

Journal of Nutrient Cycling in Agroecosystems

Supplementary information

Diversity and nutrient balances of urban and peri-urban farms in Ethiopia

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This is the questionnaire used to conduct household survey on urban and peri-urban agriculture (UPA) at Addis Ababa, Adama and Jimma cities in Ethiopia



Date: _____

Code No: _____

Base Line Survey on Urban and Peri-Urban Agriculture (UPA) in and around Adama, Addis Ababa and Jimma Cities in Ethiopia

Dear respondent,

This base line survey on urban and peri-urban Agriculture, is being conducted by Jimma University College of Agriculture and Veterinary Medicine (JUCAVM), Ethiopia and Wageningen University and Research Centre (WUR), The Netherlands, with funding for a Sandwich PhD research as part of the CASCAPE (Capacity building for Scaling up of evidence based best practices in Agricultural Production in Ethiopia) project. The purpose of this survey is to identify and describe the structure of the existing urban and peri-urban agriculture (UPA) systems in and around three selected cities of Ethiopia namely Adama, Addis Ababa, and Jimma.

The information obtained from this survey will be used to generate knowledge on the farm types (typologies) and the structure of urban and peri-urban Agriculture (UPA) systems in the study areas. The information obtained from all the respondents will be entered in appropriate statistical packages and inferences will be made in general and there is no way that your name and your private information will appear in the result of the study. For this matter the result of the study will be communicated to the Urban Agriculture offices of the respective cities.

All the information will be used for academic purpose only and treated as strictly confidential.

Thank you in advance for your very kind cooperation.

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A. Background information

Respondent's code			
Interviewer's name			
Date of interview	Date	Month	Year
Time interview started			
Time interview ended			

GPS Information: Please write the name of the farms. If the households have names for the farms (names for the locality of the farms), use those names. If they don't have names for their farms, give names to the farms by saying, for example: homestead farm (in the backyards), nearby, faraway, along the river, in open spaces of residential areas, roadsides, in urban fringe, grazing area, on hilly area, on flat area and etc.

Code for farms (plots)	Name of farms (plots)	Elevation (MASL)	Latitude	Longitude
01				
02				
03				
05				
05				

B. Household demographic data

1. Identification and location of the respondent:

Name of the respondent:		Age:
Region:	City:	Sub city:
Kebele:	Village/locality:	House #:
Geographic coordinate of the village/locality: Latitude: Degrees _____ Min _____ Longitude: Degrees _____ Min _____		

2. Do you own house? _____

3. Number of people living in the household: _____

Name of people living in a household starting with the household head	Relation to the head (3a)	Gender (M/F)	Age	Region of origin	Marriage (3b)	Highest level of education attained	Responsibility /Role (3c)
1.							
2.							
3.							
4.							
5.							
6.							
7.							
8.							

Note: Code3a

- 1 = Father
- 2 = Mother
- 3 = Daughter
- 4 = Son
- 5 = Grandchildren
- 6 = Other, (please specify): _____

Code3b

- 1 = Single
- 2 = Married
- 3 = Divorced
- 4 = Widowed
- 5 = Separated

Code3c

- 1 = On-farm (cultivation of crops, livestock rearing)
- 2 = Off-farm (wage on other farm within agriculture)
- 3 = Non-farm (non-agricultural income sources)
- 4 = Student
- 5 = No work

3.1 Occupation (economic activity)

- a. Principal: _____
- b. Any other, (please specify): _____

C. Farming types and activities

4. Who is responsible for plots that are rented out by the household (if applicable)?

5. For how many years you have been farming in this area? _____ Years, since _____

6. What is the type of farming you are currently doing?

- ☐ Field crops, ☐ Vegetables, ☐ Fruits, ☐ Ornamental crops,
☐ Dairy, ☐ Fattening (sheep, goat and cattle), ☐ Poultry,
☐ Multiple crops farming, ☐ Multiple livestock farming, ☐ Mixed crops & livestock farming
☐ Any other (specify): _____

7. What is the primary objective of your farming?

- ☐ Mostly for own consumption, ☐ Mostly for marketing, ☐ For own consumption and marketing,
☐ Any other (please specify): _____

8. Where do you grow your crops?

- ☐ In the backyards,
☐ In open spaces,
☐ In urban fringe areas,
☐ Roadsides,
☐ On rental land,
☐ Any other (please specify): _____

9. Where are you growing (rearing) your livestock?

- ☐ In the backyards,
☐ In open spaces,
☐ In urban fringe areas,

- ☐ Roadsides,
☐ On rental land,
☐ Any other (please specify): _____

10. Which management practices do you use for crop production? (Please, circle appropriate number to indicate the frequency per year or season (if applicable): 0 = not used, 1 = once/year, 2 = twice/year, 3 = three times/year and 4= four and more times/year).

