Assessment of Wastewater-irrigated Urban Vegetable Production and Market Systems in Ethiopia: The case of Akaki River in Addis Ababa

Introduction

In Ethiopia, urban vegetable production using wastewater from Akaki River in the capital city Addis Ababa is a common practice. In a wider sense, the potential of urban agriculture in the area has not been realized due to subsistence agriculture, lack of sufficient land, underdeveloped marketing structure and the state of water for used for irrigation. Apart from these, little is known about the production system, opportunities, and challenges. In cognizant of the fact, the study attempts to comprehensively address the issues of producers, marketing value chain, challenges and health related implications of urban vegetable production through wastewater irrigation.

Results

Health and Environmental Risks

Parameter | Unit | Min | Max | Mean | Standard deviation for surface water
pH |  | 5.00 | 7.80 | 6.50 | ±0.50
Turbidity | NTU | 10.80 | 285.00 | 200.00 | ±50.00
Conductivity | µs/cm | 70.20 | 200.00 | 100.00 | ±25.00
TDS | mg/L | 45.00 | 466.86 | ±50.00 | ±50.00
Nitrate | mg/L | 0.38 | 192.58 | 4.48 | ±0.01
Nitrite | mg/L | 0.01 | 4.98 | ±0.01 | ±0.01
Ammonia | mg/L | 0.00 | 51.36 | ±0.01 | ±0.01
Phosphate | mg/L | 0.00 | 1.04 | ±0.01 | ±0.01
Chloride | mg/L | 0.00 | 200.00 | ±0.01 | ±0.01
SO4 | mg/L | 0.00 | 200.00 | ±0.01 | ±0.01
COD | mg/L | 0.00 | 200.00 | ±0.01 | ±0.01

Opportunities and Challenges in Wastewater Urban Vegetable Production

- Top four by frequency of planation: cabbage, lettuce, cucumber / zucchini and green Pepper.
- Top three by area coverage: lettuce, kale ethiopia and cabbage.
- Crop rotation: on average 5 types of vegetables / year
- Harvesting multipletime / year

Conclusions and Recommendations

How profitable is the urban vegetable production at Akaki river, Addis Ababa?

- Production is dominated by a traditional system
- Positave impact on economic significance, employment, food supply,
- How does the water quality affect the health of the producers and consumers?
- Low safety standards makes them vulnerable to health issues
- Increasing pollution degrades the ecological condition of the river and the air of the surrounding.

What options are there to improve the livelihood of producers?

- Improve women participation in urban production and marketing chain
- Introducing better yielding and profitable vegetable products
- Efficient irrigation system development
- Appropriate implementation of framework for waste disposal of industries
- Application of new technologies for production and marketing information
- Continuous and up-to-date physiocochemical parameters test of the water for irrigation.

Future works and support from different stakeholders is needed

- Post-harvest activities and selling their products with farmers cooperatives brand.
- How should the industries around the rivers help the producers?
- There should be an optimized policy and solution for all value chain actors treated equally.

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