

Soil Resources of India and Their Management



Jagdish Prasad

PRESIDENT

Indian Society of Soil Science, New Delhi

Outline

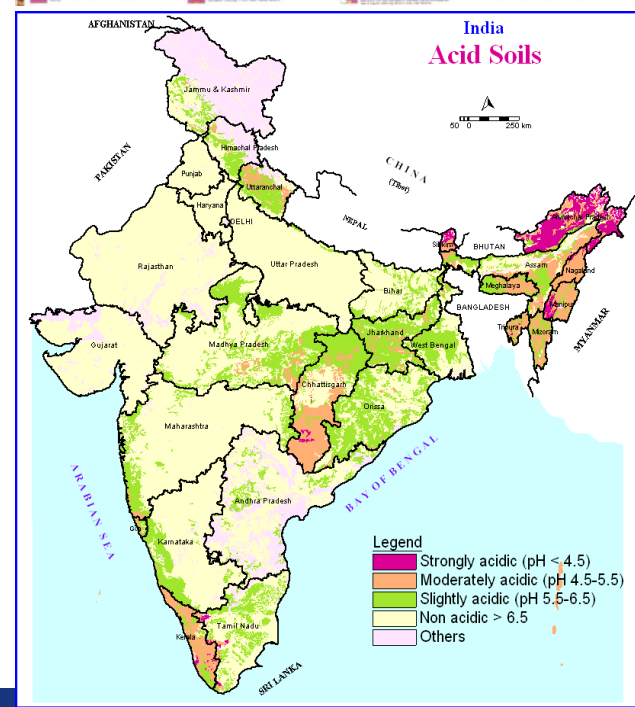
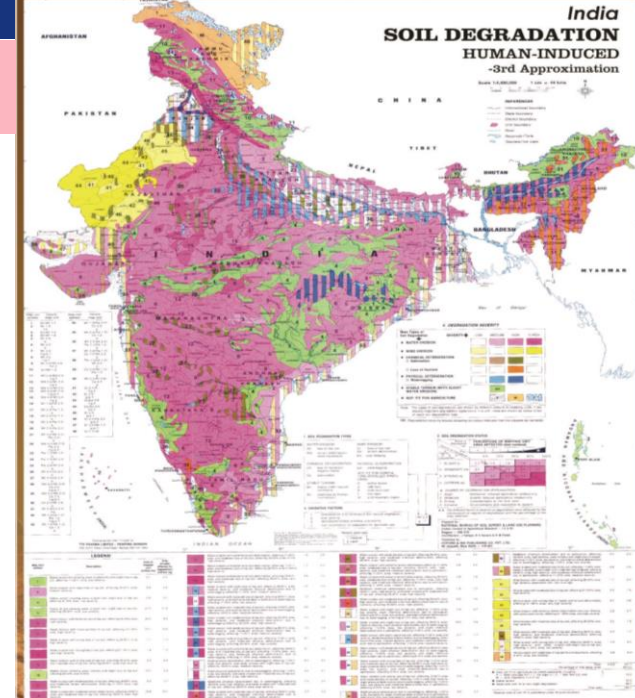
- ❖ **Soil resource inventory**
- ❖ **Basic research in soil science**
- ❖ **Soil degradation and environmental security**
- ❖ **Soil quality and nutrient management**
- ❖ **Climate change and soil carbon sequestration**
- ❖ **Way Forward**

Basic research in soil science

- 
- a**
- **Gibbsites were formed in an alkaline environment at an early stages of weathering.**
 - **Micromorphological studies for pedofeatures and formation of pedogenic carbonates in the Vertisols of arid and semi-arid climates leading to subsoil sodicity.**
 - **Mineralogical studies for different soil-size fractions.**
 - **Research on identification of soil-modifiers like zeolites, gypsum minerals. Presence of zeolites protects the biodiversity of the Western Ghats and also persistence of Mollisols and Alfisols in Satpura and Western Ghats**
 - **Quantification of biotite clay minerals and its role in the management of K-fertilizers**
 - **Use of nanotechnology in soil and crop management, and enhancing input use efficiency**
- 0.1 mm 30.0 kV 6.25E2 1709/02 NBSSDKP

