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**AgSURS - Reviewer 1 View**

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| **Abstract Title** | Estimation of precise and accurate soil porosity with respect to spatial variability of particle density in different textured soils in catena |
| **Abstract Body** | Insight on the spatial variability of soil physical properties remains at different locations on a catena is required to formulate appropriate management strategies in crop production. Therefore, the objective of this research was to assess the effect of the variability in particle density and its interrelationships on soil porosity of different textured soils in a catena of faculty farm of Sabaragamuwa University of Sri Lanka. The particle density of soil is commonly assumed to be 2.65 g cm-3. Thus, with different soil textures, it is vital to interpret precise and accurate total porosity of different textured soils. Else ways, it would mislead the interpretation of the true porosity and aeration conditions at different locations within the land catena. Randomly collected samples from two depths (0-15 cm and 15-30 cm) of well drained, moderately drained and poorly drained soils in a soil catena, beach sand, river sand, crushed boulder was used to examine for soil particle density, soil bulk density, soil texture (%) and soil porosity. Results showed that the particle density in well drained, moderately drained, and poorly drained soils varied from 1.7 to 2.1gcm-3. However, the particle density of beach sand, river sand and grinded boulder (2.562 ±0.333, 2.61 ±0.0101, 2.50 ±0.0112) were almost the particle density assumed (P<0.05). Moreover, calculated values of the total porosity were significantly differed along the soil catena (P<0.05). A strong negative correlation was observed among clay and silt and the soil particle density (r= -0.9054 and -0.9006). Sand content was positively correlated with the soil particle density (r= 0.9371). Results showed that the particle density is significance difference from assumed values related to well drain, poor drain, moderate drain soil samples. Thus, the calculated true values of the total porosity within the soil catena of faculty farm significantly varied (42.972% ±1.25) and true values of the total porosity will be extremely useful to formulate precise and accurate management strategies for sustainable crop production. |
| **Key Words (5 Words)** | Bulk density, particle density, Soil catena, total porosity, correlation analysis |
| **Abstract ID** | AERM1498 |
| **Findings of this study (r1)** | ……………………………………………………………………………………………………………………………………..   1. Make a significant contribution to existing knowledge |
| **Title of the abstract(r1)** | …………………………………………………………………………………………………………………………………….   1. Is appropriate to the thematic area and descriptive |
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| **Recommendation(r1)** | ………………………………………………………………………………………………………………………………………   1. Accept in the present form with minor editorial corrections |
| **Please justify reasons for If rejection(r1)** |  |
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