



# Perception and Determinants of Utilisation of Urban Household Organic Waste for Home Gardens in Kumasi, Ghana

Nana Fenyi Forson<sup>1</sup>, Maame Arko Ababio Bensah<sup>2</sup>, Fred Nimoh<sup>3</sup>

<sup>1</sup> Czech University of Life Sciences Prague, Fac. of Tropical AgriSciences, Czech Republic

<sup>2</sup> Audencia Business School, Department of Food and Agribusiness Management, Nantes, France

<sup>3</sup> Kwame Nkrumah University of Science and Technology, Department of Agricultural Economics, Agribusiness and Extension, Kumasi, Ghana



## Background

- Waste management is an important issue worldwide with Ghana producing 13000 tons of waste daily. (Appiah-Adjei et al., 2015)
- Municipal waste includes domestic, commercial and industrial waste with organic waste constituting 60-80% of bulk urban waste after recycling ( Meizah et al., 2015)
- The average waste generation was 0.51kg /person/day in 2015 for the ten regional capitals in Ghana with Kumasi metropolis recording the highest waste generation of 0.75 kg /person/day. ( Meizah et al., 2015)
- Unfortunately, most households do not consider organic waste as a resource but as waste which adds up to municipal waste as a cost to the individual and society (Monney et al., 2013)
- This waste can be reclaimed and used for soil fertilisation in home gardens to increase food security and further combat poverty.

## Research Questions

- What are urban households' perception on the utilisation of household solid waste for home gardens?
- What factors influence utilisation of household organic solid waste for urban home gardens?
- What are the constraints to the utilisation of household organic solid waste for home gardens?

## Methods

**Study area :** Kumasi metropolis

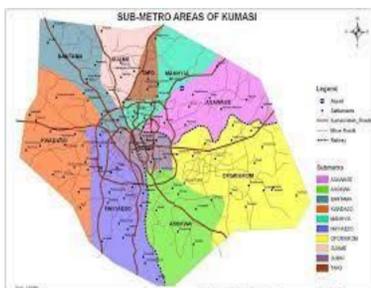


Figure 1. Map of the study area  
Source: Town and country planning (2017)

### Sampling technique:

- Multistage sampling
  - Stratification into low, middle and high income
  - Two sub-metros from each stratum through simple random technique
  - Three communities from each sub-metro through systematic sampling
  - Ten households involved in home gardens from each community

**Sample size:** 180 households

**Data collection approach:**  
Home visit approach through face to face interviews with semi-structured questionnaire

### Data analysis:

- Descriptive statistics
- Perception index
- Probit regression model
- Kendall's coefficient of concordance

Table 3. Constraints to the utilisation of household organic solid waste

Constraints	1 * F	2 * F	3 * F	4 * F	5 * F	Total	Mean	Rank
Insufficient knowledge on application	83	32	29	21	15	393	2.18	1 <sup>st</sup>
Unpleasant garden	25	36	48	46	25	550	3.06	2 <sup>nd</sup>
Ownership of land	35	38	19	27	61	581	3.23	3 <sup>rd</sup>
Long decomposition period	21	37	37	44	41	587	3.26	4 <sup>th</sup>
Odor generation	17	36	47	42	38	588	3.27	5 <sup>th</sup>

Kendall's W = 0.086 Chi-square = 62.221 df = 4 Asymp. Sig = 0.000  
1= Most serious 2= More serious 3= Moderately serious 4= Slightly serious 5= Least serious

## References

- Appiah-Adjei, S., Acquah, J., & Adetunde, I. (2015). Households' willingness to pay for solid waste management services in Tarkwa area council, Ghana. *International journal of mathematical archive*, 6(8), 164-169.
- Miezah, K., Obiri-Danso, K., Kádár, Z., Fei-Baffoe, B., & Mensah, M. Y. (2015). Municipal solid waste characterization and quantification as a measure towards effective waste management in Ghana. *Waste management*, 46, 15-27.
- Monney, I., Tiimub, B. M., & Bagah, H. C. (2013). Characteristics and management of household solid waste in urban areas in Ghana: the case of WA. *Civil and Environmental Research*, 3(9), 10-21.