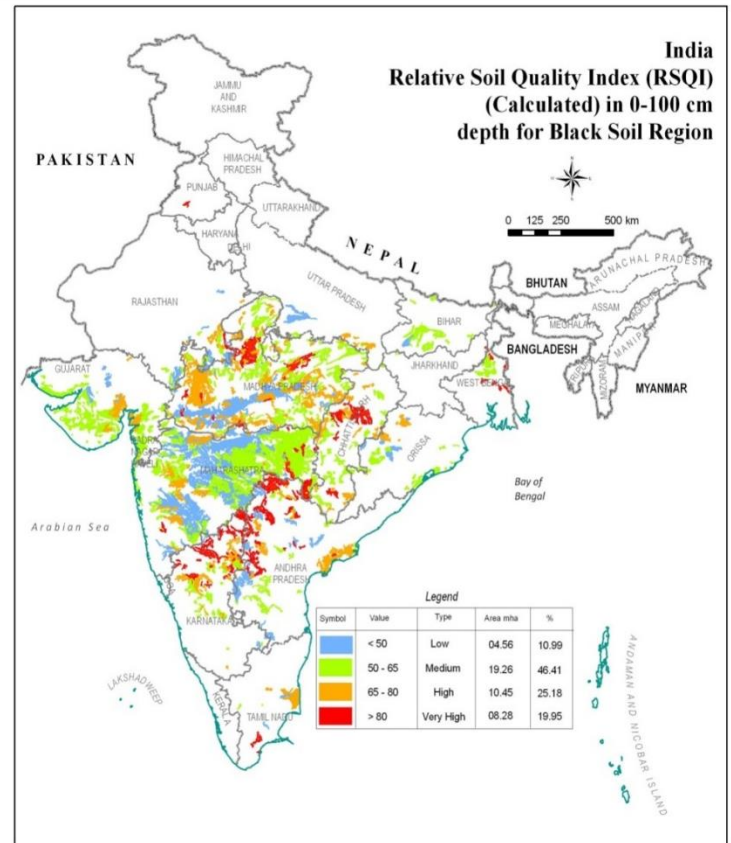
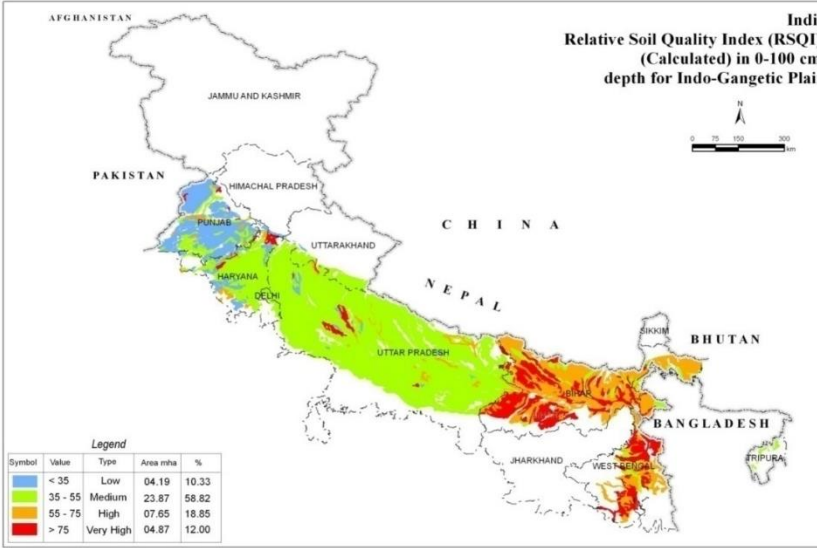
Soil degradation and environmental security

- ❑ About 120.7 mha is degraded
- ❑ Characterization and mapping of salt affected soils (6.73 mha)
- ❑ Characterization and mapping of acid soils (30.9 mha with pH <5.5)
- ❑ Reclamation and Management of problem soils
- ❑ Bio-remediation/phytoremediation of contaminated soils



Soil quality and nutrient management

- ❑ Development of soil and land quality indices for major crops
- ❑ Integrated nutrient management and input use efficiency
- ❑ Characterization and prospecting of large soil biodiversity
- ❑ Conservation agriculture
- ❑ Precision agriculture
- ❑ Research on cropping sequence under different soil environmental conditions
- ❑ Land evaluation and agricultural land use planning
- ❑ Benchmark spots (hotspots) for monitoring soil and land quality



Way Forward

- ❑ Land resource inventory on 1:10,000 scale for the entire country in phases.
- ❑ Use of hyperspectral and LiDAR data for hastening land resource inventory
- ❑ Basic research to understand the cause-effect relationships of soil-crop dynamics
- ❑ Policy for agricultural land use planning
- ❑ Research on hydro-pedological and pedometrics
- ❑ Climate resilient/Climate smart agriculture
- ❑ Refinement of AESRs boundaries of the country
- ❑ SOTER database for the entire country
- ❑ Simulation modeling to understand soil physical processes *vis-à-vis* climate change

Thank You