Tropentag, September 10-12, 2025, hybrid conference

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Impact of agroecological innovations on agricultural production and the environment in the foothills of mumirwa, burundi

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Abstract

Agriculture is an important pillar of the national economy of Burundi. The sector contributes more than 40 % of gross domestic product (GDP) and employs 90 % of the population. The main challenges facing the sector include soil degradation, loss of biodiversity, water contamination, pesticide residues, use of genetically modified organisms and participation in climate change. Faced with such constraints, the Burundian farmers experience new modes of production and consumption such as the development of agroecological farms (crop association, crop rotation, agroforestry, anti-erosion ditches) and the use of biofertilisers and biopesticides. This study aims to analyse the impact of agro-ecological innovations on agricultural production and environment in Mumirwa region, especially in three communes of Bubanza province (Bubanza, Musigati and Rugazi). The study approach consisted of 341 surveys conducted on two samples (members of cooperatives and non-members), focus groups, individual interviews and field visits. The ordinary least squares method and comparative approach between the two samples (treatment sample and comparison sample) were used to analyse the impact on production and environment, especially on soil fertility. We referred to the ISABU laboratory (Higher Agronomic Institute of Burundi) results of the soil samples brought by ADISCO NGO before and after planting the beans using organic manure on the one hand and chemical fertilisers on the other. The results showed that agro-ecological practices positively impact agricultural production and improve soil fertility. After one year of adoption, bean production increased by 21 %. The analysis of the soil samples indicate that the combination of agro-ecological practices improves the soil's chemical characteristics, contributing to increased productivity. This could be explained by the fact that the development of agro-ecological farms and biofertilisers promote the sedimentation of particles of organic matter from runoff water and organic manure.

Keywords: Agroecology, Burundi, fertility, innovation, soil

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