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Cropping Systems to Improve Carbon Sequestration for Mitigation of Climate Change

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Author(s)

Qingren Wang, Yuncong Li, Ashok Alva

ABSTRACT

The recent trend of an increase in the concentration of greenhouse gases (GHGs) in the atmosphere has led to an ele-vated concern and urgency to adopt measures for carbon (C) sequestration to mitigate the climate change. Among all GHGs, carbon dioxide (CO2) is the most important one which occurs in the greatest concentration and has the strong-est radiative forcing among all. Reducing the release of CO2 to the atmosphere through "green energy" technologies or fossil fuel energy alternatives, such as wind, solar and hydraulic energies, is a major challenge. However, removal of atmospheric CO2 by terrestrial ecosystems via C sequestration and converting the sequestered C into the soil organic C has provided a great opportunity for shifting GHG emission to mitigate the climate change. Soil is an ideal reservoir for storage of organic C since soil organic C has been depleted due to land misuse and inappropriate management through the long history. To optimize the efficiency of C sequestration in agriculture, cropping systems, such as crop rotation, intercropping, cover cropping, etc., play a critical role by influencing optimal yield, total increased C sequestered with biomass, and that remained in the soil. As matter of fact, soil C sequestration is a multiple purpose strategy. It restores degraded soils, enhances the land productivity, improves the diversity, protects the environment and reduces the enrichment of atmospheric CO2, hence shifts emission of GHGs and mitigates climate change.

KEYWORDS

Carbon Dioxide, Carbon Sequestration, Climate Change, Cropping System, Greenhouse Gas

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