



Biochar Mediated Mechanisms for Reducing N₂O Emissions: An Overview

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Continuing land-use change (e.g., greater inorganic and organic N fertilizer use) due to increasing population growth has led to significant increases in global N₂O emissions. N₂O has a high global warming potential; thus, a clear need exists to lessen further emissions. Biochar, a pyrolysis by-product, holds promise as a material that can influence soil and manure N transformations and drastically reduce N₂O emissions. Biochar has been shown to: 1) entrap and thus decrease NO₃-N concentrations; 2) sorb and thus decrease NH₄-N concentrations; 3) alter microbial community composition; 4) be a source of electrons and thus alter redox conditions; 5) potentially react with N₂O; and 6) locally increase soil pH, all of which can lead to reduced N₂O emissions. The purpose of this presentation is to provide overarching mechanisms behind these six points in terms of how biochar reduces N₂O emissions.