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Fuelwood Use and its Impacts on Food Crop Production and Nutrient Transport from Forests in the Highlands of Ethiopia

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Abstract

Due to deforestation and human population increment, there is a severe fuelwood scarcity in Ethiopia, which in turn is forcing farmers to use cattle dung. This study investigated how the use and scarcity varied with proximity to state forest, and the impact of the use and scarcity on food crop production and on nutrient export from forest ecosystems in Suba area, central highland Ethiopia. Data was collected using questionnaire survey and key informants interview supplemented by a nutrient analysis result of the wood and cattle dung samples from a secondary source. With increasing distance from the state forest, fuelwood consumption decreased while cattle dung consumption increased. Annually, 1.2×10^6 kg of fuelwood containing 1.4×10^3 kg N, 6.1×10^5 kg C, 39.44 kg Al, 2×10^3 kg Ca, 3.33 kg Cu, 131.5 kg Fe, 766.5 kg K, 130.9 kg Mg, 92.07 kg Na, 50.57 kg P, 131.06 kg S and 8.17×10^4 kg Zn, was extracted from the state forest and 3.22×10^5 kg yr⁻¹ cattle dung containing 6.14×10^3 N and 1.1×10^3 kg P was burnt by the studied 381 households. This amount of cattle dung could potentially produce 4.2×10^4 or 5.9×10^4 kg of wheat or maize respectively, which could have fulfilled the annual cereal demand of 39 or 55 households with the respective crops. Generally, fuelwood scarcity is beyond energy issue, having direct impacts on food self-sufficiency and nutrient transport from forest ecosystems. Hence, alleviating fuelwood scarcity problem should attain priority in the development programs conducted in the study area for promoting food crop production and enhancing the development of the nearby forest.

Keywords: Cattle dung, crop production, fuelwood scarcity, nutrient outflow