

USE OF WATER DISPERSIBLE SILT PLUS CLAY CONTENT
OF THE SOIL IN QUANTIFYING DEGREE OF PUDDLING

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Puddling destroys soil aggregates and causes changes in soil physical properties. Quantifying degree of puddling is useful in identifying optimum puddling levels for different soil conditions. The water dispersible silt plus clay content (WDS+C%) could be measured just after puddling and could compare or estimate the degree of puddling. Two metal tubes were dipped into recently puddled soil up to 10cm below soil surface. Contents in one tube was used for determining soil moisture and contents in the other was transferred into a 1000ml cylinder to measure WDS+C%. The cylinder was filled with water upto 1000ml mark and shaken end-over-end 20 times. Then soil-water mixture was aspirated out when 20 microns diameter particles were supposed to be settled and estimated the silt plus clay content. We measured the WDS+C% under different degrees of puddling, in a lowland paddy soil at RARC, Angunakolapelessa. Four different degrees of puddling of 8, 16, 32, and 48h/ha were achieved by changing the duration of puddling by a two-wheel tractor with puddle wheels. Average WDS+C% of 15.4, 19.8, 28.3 and 46.8% were obtained at 8, 16, 32 and 48h/ha degrees of puddling respectively. A significant difference was not observed in WDS+C% produced by degrees of 8 and 16h/ha. But the other two levels produced significantly different quantities of WDS+C%. Hence, the estimation of WDS+C% could be used to quantify the degree of puddling and identification of optimum level of WDS+C% helps to decide the suitable degree of puddling for different soil conditions.

Reference: Methods of soil analysis, part 1 Physical and
Minerological methods, 2nd Ed. A.Klute, editor.