



## UNSEEN THREATS BENEATH OUR FEET: DIFFERENT PROBLEMATIC SOILS IN INDIA – AN OVERVIEW

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### Introduction

Indian soils are rich and abundant with diversified soil types and each soil has a unique properties. But due to adverse climate change and weather pattern, these soils are subjected to change both in morphological and chemical properties, which leads to affect on crop plants. Such soils are called Problematic soil. There are different types in Indian condition. They are listed below.

### Different problematic soils encountered in India

#### Saline soil

Salinity soils are reported when the soil has predominant amount of neutral salts like Sodium, chloride and calcium, magnesium as when combined with Na and Cl. When it occurs, it forms a thin white encrusted layer over the surface. Plants are very much affected.



Fig. 1. White encrustation over the entire field due to saline condition

**Management:** Leaching or flushing with good irrigation water with better drainage.

#### Sodic soil

Sodic soil are condition where the dominant element of Sodium is abundant when compared to other cations and in the soil whose ESP are > 15. The pH of the soil always be alkaline condition. This soil usually called as “Destructive soils” due to presence of sodium in exchange complex.

**Management:** Application of Gypsum and leach with good quality water.

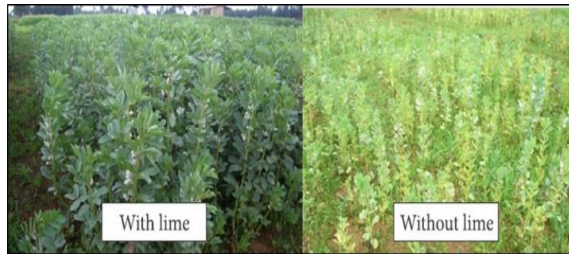


Fig. 2. Situation of Sodic soil in barren land field

#### Acid Soil

These soils are subjected to have more exchangeable Hydrogen and aluminum ions with low pH. These soils are mostly abundant at low temperature and humid climate condition.

**Management:** Lime addition to soil



**Fig. 3. Growth of faba bean under limed and un-limed condition on acidic soils**

### Pluffy soil

Pluffy soils are soil whose bulk density is very low and the soil structure gets reduced. The plant anchorage is very much affected and root can't be hold strongly by soil. Puddling is much affected in pluffy soil.

**Management:** Addition of organic manure; rolling stone roller; addition of clay or tank silt.



**Fig. 4. Effect of pluffy soil on puddling**  
(Farmers knee and cow is nearly half submerged in agriculture field) **due to pluffy nature of soil**

### Laterite soil

Laterite soil are hard mass of soil which has more penetration strength. Over a period of dryness these soils gets hard, compact and difficult to break. Usually they are red in colour.



**Fig. 5. Laterite soil**

### Calcareous soil

Calcareous soil are soil which is abundant with Calcium carbonate ( $\text{CaCO}_3$ ). This will forms a thick layer of white encrusted layer. The plant roots become more difficult to penetrate deeper. These soils will causes micronutrient deficiency in the soils.

**Management:** Addition of organic matter.



**Fig. 6. Calcareous soil**

### Conclusion

Soil were the key foundation for future agriculture production and sustainability. Their healthy are innate and should be carefully take care for future generation. Thus farmers and agricultural experts shall focus rely on management aspect and should give experimental analysis. Hence, "*A Healthy soil gives back healthy food*".