Economic analysis of soil amendment (biochar) and safer irrigation options in urban and periurban agriculture. Case of Tamale and Ouagadougou

Abstract

African population is increasingly becoming urbanized and it is projected that nearly half (46.2%) of the population will live in cities by 2020. This expansion of urban agglomeration results in an increase in demand for food and the immigration of unskilled labour. While foods like cereals can be transported from rural areas, perishable crops like vegetables lose their market value during transportation as refrigeration is scarce. Most vegetables are therefore grown in and around cities to maintain their freshness and nutrition value. Thus urban and peri-urban agriculture often irrigated due to unreliable rains and for year round supply to cities is a common practice and a means of attaining food security, balanced diet and livelihood to diverse groups of people in many developing countries.

Nonetheless, the activity is often marked by the use of wastewater for irrigation and a general decline of soil fertility resulting in a gap between actual yield and potential yield as well as health risk through the production and consumption of unsafe foods particularly vegetables consumed in the raw state. In developing countries where agriculture is characterized by small scale, emerging studies have shown that the use of low cost safer irrigation options and the incorporation of pyrolysed biomass (biochar) into the soil are probable measures to sustainably produce safer foods whiles increasing the fertility of land among farming households. In this regard, many studies have been carried out to assess the environmental and technical feasibility not the economic implication of these measures. However, farmers’ decision to adopt a technology are often influenced by other factors which include the impact on land use systems, flows of returns associated with the new practice relative to the present practice and inherent risk.

This study thus seeks to economically assess safer irrigation option and the incorporation of biochar into urban and peri-urban soils of two cities in West Africa; Tamale (Ghana) and Ouagadougou (Burkina Faso).