THE SOIL REACTION PROFILE

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During the past few years increasing attention has been given to study of the observable features of the component parts of the soil profile. The texture, structure, color, consistence, and other observable features of each horizon are carefully studied and recorded in an effort to characterize, recognize, and differentiate soil types. The chemical composition and reaction, particularly of the surface horizon, of the soil profile have long been recognized as important soil characteristics, but they have not been commonly used in differentiating soils except in establishing broad categorical schemes of classification (1). It appears that, until appropriate field methods are developed, chemical analysis must continue to be used as a means of characterizing separations already made, and of testing their validity. Reaction determinations, however, as will be brought out in this paper, appear to offer an additional tool which may be used by the field man in helping to solve difficult problems.

The study of the reaction soil profile reported in this paper was made in Illinois on some established soil types to determine whether the reaction of horizons in the profiles of these types was significantly different, and whether it could be correlated with observable characteristics. It was thought that if such proved to be the case, the reaction profile could be used to help differentiate soils in the field. Similar studies have been made by others (10, 11, 12), but no definite conclusions can be drawn from the work reported because of limitations in the samples available for study, or for other reasons noted by the authors.

PROCEDURE

The potentiometric method, with the hydrogen electrode, was selected as the most satisfactory single test to indicate the reaction. This method determines the intensity of acidity or basicity and the results are closely associated with the degree of saturation of the acid colloid (2). This relationship is of particular importance in this work because the degree of saturation may be a criterion of degree of weathering in the soils studied. Samples were taken from

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2 Assistant Chief in Soil Survey Mapping and First Assistant in Soil Survey Analysis, respectively.
3 Reference by number is to "Literature Cited," p. 844.