the soils of India is relatively low, ranging from 0.1% to 1% and typically less than 0.5%, its influence on soil fertility and physical conditions is of great significance. The cause of low levels of organic carbon in Indian soils is primarily high temperature prevailing throughout the year. Soil organic carbon level reaches a fixed equilibrium that is determined by a number of interacting factors, such as precipitation, temperature, soil type, tillage, cropping systems, fertilizers, the quality of crop residues returned to the soil, and the method of residue management. Conversion of land from its natural state to agriculture generally leads to losses of SOC. It may take up to 50 years for the organic carbon of soils to reach a new equilibrium level following a change in management, but this period is much shorter in a semi-arid and tropical environment like India. Considering the nutrient removal by crops, and supply through different sources under intensive cropping systems, it is seen that removal is far greater than the supply. It is therefore extremely important to maintain SOC at a reasonably stable level, both in quality and quantity, by adding organic materials from crop residues. Long-term experiments conducted in different agro-ecoregions of India involving a number of cropping systems and soil types, have proved that even balanced use of NPK fertilizer helps in maintaining SOC. The encouraging results obtained by the integrated use of fertilizers, organic and green manures, and bio-fertilizers, are providing the leads for future strategies for rational use of land for enhancing productivity without detriment to the environment.

Keywords: balanced use of fertilizers, carbon sequestration, sustaining crop productivity, land degradation, organic carbon.

2.4.15. Soil carbon sequestration: can it take the heat of global warming?

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Expectations have been raised that carbon sequestration in soils could provide a short-term bridge to reduce the impacts of increasing carbon emissions until low-carbon technologies are available. This paper tackles the issue by balancing soil carbon sequestration potentials against anthropogenic CO2 emissions, as well as emissions of greenhouse gases from soils in response to global warming (+2°C) that is currently considered inevitable. Central Asia, with its vast areas of rangelands, is looked at in more detail. Therefore, organic carbon in the soils of Central Asia, and losses in response to land use, was quantified in a spatially explicit way. In conclusion, it appears that, unfortunately, the strategy of soil carbon sequestration as a stand-alone measure is not a viable bridge to a future in which alternative energy sources can substitute fossil fuel burning, but can only be part of a set of mitigating measures.

Keywords: anthropogenic CO2 emissions, carbon sequestration, Central Asia, climate change.

2.4.16. Community-based reuse of gray water in home farming

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With annual renewable water resources of less than 150 m3 per capita, Jordan is one of the most water scarce countries of the world. The demand