



Editorial

USE OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) FOR SOIL HEALTH ENHANCEMENT

Information and Communication technology (ICT) is not a new concept in agriculture as ICT based technologies like radio and television are being used in technology transfer for last fifty years. Eventually, digitalization started to make impact in the information use pattern of the farming community throughout the world. Rural farmers, once dependent upon traditional wisdom and changes in the sky to predict rainfall are also moving towards satellite based weather data available in smartphones and internet in recent years.

Digitalization in agriculture, which gained a momentum with the precision farming concept, is progressing towards soil health management technologies. Development of sensors and drones installed with sensors to monitor crop growth, pest and disease incidences, and irrigation requirement of large farms has already transformed 'farming' to 'smart farming' in many developed countries. Moreover, portable sensors that can detect soil moisture and soil temperature are already available in developing countries too.

In this digitalization move, soil research also making use of smartphones as a signal transducer that may potentially replace a spectrometer. Moreover, it can also be expanded as a mobile instrumentation platform for analytical applications so-called "lab-on-a-smartphone" for development of portable measurement devices. Smartphones such as iPhones and android phones are integrated devices of the cutting edge technologies such as fast CPUs, user-friendly interfaces, high quality

digital cameras, GPS, gyro sensors and so on. Besides, it is supplied with software development toolkits for controlling the hardware, to provide a flexible development platform.

The hand held devices including the smartphones can also be used along with sensor systems involving the appearance or disappearance of colour or any property that can be measured/sensed, i.e. luminescence, developing complete analytical systems that include chemical recognition and the transduction of the signal.

At next level, soil research emphasises on development of portable low cost techniques using sensors that can make quantitative measurements of soil nutrient levels in the field and recommend fertilizer doses for the standing crop. Such developments will ease the reach of soil health assessment and management technologies to farmers. The volunteers at the village level itself may be equipped with the tools of assessment and interpretation know-how.

In addition, other ICT opportunities like soil health interactive portals also benefit various agricultural stakeholders as it can act as a one stop solution to their soil related issues.

Dr. Sanjay Srivastava
Editor in Chief