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INFLUENCE OF RECENT LAND USE CHANGE ON TOTAL ORGANIC CARBON STOCK IN HUMOR RIVER BASIN

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Abstract

Inventory and monitoring of total organic carbon stock (TOC) it's an issue of actuality in the context of breaking into the atmosphere an alarming quantity of CO₂ result of human activities. Management and sustainable management of forest and agricultural ecosystems can have a positive influence on maintaining optimal stock of carbon sequestered. A case study achieved in the Humor catchment reveals that changing the land's utility means important modifications in the quantity of the carbon organic in ecosystems. The transition from forest biomass to herbaceous biomass or crops it means a considerable reduction of the organic carbon. Other important changes are occurring in soil trough the transformation of forest humus in grassland humus and cropland. The most common changes of intended land use were: from the forest to grassland, from the forest to arable, from the forest to urban use, from the grassland to arable, from the grassland to urban use, and less, from the grassland to forest or from the arable to grassland. In case of deforestation or fire, the soil organic carbon (SOC) is reduced by an amount equivalent to biomass missing. As a result of the insect attack, the living biomass turns into deadwood and the total organic carbon (TOC) will persist for a while even after decomposition of the wood, which will be incorporated into the forest soil. Litter and soil organic carbon last longer after fire or deforestation, but in time it is eroded either reshuffled or mineralized. The calculation of the stock of organic carbon sequestered it was achieved by quantitative estimation methods in the biomass, soil, deadwood and litter, depending on the type of land use. In the case of forest ecosystems, carbon stock it depends on the species composition of the forest, the trees age and the density of the trees. The study was conducted to demonstrate by calculations that changes in the land use pattern lead to increases and decreases in the carbon stock segregated in forest ecosystems. The used methodology correlates Corine Land Cover data with the carbon stock estimations from different land use categories, highlighting changes from one historical period to another.

Key words: biomass, carbon stock, ecosystem, soil

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