Soil organic carbon balance in a bio-energy crop


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Short-rotation coppice cultures (SRC) with poplar (Populus spp.) for bio-energy production offer a potential for fossil fuel substitution and mitigating increased CO₂ concentrations. But the potential of SRC to store carbon into the soil and to mitigate the rising atmospheric CO₂ concentration is still not well understood. The objective of this study is to measure all carbon fluxes into and out of the soil to quantify the SOC balance of a SRC with poplar in the second growing season.

OBJECTIVE

We were able to get reliable estimations of all below-ground carbon stocks and fluxes.
A net below-ground carbon loss was observed in the second growing season of a SRC of poplar.

CONCLUSIONS

Genotype: Skado
(P. trichocarpa x P. maximowiczii)

Former land use: Pasture

Two harvest machines

Soil chambers: root + soil respiration

Harvest of above-ground biomass and root production by sequential coring

Soil sampling in March 2010

Sequential coring

Water balance and carbon concentration in water table

Carbon stocks, carbon inputs and carbon released (g C m⁻²)