Lecture 13
Soil Health

Sustaining soil health is the imminent need of the hour

Soil health is defined as the continued capacity of soil to function as a vital living system, which include sustaining biological productivity of soil, maintain the quality of surrounding air and water environments,as well as promote plant, animal, and human health. Soil function include sustaining biological diversity, activity and productivity, regulating water and solute flow, filtering, buffering, degrading organic and inorganic materials, storing and cycling nutrients and carbon, providing physical stability and support.

Soil health deals with both the inherent and dynamic soil quality. The former relates to the natural (genetic) characteristics of the soil (e.g., texture), which are the result of soil-forming factors. They are generally cannot easily be amended. On the other hand, the dynamic soil quality component is readily affected by management practices and relates to the levels of compaction, biological functioning, root proliferation, etc whichis of most interest to growers because good management allows the soil to come to its full potential.

Soil quality or health cannot be determined by measuring only crop yield, water quality, or any other single outcome but with indicators which are measurable properties of soil or plants that provide clues about how well the soil can function.

Soil health Indicator	Relationship to Soil Health
Soil organic matter (SOM)	Soil fertility, structure, stability, nutrient retention; soil erosion
Physical: soil structure, depth of soil, infiltrationand bulk density; water holding capacity	Retention and transport of water and nutrients; habitat for microbes; estimate of crop productivity potential; compaction, plow pan, water movement; porosity; workability

Chemical: pH; electrical conductivity; extractable N-P-K	Biological and chemical activity thresholds; plant and microbial activity thresholds; plant available nutrients and potential for N and P loss
Biological: microbial biomass C and N; potentially mineralizable N; soil respiration.	Microbial catalytic potential and repository for C and N; soil productivity and N supplying potential; microbial activity measure

In the International Year of soils, policy makers, scientists and allstake holders should pledge to really protect the soil through multifaceted approach including input management like water, manures, fertilizers andrevamp soil health management programmes and evolving more soil health indicators specific to a region and resort to more of physical and biological fertility management and precise agriculture which naturally will take care of all other functions. Many interactions hitherto neglected involving soil, plant, microbe, water and atmosphere should be focussed. Sustainable soil management is essential for getting food, feed, fibre, fuel, medicines and ecosystem services. It is a non renewable resource and managing sustainably needs increasing soil organic matter content, using nutrients wisely, keeping soil surface vegetated, promoting crop rotations and diversification and reducing erosion. It is imperative to solve the soil constraints and make the lands highly productive on a sustainable basis, we need to develop technologies suitable to specific locations which will be economically feasible and workable at farmer's field. Though emphasis is on increasing the current yield level, attention should also be given to prevent soil degradation and also develop suitabletechnologies to reclaim the problem soils.