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Effects of biochar on greenhouse gas emissions from arable and bioenergy crops

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Biofuels can provide energy for human use. Two common crops used for biofuel are willow and miscanthus. Biochar is increasingly used as soil amendment as it can improve soil productivity. Thus, there is a prospect to combine biochar production with biofuels. However, if this is going to happen it would be necessary to assess the changes in greenhouse gases emissions caused by biochar. An experiment was carried out in the laboratory to assess the effects of biochar prepared from different feedstocks (sewage sluge, paper mill waste and miscanthus) on N2O and CO_2 emissions in an arable soil, a soil planted with willow and a soil cultivated with miscanthus. Miscanthus biochar increased CO_2 emissions for the 3 soils considered. N2O emissions were higher in the arable soil compared to the other soil. N2O emissions diminished by all of the biochars tested in all the soils. The extent of this decrease depended on soil type and on the biochar feedstock.