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GYPSIFEROUS SOILS OF PAKISTAN

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ABSTRACT

Twenty surface and 20 sub-surface soil samples from the districfts of Peshawar, Mardan, Bannu, and D.I.Khan, were analysed for gypsum content, pH, ESP, Ca CO_3 content and gypsum requirements. Almost all the soils of Bannu district and some soils of D.I.Khan district were found to be gypsiferous in addition to being saline-sodic and calcareous. The gypsum contents of these soils could be used for their reclamation without the addition of any chemical amendments. Moreover, due to their gypsum content, high sodium-water may safely be applied on these soils.

INTRODUCTION

Gypsum ($CaSO_4.2H_2O$) usually accumulates in soils of arid and semi-arid regions due to scanty precipitation. The occurrence is frequently in the horizon underlain by calcium carbonate ($CaCO_3$). Gypsum is found in soils as indurated horizon, called the gypsic horizons, or it may occur as crystals disseminated in surface soil horizons (Bear, 1964). The study of the gypsum content of a soil is important to know its moisture retention properties, aggregate stability, availability of plant nutrients and its reclamation. Poor physical conditions sometimes occurred when the percentage of insoluble calcium ($CaSO_4$, $CaCO_4$) was too high [2]. The gypsum accumulation increased as the depth of water-table decreased [3]. According to [5] gypsum accumulation was not, as a rule, encountered in the normal profile of any type of soil. It was stated that gypsum was a natural source of calcium and sulfur in soil [8].

Gypsum reduced the loss of nitrogenous fertilizers [7]. They further found that moisture retention in sandy loam soil at pH of 7.2, was unaffected by the application of gypsum. While studying the effect of moisture content on the yield of maize and wheat