fine sand content and a lower plastic index. There was a predominance of lepidocrocite in the iron fraction throughout the profile at Las Hermanas and below 30 cm at St. Helena, implying that reduced conditions were more severe at Las Hermanas. Soil from St. Helena lost more porosity by remoulding, and therefore was assumed to have more structure than the soil from Las Hermanas. Aggregate stability was higher at St. Helena, and shrinkage was much higher at Las Hermanas. Saturated and unsaturated conductivities (at tensions under 100 cm) were very low at both sites. Saturated conductivity reached a steady value with time at St. Helena unlike Las Hermanas and unsaturated conductivity decreased more with increasing tension at Las Hermanas. Within a profile, organic matter improved porosity and therefore aeration but was associated with a decrease in conductivity. Flow properties also worsen beyond 45 cm of depth.

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