

ABSTRACT NO: 94

Carbon dioxide emissions from peat soil on a
newly restored reed canary grass field and a nearby,
abandoned agricultural field

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In northern Scandinavia vast areas of agricultural land on peat soil have been abandoned the last 50 years. This land is still drained and thus carbon dioxide emissions can be substantial. Reed canary grass can be a suitable energy crop for some of the abandoned peatland that is easiest to restore. A field near Malå in Sweden was restored using open ditches on one part and tile draining on another part and reed canary grass was sown in 2010. Carbon dioxide emissions were measured using the EGM 4 portable equipment from PP systems, water content was measured using profile probe PR2 and groundwater level was measured in ground water tubes using a “plopper” groundwater level meter. The first growing season there were higher carbon dioxide emissions and lower groundwater level and water content on the nearby field that was not restored, than on the reed canary grass field. The reason could be compaction of peat on the restored field by agricultural machinery and higher transpiration and respiration from the dense grass vegetation on the abandoned field. The second growing season, a randomized experiment with raised groundwater level was performed on the tile drained part. Neither carbon dioxide emissions nor the growth of the reed canary grass were affected by the higher groundwater level. In conclusion, there was no indication that restoration of abandoned agricultural field to reed canary grass production gave higher carbon dioxide emissions from decomposition of the peat substrate. For quantifications more research is needed.