TO MONITOR THE DIFFERENCES IN CLAY MEASUREMENTS BY VARIOUS METHODS

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To elucidate the differences in clay measurements by various methods 28 soil samples were collected from Bhalwal (9), Miranpur (9) and research fields of Ayub Agricultural Research Institute (AARI) Faisalabad (10). The use of three different sets of soils made the study more comprehensive and wider application of the results. Three methods those of Pipette, Bouyoucos and Day's were utilized for the comparison of clay measurements. Considering the measurement of clay by Pipette method as standard, comparison of the clay measurements by Bouyoucos and Day's methods revealed an overall underestimation of clay as 11.04% by Day's method and 34% overestimation by Bouyoucos method relative to the standard Pipette method. Individually underestimation by Day's method is 14.4%, 11.41% and 7% in Bhalwal, Miranpur and AARI, soils respectively, whereas clay measurement by the Bouyoucos method were overestimated as 41%, 23% and 50% respectively in the above collections. The above results suggest the closest agreement of clay as measured by Day's method with that of standard Pipette method. it is, therefore, recommended that Day's method could be used as a standard method for soil texture determination in soils of low organic matter, such as those of Pakistan and other similar arid zone soils.

INTRODUCTION

Due to significant and remarkable effect on various soil physical and chemical properties, texture has achieved an imperative position in soil analysis. Generally it imparts role in structure development, water holding capacity, permeability, infiltration, porosity, consistence, ion exchange and nutrient fixation (Bajwa, 1981; Shahid *et al.* 1991). Sand, silt and clay are the 3 main fractions of soil texture. Among these, clay is by far the most active constituent and plays a vital role in soils used as a medium for plant growth. Thus the need for an accurate measurement of clay in soils deserves a special attention. In Pakistan, 1. Bouyoucos method (Bouyoucos, 1951); 2. Day's method (Day, 1950 and 1965) and 3. Pipette (Day, 1965) method and to choose one that is most suited to the soils of Pakistan.

MATERIALS AND METHODS

To complete the present investigation 28 soil samples i.e. Bhalwal profile (9), Miranpur profile (9) and from surfaces of various research fields at AARI, Faisalabad (10) are involved. Soil samples from Bhalwal profile were collected at (0-16, 14-18, 16-35, 33-37, 35-56, 54-58, 56-94, 94-130 and + 130 cm) and from Miranpur