Management practices	Frequency of practices
☐ Land preparation/cultivation	0 1 2 3 4
☐ Soil fertility management	0 1 2 3 4
☐ Disease management	0 1 2 3 4
☐ Insect management	0 1 2 3 4
☐ Weed management	0 1 2 3 4

11. Which of the following inputs were used for crop production? Indicate the frequency and the quantity of each input you used for your crops last year, 2005 (2012/3) in general. (Please, circle the appropriate number to indicate the frequency per year or season (if applicable): 0= not used, 1 = once/year, 2 = twice/year, 3= three times/year and 4= four and more times/year).

Type of input used	Frequency of use	Quantity of input used (kg/ha)
☐ Animal manure	0 1 2 3 4	
☐ Crop residue	0 1 2 3 4	
☐ Compost of animal manure and crop residue	0 1 2 3 4	
☐ Urban waste compost	0 1 2 3 4	
☐ Urban waste ash	0 1 2 3 4	
☐ Chemical fertilizers,	DAP	0 1 2 3 4
	UREA	0 1 2 3 4
☐ Other, please specify	0 1 2 3 4	

12. Which type of input/fertiliser(s) do you prefer? _____

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13. Why do you prefer this fertilizer?

14. Have you ever had your soil tested to determine your fertilizer needs?

- ☐ Yes,
☐ No, it is too expensive,
☐ No, I don't know how,
☐ No, I didn't know soil testing is important,
☐ Any other, (please specify): _____

15. Which management practices do you use for your livestock production? *(Please, circle appropriate number to indicate the frequency per year or season (if applicable): 0= not used, 1 = once/year, 2 = twice/year, 3 = three times/year and 4= four and more times/year).*

Management practices	Frequency of practices
☐ Feed production and/or purchasing	0 1 2 3 4
☐ Pregnancy detection and artificial insemination	0 1 2 3 4
☐ Castration and hoof trimming	0 1 2 3 4
☐ Non-surgical dehorning	0 1 2 3 4
☐ Manure management	0 1 2 3 4
☐ Disease management (medication)	0 1 2 3 4

16. What is the source of feed for your livestock?

- ☐ Grass (hay) grown on own farm,
☐ Grass (hay) purchased,
☐ Crop residue from own crop production,
☐ Crop residue purchased,

- ☐ Purchased oil cake,
☐ Purchased wheat bran,
☐ Grass (hay) exchange for animal manure (cow dung),
☐ Crop residue exchange for animal manure (cow dung),
☐ Any other, (please specify): _____

17. What is the source of agricultural inputs (chemical fertilizers, seeds, pesticides & antibiotics) for your farming (crop & livestock production) activities?

- ☐ Ministry of Agriculture (MOA) central government,
☐ Urban agriculture office of regional government,
☐ Traditional institutions,
☐ Micro credit institutions,
☐ Any other, (please specify): _____
- ☐ Agricultural cooperatives,
☐ Loan from government bank,
☐ Private companies,
☐ Elderly and rich people lending money,

D. Nutrient flows and balances

18. If you are growing **field crops**, list the individual crops according to their importance, inputs used, crop yield and residue produced:

No	Name of crops	Area (ha)	Agricultural Inputs Used (kg/ha)							Crop yield (kg/ha)	Crop residue (kg/ha)
			Seed	DAP	UREA	Animal manure	Crop residue	Urban waste			
								Compost	Ash		
1	Teff										
2	Wheat										
3	Chick pea										
4	Grass pea										
5	Beans										
6	Lentil										
7	Barley										
8	Millet										

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9	Maize										
10	Sorghum										
	Others (specify)										
11											

19. What is the source of organic fertilizers such as animal manure, crop residue and urban waste for your **field crops**, in addition to your own farm wastes?_____

Note: Please specify if other types of agricultural inputs are also used in addition:

20. If you are growing **vegetables**, list the individual crops according to their importance, inputs used, crop yield and residue produced:

