DETERMINATION OF THE SWELLING COEFFICIENT OF DRY SOILS WHEN WETTED.¹

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No method of determining accurately a physical constant for the swelling of dry soil when wetted, comparable to the hygroscopic water content or to the moisture equivalent, was known to the writers when the method described in this paper was worked out. Tempany ³ has described a method of measuring the shrinkage of soils on drying. From the data obtained by his method, he has estimated the amount of colloids present and judged soils as to their adaptability to certain crops. It seemed that the swelling property of soils might be correlated with other soil properties, if it could be determined with reasonable accuracy. Investigations made in our laboratory on a limited number of soil types indicate that the amount of swelling on wetting is a constant for any particular soil which is susceptible of as exact determination by a strictly empirical method as other physical soil constants.

The purpose of this paper is to make available a new method rather than to present any results that have been obtained by its use. Study of a few soil types shows a certain correlation between the swelling constant and the mechanical analysis, the moisture equivalent, and the hygroscopic moisture content, although there seems to be no fixed ratio. This fact gives added value to the new constant. It will probably be of value in investigating the influence of various soil treatments, such as liming and fertilizing, on the physical char-

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