

Sustaining Agricultural Productivity through Integrated Soil Management

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Soil is the living outer layer of our planet which provides a medium in which plants grow. It forms the main component of the terrestrial ecosystems upon which our well-being and prosperity is based. It plays a fundamental role in the carbon cycle and the water cycle, as well as being the engine room of food production, and host to enormous biodiversity. Augmentation and maintenance of soil productivity is essential to the sustainability of agriculture and for meeting needs of rising population. The doubling of global food demand projected for the next 50 years poses serious challenge for sustainability of food production and safe guarding the environment. Integrated Soil Management involves a combined strategy of effective nutrient, crop, water, soil and land management for sustainable agricultural production and other forms of land use. ISM can be tailored to the characteristics of site and soil and, importantly, to environmental, economic, and social constraints faced by farmers. ISM technologies should enhance soil structure, improve nutrient and water use efficiency, conserve valuable soil and water resources, and, where possible, increase cropping intensity. Soil specific technologies under such a combined strategy (ISM) including structural improvement, integrated nutrient management, residue management, conservation, minimum tillage and improved water capture/recycling/irrigation. Success of conservation/ minimum tillage in increasing soil organic matter, with consequent improvement in fertility and erosion control, has been reported. Degradation of soil health has also been reported due to long-term imbalance use of fertilizer nutrients. Although overall nutrient use (N: P₂ O₂: K, O) of 4:2:1 is considered ideal for Indian soils, the present use ratio of 6.8:2.8:1 is far wide. In this context integrated soil management in terms of nutrient, soil conservation, phyto-remediation, soil tillage, tith and maintenance of soil



organic carbon will help in maintaining optimum soil health and enhancing the crop productivity on long run.

