

Bern University of Applied Sciences

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



Methodology

▶ 115 respondents

Participants' age vary from 24 till 60 20 Female and 55 Male producers 22 Female and 18 Male Consumers

Data collection :

Secondary data ✓ Government institutions

- Primary data survey and obseravation on ✓ Vegetable production and ✓ Pre-documented productivity ✓ Market system
 - ✓ Different published articles and unpublished

institutional reports.

and researchers.

of the fact, the study attempts to comprehensively address the issues of production, marketing value chain, challenges and health related implications of urban vegetable production through wastewater irrigation.

Figure 1: sample and study area, Akaki River in Addis Ababa.

✓ Health risks

✓ Profitability

documents.

Research Questions:

- How profitable is vegetable production in Addis Ababa?
- How does irrigation water quality affect productivity and the health of producers and consumers?
- What options are there to improve the livelihood of peri-urban vegetable farmers in Addis Ababa?

Results

Background Characteristics and Farming Practice								
		Female	Male					
Average farmland holding	Minimum	500 m ²	500 m ²					
of producers	Mean	3669 m ²	4376.36 m ²	The main is a set of the second of the secon				
(in m2)	Maximum	10000 m ²	10000 m ²		A started			
Farm Land age for Urban	Minimum	11 years	s 8 years					
Vegetable farming practice	Mean	18.3 years	23.62 years					
(in years)	Maximum	47 years	57 years	LANK AND		Heal	th and Env	vironmenta
Average profitability per	Minimum	3,319 Birr	· 3920 Birr	Wastewater lying on cultivation land Land after the water is removed	Parameter	Unit	Min.	Mean
household per year in Birr	Mean	34,719 Birr	· 34,115 Birr	The photos are take in May 2019 from 2 farm plots 'during' and after the rain time				
(1CHF = 29 Birr)	Maximum	144,664 Birr	121,109 Birr		pН		5.96	7.80

18%

Figure 2: Basic background comparisons based on Gender



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

Parameter	Unit	Min.	Mean	Max.	Standard for surface water	
pН		5.96	7.80	9.01	6.5-9.0	
Turbidity	NTU	10.30	285.00	2000.00	-	
Conductivity	μS/cm	70.20	663.23	3330.00	1000	
TDS	Mg/L	45.90	463.86	2540.00	-	
Nitrate	mg/l	6.36	44.74	192.59	4.43	
Nitrite	mg/l	0.10	0.69	4.84	0.033	
Ammonia	mg/l	0.00	9.49	51.16	0.3	
Phosphate	mg/l	0.00	0.28	1.40	0.2	
Chloride	mg/l	0.00	60.85	799.75	200	
BOD	mg/l	0.00	55.76	319.20	3	
COD	mg/l	0.00	200.36	738.67	<7	

al Risks

		The main sources of household Income								
		Riverside urban vegetable production	Animal husbandry activities	Permanent Paid employment	Daily labor	Renting of properties or House	Trading activities			
	Producare	43	7	0	4	7	14			
	riouuceis	57.30%	9.30%	0.00%	5.30%	7%	18.70%			
	Concurrence	0	0	20	5	6	9			
	Consumers	0.00%	0.00%	50%	12.50%	15.00%	22.50%			
	Total	43	7	20	9	13	23			
10	IULdI	37.40%	6.10%	17.40%	7.80%	11.30%	20.00%			







Producers	Consumers				
Absence of appropriate technologies.	Bad perception of consuming wastewate				
Expansion of urban settlement	produced vegetables				