GENESIS AND MORPHOLOGY OF DESERT SOILS

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The purpose of this paper is to discuss dominant profile and environmental conditions and relationships of representative soils of the Desert Region of the Western United States.

THE DESERT REGION

This region extends from the Continental Divide in western Montana, central Wyoming, Colorado and New Mexico, westward to the Cascade Mountains and the Sierra Nevada; and in southern California and Arizona is coextensive with the great Sonoran Desert of northern Mexico. Local outlying areas occur in the Columbia Basin in Washington and Oregon, in New Mexico and Texas, and in interior valleys in California.

It is a region of calcification or accumulation of carbonates at variable depth within the weathered soil material. The mean annual rainfall is predominately less than 5 to 15 inches, and insufficient to permanently moisten the soil to such depth as to form contact with the water table. The region is characterized by low relative humidity and high rate of evaporation and by desert shrub and bunch grass type of vegetation with deficiency in accumulated organic matter.

Most of the data bearing on soil profiles and soil development in detail are of recent accumulation in connection with cooperative federal and state soil surveys. Much of the published literature from other sources is of very broad and frequently of theoretical character, and in part misleading.

GENERAL CONCEPT OF DESERT SOILS.

Hilgard (1) states kaolinization and the formation of colloidal clay being a process of hydration influenced by rainfall, decomposition of rocks in arid regions results in pulverulent instead of clayey soils. "There is then little or no clay to be washed down into the subsoil, hence there is no compacting of the latter; the air consequently circulates freely down to the depth of many feet." He