

INTISARI

Ketika terjadi hujan, terbentuk banyak genangan-genangan air pada Halaman Candi Prambanan. Hal ini dikarenakan air hujan yang jatuh ke tanah tidak terinfiltrasi secara optimum, sehingga perlu dilakukan penelitian lebih lanjut mengenai kondisi tanahnya. Penelitian yang dilakukan adalah pengukuran nilai *matric suction* dan kadar air volumetrik tanah di lapangan dengan alat uji *Irrrometer tensiometer* dan *Soil Moisture Sensors EC-5 Decagon Devices* untuk mengetahui hubungan antara *matric suction* dan kadar air lapangan.

Tensiometer mampu membaca selisih tekanan udara pori dan tekanan air pori pada tanah ($u_a - u_w$) dengan kisaran nilai 1-100 kPa. Kedua alat ditanamkan ke dalam tanah secara berdampingan dan dibaca dengan *data logger*. Hasil pengujian lapangan di kontrol dengan pengujian di laboratorium. Hasil uji penelitian ini berupa kurva yang menggambarkan hubungan *matric suction* dengan kadar air lapangan yang dikenal sebagai *soil-water characteristic curve (SWCC)*. Berdasarkan hasil uji distribusi ukuran butir, dilakukan estimasi dan *fitting SWCC* pada *software SoilVision 4.23* sebagai perbandingan terhadap kurva *SWCC* yang didapat dari pengujian lapangan.

Hasil estimasi *SoilVision* menunjukkan bahwa persamaan Vereecken PTF menghasilkan *SWCC* yang paling mendekati *SWCC* pengujian lapangan. Namun terdapat perbedaan yang cukup jauh antara keduanya, sehingga pengujian di lapangan dinilai tetap perlu dilakukan.

Kata kunci : *soil-water characteristic curve, matric suction, tanah berpasir, tensiometer, volumetric water content*

ABSTRACT

At Candi Prambanan site, many puddles are usually formed after rain. This is the result of rainwater not being able to infiltrate soil optimally. Thus, a further research needs to be conducted in order to determine the ground's condition. This research involves measurement of matric suction value and volumetric water content at the site, using Irrrometer tensiometer and Soil Moisture Sensors EC-5 Decagon Devices.

Tensiometer is capable of detecting the difference of pore-air pressure and pore-water pressure ($u_a - u_w$) in a range of 1-100 kPa. Both devices are planted into the ground adjacently, and the data are analyzed by a data logger. The result of this field study is controlled by laboratory examination. The result of this research is a curve which represents the relation between matric suction and field water content, known as soil water characteristic curve (SWCC). Based on the resulting grain size distribution, an estimation and SWCC fitting is done using SoilVision 4.23 software as a comparison with SWCC gained from field examination.

The SoilVision's estimation results indicate that Vereecken PTF equation produces the most suitable SWCC compared to field testing SWCC. However, there are considerable differences between the two, therefore a field examination still need to be assessed.

Keywords: soil-water characteristic curve, matric suction, sandy soil, tensiometer, volumetric water content