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Land Use Change and its Implications for Food Security and **Sustainability in Northern Ghana**

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Introduction

Food insecurity is a problem in Ghana, and this situation is expected to worsen

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Methods

• A mixed-method study identified and measured sustainability of all open-space

due to a predicted doubling of national population between 1995 and 2020. Tamale is the capital of Northern Ghana. Its population is growing by 3.3% annually, and three quarters of people live in urban areas. The food and income needs of this population are partly met by urban and peri-urban agriculture (UPA). This study aims to determine how sustainable this agricultural system is. Sustainability is defined as the ability to meet one's current needs without compromising the needs of the future generation.

Highlights

- dry-season vegetable fields.
- The International Framework for Evaluating Sustainable Land Management¹ was adapted for UPA.
- Land area was defined as one element of sustainability.
- Cultivated areas were measured with Global Positioning Systems (GPS). Aerial maps were collected with an Unmanned Aerial Vehicle (UAV) and mapped with ArcGIS software.
- Images from Google Earth maps triangulated farmers' recollection.
- Interviews and focus groups were used.

Results and Discussion 1

Vegetable farming is a dynamic activity that takes advantage of urban infrastructure such as markets and transport links to flourish. It is a source of food and income for urban dwellers. However, it is threatened by planned and unplanned urban development and a booming land market.

Vegetable production meets income generation and nutritional needs of urban dwellers in Tamale. However, UPA poses some specific health and hygiene risks, through the use of waste water for irrigation and increased concentration of pesticides into the urban environment. Furthermore, its persistence is compromised by urban development.

Results and Discussion 2

Cultivated land area decreased by 8.3% between 2008 and 2014, even as new vegetable sites cropped up in the periurban fringes. Year-round availability of different vegetables enhances dietary diversity. However, in order to meet market demands, farmers have adopted intensive farming techniques such as waste water irrigation and overuse of chemical pesticides, posing health risks to themselves, urban ecology, and consumers of raw vegetables.



Vegetable sites in Tamale



A marketer washing lettuce in waste water at Tamale Waterworks





¹ Drechsel, P. & Dongus, S. (2010). Dynamics and sustainability of urban agriculture: examples from sub-Saharan Africa. Sustainability Science, 5(1), 69–78.

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