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MANAGEMENT OF SANDY SOILS

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INTRODUCTION

Sands are large sized particles having diameter in the range 2-0.02mm (ISSS) or 2-0.05mm (USDA) and have low specific surface area (0.0011- 0.1 m 2 /g). These soils have single grained structure and constitutes the skeleton of the soil body. Sand grains comprise mostly quartz but also contain fragments of feldspar and mica and traces of some heavy metals. These soils are characterized by & gt; 70 % sand and & lt; 15 % clay and are also known as light soil due to lower draft required to till these soils as sandy soils are loose and easy to cultivate.

PROPERTIES OF SANDY SOILS

• Sandy soils have a gritty texture and particles can be easily seen.

• Shrinking and swelling property of these soils is negligible.

• Water holding capacity in sandy soils is low because of more proportion of macro pores and low organic matter content. As a result, these soils can hold less water and causes higher leaching. Hence, these soils have poor nutrient supplying capacity and are naturally poorly fertile.

• These soils are weakly developed; there is lack of structure and exhibit low buffering properties.

• Infiltration capacity and permeability of these soils is high.

Key to manage sandy soils. Following properties should be considered for management of sandy soils-

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• Decrease in the proportion of macropores

• Increase in organic matter content

• Increase in Cation Exchange Capacity of soil

• Improving the stability of soil structure

MANAGEMENT OF SANDY SOILS:

A. Addition of organic materials-

Addition of organic materials like farmyard manures, crop residues, green manures will bind the soil particles together to form aggregates. This will increase the water holding capacity of soil and improve nutrient status and nutrient supplying capacity of soil. Hence, CEC of sandy soils will increase.

B. Mulching -

Addition of mulch to sandy soil surface will help in reducing evaporation losses, will protect against raindrop impact, decrease erosion losses, increase aggregate stability, maintain the soil temperature and moisture status of sandy soils.

C. Compaction of soil-

Compaction of sandy soils will help in increasing the proportion of micro pores which are responsible for increasing the water holding capacity of soil, reducing infiltration rate and hence reducing the leaching losses.

D. Addition of clay-

Addition of clay particles like pond sediments will increase the specific surface area and CEC of soil enhancing nutrient supplying capacity and reducing leaching losses.

E. Light and frequent irrigation-

It will reduce water, leaching and erosion losses.

F. Growing of cover crops-

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Growing of cover crops protects the soil against erosion by wind and water, manages soil fertility improves soil structure and reduces evaporation losses. Inclusion of leguminous crops and crops with deep root system in agriculture system will also reduce soil erosion and improve productivity of the system.

G. Adequate Nutrition

Since sandy soils are poor in nutrients because of high leaching rate, therefore, comparatively higher rate of nutrients must be applied to achieve optimum yield.

H. Addition of biochar

Biochar is made up of stalks, straw, wood, and manure. Adding biochar to the soil increases its carbon content increase soil fertility, water holding capacity and ultimately crop productivity.

I. Use of slow-release fertilizers

Sandy soils have high infiltration rate. Water soluble fertilizers can easily wash out of these soils. Therefore, use of slow release fertilizer sources or split application of nutrients in case of N can help under cultivation in sandy soils. These fertilizer sources can release nutrients over a longer period and minimize nutrient losses.