RELATIONSHIP OF ATTERBERG LIMITS WITH SOIL-WATER CONSTANTS IN ARIDISOL SOILS OF PUNJAB

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ABSTRACT

*Three different calcareous soil series in Punjab viz, Rasulpur, Bhalwal and Miranpur were selected to estimate Atterberg limits and water retention at different suctions. The liquid limit (LL) was determined by using liquid Limit-device and plastic limit (PL) by rolling moist soil between fingers and glass plate to a thread of 3.2 mm diameters and then determing its water content. The water content of the soil series was also judged by placing the saturated soil samples inside extractor connected to the hydraulic outflow subjected to subsequent tensions at –33 and –1500 kPa tensions. The LL and PL were found maximum in case of Miranpur soil series (33.40% and 18.59%, respectively), whereas Rasulpur soil series was observed to be non-liquid and non-plastic. Highest SL was observed (21.01%) in Miranpur as compared to the rest of the soil series. Maximum available water capacity (13.3%)was found in Miranpur soil series. Highly significant correlation coefficient between PL and field capacity was observed in Bhalwal soil series (r = 0.98**). The correlation coefficient between SL and Permanent wilting point was also significant in both Bhalwal (r=0.88*) and Miranpur (r = 0.89*) soil series. It was concluded that clay content influenced significantly Atterberg limits and soil-water retention at different suctions.*

Key Words: Atterberg limits, Aridisol, Punjab