

Switchgrass as bioenergy feedstock

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Scientists examined current knowledge about the potential contributions of bioenergy production from switchgrass to limit greenhouse gas emissions. Their findings, published in *GCB Bioenergy*, conclude that the use of switchgrass bioenergy can contribute to reducing greenhouse gas emissions but encourage further research to address the significant sources of uncertainty, such as what type of land is converted to switchgrass.

According to the leading author, Dr. Andrea Monti, Research Scientist at the University of Bologna, Italy, "We reviewed over 100 articles on switchgrass, which found that this crop has a considerable ability to accumulate carbon in the soil compared to several other grasses, and especially [row crops](#). Although switchgrass has recently received a lot attention as an environmentally beneficial energy crop, it is important to consider that switchgrass had not been planted as a monoculture crop until the mid 20th century. Information needed to make long term predictions on [carbon sequestration](#), such as land use change, carbon turnover rate, and the economic life cycle length are lacking."

The authors examined the emissions and uptake of three [greenhouse gasses](#) - carbon dioxide, methane, and nitrous oxide over the life cycle of switchgrass from cultivation to processing. They considered how previously published estimates have varied widely according to what variables are included and what values are used for factors, such as agricultural practices (e.g., tilling, harvest frequency, and [fertilizer application](#)), end-product (e.g. bioethanol vs. bioelectricity), and fossil fuels that are being displaced.

The authors conclude that switchgrass bioenergy use could significantly reduce [greenhouse gas emissions](#), although areas of uncertainty still exist in the assessment of soil carbon storage, nitrous oxide, and [methane emissions](#), and the effects of converting lands to switchgrass. Researchers must not ignore or underestimate the effects of indirect and direct land use change on the greenhouse gas

balance of switchgrass, and therefore must undertake considerable further studies in order to understand and quantify its true impact.

"A reliable assessment of the contribution of switchgrass, along with other energy crops, in reducing greenhouse gas emissions might increase their demand in the booming renewable energy market," said Dr. Andrea Monti.

Provided by Wiley

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