## Conclusions

- Majority of the respondents agreed to the perception that the use of organic solid waste contributes to soil fertility, serves as an important resource and it reduces disposal cost of waste.
- Urban dwellers also perceived that the reuse of organic solid waste had no health implications
- Age, occupational status, perception on soil structure improvement and perception of organic solid waste as an important resource had influence on urban household's utilisation of organic solid waste for home gardens.
- Insufficient knowledge on application was ranked as the most pressing constraint to utilisation of organic solid waste

Table 1. Perception of utilisation of organic solid waste for home gardening

Perception Statements	Agree (1)	Neutral (0)	Disagree (-1)	Mean score
<b>Fertility statements</b>				
Organic waste is rich essential nutrient	166(92.2)	13(7.2)	1(0.5)	0.92
Organic waste helps to improve yield	175(97.2)	5(2.8)	0	0.97
Organic waste help crops' performance under utilisation	163(90.6)	17(9.4)	0	0.91
Crops cultivated with organic waste has a longer storability	125(69.4)	45(25)	10(5.6)	0.64
Organic waste helps to improve the soil structure	133(73.8)	46(25.6)	1(0.6)	0.73
Organic waste does not deplete the soil	125(69.4)	48(26.7)	7(3.9)	0.66
<b>Fertility benefit perception index</b>				<b>0.80</b>
<b>Waste as important resource statements</b>				
Reuse of organic waste would reduce environmental pollution	141(78.3)	24(13.3)	15(8.3)	0.70
Organic waste is an important resource	163(90.6)	7(3.9)	10(5.5)	0.85
<b>Perception index of waste as a resource</b>				<b>0.78</b>
<b>Cost statements</b>				
The use of organic waste does not demand much time	63(35)	23(12.8)	94(52.2)	-0.17
Organic waste does not take long time to decompose	39(21.7)	26(14.4)	115(63.9)	-0.42
Cost of waste disposal is expensive	120(66.7)	27(15)	33(18.3)	0.48
The use of organic waste would help reduce household budget	122(67.8)	44(24.4)	14(7.8)	0.60
When organic waste is used, cost of waste disposal would reduce	139 (77.2)	29(16.1)	12(6.7)	0.71
<b>Perception index of cost</b>				<b>0.24</b>
<b>Health statements</b>				
Organic waste does not generate unpleasant smell when used for home garden	61(33.9)	37(20.6)	82(45.6)	-0.12
Organic waste should be handled in a sanitized manner	168(93.3)	7(3.9)	5(2.8)	0.91
Crops cultivated with organic waste are safe for consumption	152(84.4)	16(8.9)	12(6.7)	0.78
<b>Perception Index of Health</b>				<b>0.52</b>
<b>TOTAL PERCEPTION INDEX</b>				<b>0.59</b>

Table 2. Factors influencing utilisation of household organic solid waste for urban home gardens

Variables	Measurements	dy/dx	SE
Age	years	<b>0.0057***</b>	0.0075
Gender	1 if male and 0 otherwise	0.0718	0.2363
Education	Number of years in formal education	-0.0013	0.0278
Household size	Number of persons in a household	-0.0061	0.0384
Occupational status	1 if employed 0 for otherwise	<b>-0.1858***</b>	0.2512
Ownership status	1 if landlord, 0 if otherwise	-0.0012	0.2353
Income	Household's monthly income in ( GH ¢ )	-3.23E-06	0.0001
Perception on storability	1 if Agree and 0 otherwise	0.0823	0.2548
Perception on soil structure	1 if Agree and 0 otherwise	<b>0.1785**</b>	0.2550
Perception on reducing environmental pollution	1 if Agree and 0 otherwise	0.0358	0.2861
Perception on important resource	1 if Agree and 0 otherwise	<b>0.4580***</b>	0.6100
Perception on Time Demanding	1 if Agree and 0 otherwise	0.0628	0.2437
Perception on disposal cost	1 if Agree and 0 otherwise	-0.0189	0.2406
Perception on unpleasant smell	1 if Agree and 0 otherwise	-0.0198	0.2406
Perception on safe consumption	1 if Agree and 0 otherwise	0.0555	0.2490
Number of observations		180	
Prob> chi 2		0.000	
Pseudo R 2		0.2359	

Key :dy/dx – marginal estimates , SE – Standard error \*, \*\*, \*\*\* - 10%, 5% and 1% significance levels respectively

