

Assessment of Soil Physical Properties in Rice Growing Areas of Bapatla Mandal of Guntur district

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ABSTRACT

A study was conducted to assess the physical properties of rice growing soils in four different prominent rice based cropping systems of Bapatla mandal, Guntur district, Andhra Pradesh during 2018-19. A total number of 120 surface soil samples (0-15 cm) were collected from Bapatla mandal covering four rice based cropping systems namely rice-pulse, rice-groundnut, rice-maize and rice-sorghum using GPS co-ordinates and were analysed for different physical properties. Majority of the soils were clayey in texture followed by sandy and sandy clay loam. The range of WHC in rice growing soils of Bapatla mandal was varied from 12.00-57.90 per cent with mean values of 14.69 and 55.26 per cent. The highest (57.90%) WHC was observed in Etheru village of Rice-pulse cropping system whereas lowest (12.00%) was observed in Nandirajuthota village of Rice-groundnut cropping system. The range of bulk density in soils of rice growing areas of bapatla mandal was 1.11-1.68 Mg m⁻³. The highest bulk density (1.68 Mg m⁻³) observed in soils of Pandurangapuram village in Rice-groundnut cropping system and lowest (1.11 Mg m⁻³) bulk density was observed in Etheru village in Rice-sorghum cropping system. The highest mean value (1.54 Mg m⁻³) was observed in Rice-groundnut cropping system and lowest mean value (1.26 Mg m⁻³) was observed in Rice-sorghum cropping system. In the study area, very high aggregation (70.47%) was reported in Rice-pulse cropping system whereas very low (13.42%) was reported in Rice-sorghum cropping system whereas no aggregation was reported in all the soils of Rice-groundnut cropping system. The variations in physical properties might be due to the varied textures of the soils.

Key words: *Cropping systems, rice growing soils, texture, bulk density and water holding capacity*