



PARTICIPATORY SOIL HEALTH ASSESSMENT APPROACH AND ITS NECESSITY IN INDIA

SHINOGI K C, SANJAY SRIVASTAVA and PRIYA P GURAV

ICAR-Indian Institute of Soil Science, Bhopal, Madhya Pradesh



Soil is the foundation of life on earth and the health of this thin layer of the planet decides the survival and extinction for most land-based life forms. Sir Albert Howard outlined the significance of healthy soils in 1945 through his book *The Soil and Health: A Study of Organic Agriculture* as “The birthright of all living things is health. This law is true for soil, plant, animal and man: the health of these four is in a connected chain. The general failure in the last three links is to be attributed to failure in the first link, the soil: the undernourishment of soil is at the root of all”. Even the ancient farmers knew the importance of soil health and owned the art of feeding the soil with compost and organic manures.

When agriculture transferred from the “subsistence farming” approach to “intensive farming” approach, the importance of soil health started to decline and left behind as a missing link that eventually restrained us from achieving the sustainable development goals. But, the world agricultural scenario has changed a lot in the past few years and farmers as well as researchers started to retrace the road of a healthy agriculture than a wealthy agriculture in order to improve the sustainability of agroecosystems. It is because only in a healthy agroecosystem various physical, chemical and biological properties of soil interact in complex ways to make the soil

function as a living system and promote ecosystem services to improve the environmental quality and sustain biological productivity.

NEED FOR PARTICIPATORY MODE IN SOIL HEALTH ASSESSMENT

Realizing the locale specific needs of farming community Participatory Technology Development (PTD) approach is also gaining importance in the Indian agriculture in recent days. PTD emphasises on involvement of farmers and their knowledge in the evaluation of agricultural technologies under farmers’ field conditions in order to identify locale specific technologies. In a similar way integration of traditional knowledge related to land management with scientific knowledge is also necessary in the assessment of soil health. Traditional knowledge is based on the observations and integration of understanding made by ancient farmers over the years based on the responses of their agroecosystems towards different biotic and abiotic factors that affect crop production. Hence, incorporation of those with the scientific knowledge definitely produces a synergetic effect in improving soil health.

In a country like India where there is a wide variation in the soil type, weather parameters and cropping pattern, traditional knowledge associated with each agroecosystem may be unique to that location. Also, it may vary with the change in social and cultural parameters. For instance the ancient farmers of South-West India fertilized their soils with cow dung manure, wood ash, and fish waste etc. to meet the NPK requirements of the crop. This kind of indigenous traditional knowledge (ITK) generally transferred to the next generation through oral tradition in the form of small meaningful sayings/proverbs.

Indigenous agricultural knowledge related to land and crop management could be identified among almost all the rural farming communities. Validation of different ITKs with existing scientific farming practices may reveal close association of many of the scientific farm/soil management practices with traditional



knowledge. For example, a famous agricultural saying in Malayalam “*kothukazhinjal pathunakkam*” instruct that after ploughing, the land should be kept for drying for the next ten days. The scientific farming also advocates summer ploughing to expose the weed seeds, hibernating insect pests and disease causing organisms to sun as well as to improve the soil aeration.

To identify the ill soil health or time of land management earlier farmers used some indicators in traditional farming and those indicators generally known as local indicators. Integration of local indicators and scientific indicators enables development of a more effective soil health assessment tool than the existing tools. Only a participatory approach can facilitate knowledge sharing between farmers and researchers/technical professionals that in turn facilitate incorporation of traditional knowledge in soil health management decisions. Traditional knowledge on visible soil characteristics can be considered as local indicators of soil health. But, scientific validation of local indicators is important to enhance complementarities between the local and scientific indicators in the participatory soil health assessment process.

PARTICIPATORY METHODOLOGIES TO IDENTIFY LOCAL INDICATORS OF SOIL HEALTH

The Methodological Guide for participatory knowledge integration by World Agroforestry Centre delineates five key steps for generating a prioritised list of local indicators of soil quality together with farmers as

- xii. Field day activity to the leader(s) of the farmer community
- xiii. Identifying local knowledge on indicators of soil quality
- xiv. Classifying local indicators of soil quality
- xv. Prioritizing local indicators of soil quality by farmers in working groups
- xvi. Summarizing to the farmer community priorities on local indicators of soil quality using the synthesis matrix tool

After carrying out an additional prioritization exercise and making the necessary corrections, the final list of local indicators of soil quality prioritised by the farmer community can be generated. The local and technical indicators of soil quality need to be integrated based on the linkages between them to generate Hybrid Indicators that facilitate better soil health assessment.

CONCLUSION

Integration of agricultural technologies with locale specific indigenous agricultural knowledge will definitely increase the adaptability of the technologies as indigenous agricultural knowledge have a local origin based on the year old experience of the farmers. Unfortunately, migration of rural youth to the cities leaving their agricultural tradition and aging of experienced farmers may take away this valuable cultural resource from the future agriculturists. Also, there were no systematic efforts from any of the agricultural stakeholders to codify and protect these cultural resources existing in various parts of the country. Therefore, there is an urgent need for identification and/or development of suitable approaches/tools that helps to carryout participatory soil health assessment in India. Because, keeping our soils healthy is a necessity not only to make our nation wealthy but also feed the future India.
