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“Bridging the gap between increasing knowledge and decreasing resources”

Soil Science Meets Economics: An Interdisciplinary Study on Urban and Periurban Agricultural Production Systems in Ghana and Burkina Faso

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Abstract

In sub-Saharan Africa urban and periurban agriculture plays an important role in people's livelihood strategies, supplying staple and vegetable crops to local markets. High urbanisation rates put pressure on urban and periurban production sites, but also create new market opportunities for local farmers. This is associated not only with socioeconomic changes in the lives of urban and periurban farmers, but also environmental changes in cultivated soils. The aims of the present study were to demonstrate the links between crop production, economic input and soil fertility of single backyard and open-space fields in urban and periurban agricultural areas. Using a remote sensing-based approach, 247 fields in Tamale (Ghana) and 246 fields in Ouagadougou (Burkina Faso) were randomly selected for the study. Farmers were interviewed via structured questionnaires on field inputs, outputs, soil management and household socioeconomic information. Three soil sample replicates were taken from each field. A preliminary evaluation of the data showed that backyards had a higher pH than open spaces in both cities. For organic C and total N stocks ambivalent trends were found. In Tamale organic C stocks were higher (by 10%) in backyards than in open space fields whereas N stocks were equal. In Ouagadougou, organic C stocks and total N were higher (by 25% and 15%, respectively) in open space fields than in backyards. Backyard farms in Tamale, generally unfenced in the dry season, received more C rich inputs than open space fields. Conversely, in Ouagadougou's enclosed backyards the limited application of C and N rich inputs led to lower C and N stocks compared to the open space. More arid conditions in Ouagadougou also led to less available organic inputs and shorter growing periods. This study presents the interaction of economic inputs and soil fertility on the economic outcome of urban and periurban farmers in sub-Saharan Africa.

Keywords: Backyard, carbon, nitrogen, pH, urban farming