No	Name of crops	Area (ha)	Agricultural Inputs Used (kg/ha)							Crop yield (kg/ha)	Crop residue (kg/ha)
			Seed	DAP	UREA	Animal manure	Crop residue	Urban waste			
								Compost	Ash		
1	Carrot										
2	Potato										
3	Tomato										
4	Beet root										
5	Cabbage										
6	Head cabbage										
7	Habasha cabbage										
8	Other cabbages										
9	Mushroom										
Other vegetables (specify)											
7											
8											

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21. What is the source of organic fertilizers such as animal manure, crop residue and urban waste for your **vegetable crops**, in addition to your own farm wastes? _____

Note: Please specify if other types of agricultural inputs are also used in addition:

22. If you are growing **fruits**, list the individual crops according to their importance, inputs used, crop yield and residue produced:

No	Name of crops	Area (ha)	Agricultural Inputs Used (kg/ha)							Crop yield (kg/ha)	Crop residue (kg/ha)
			Seed	DAP	UREA	Animal manure	Crop residue	Urban waste			
								Compost	Ash		
1	Apple										
2	Orange										
3	Mango										
4	Papaya										
5	Banana										
6	Avocado										
7	Coffee										
Other fruits (specify)											
8											

23. What is the source of organic fertilizers such as animal manure, crop residue and urban waste for your **fruit crops**, in addition to your own farm wastes? _____

Note: Please specify if other types of agricultural inputs are also used in addition:

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24. If you are growing **ornamental crops**, list the individual crops according to their importance, inputs used, crop yield and residue produced:

No	Name of crops	Area (ha)	Agricultural Inputs Used (kg/ha)							Crop yield (kg/ha)	Crop residue (kg/ha)
			Seed	DAP	UREA	Animal manure	Crop residue	Urban waste			
								Compost	Ash		
1	Flowers										
2	Trees										
3	Seedlings										
	Others (specify)										
4											

25. What is the source of organic fertilizers such as animal manure, crop residue and urban waste for your **ornamental crops**, in addition to your own farm wastes? _____

Note: Please specify if other types of agricultural inputs are also used in addition:

NOTE: For farmers doing **multiple farming of livestock** (dairy cows, fattening of sheep, goat and cattle and poultry) questions **29 to 31** will be asked and filled according to the types of mixed livestock they are producing.

26. If you are doing **dairy** farming, list the number of individual animals, their feed and total milk and manure produced:

No	Type of animal	Number of animals		Grazing outside (Hours)	Type of Feed Used in side (kg)					Milk yield (lit)	Animal manure (kg)
		At Present	Sold last year		Hay	Crops grain	Crops residue	Wheat bran	Oil cake		
1	Cow										
2	Calf										
3	Heifer										
4	Bull										
5	Oxen										

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Note: Please specify if other types of feeds are also used in addition:

27. If you are doing **animal fattening** (sheep, goat and cattle), list the number of individual animals, their feed, manure produced and total sale:

No	Type of animal	Number of animals		Grazing outside (Hours)	Type of Feed Used in side (kg)					Meat yield (kg)	Animal manure (kg)
		At Present	Sold last year		Hay	Crops grain	Crops residue	Wheat bran	Oil cake		
1	Cattle										
2	Sheep										
3	Goat										
4	Young stock										

Note: Please specify if other types of feeds are also used in addition:

28. If you are doing **poultry** farming, list the number of individual animals, their feed, manure produced and total sale:

No	Breeds of chicken	Heads of chicken		Roaming outside (Hours)	Type of Inputs Used			Poultry yield		Poultry manure (kg)
		At Present	Sold last year		Chickens (No)	Feed (kg)	Medicine (kg)	Meat (kg)	Egg (kg)	
1	Egg laying									
2	Meat chicken									
3	General purpose									
4	Young stock									

Note: Please specify if other types of feeds are also used in addition:

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E. Waste handling

29. Do you use the wastes from your crops farming activities (crop residue and etc.) for your soil fertility management?

☐

Yes,

☐

No,

30. If your answer is **yes** for question number 34, mention the types of wastes namely? _____

31. How do you use the wastes?

☐

Adding fresh crop residue as it is without composting,

☐

Adding the composted crop residue,

☐

Burning the crop residue in the field,

☐

Any other, please specify: _____

32. If your answer is **no** for question number 34, how do you handle and dispose the waste from your crop farming activities? _____

33. What is the alternative and computing use of the waste (crop residue) from your crop farming activities? _____

34. Do you use the wastes from your livestock farming activities (animal manure and etc.) for your soil fertility management?

☐

Yes,

☐

No,

35. If your answer is yes for question number 39, mention the types of wastes namely? _____

36. How do you use the wastes?

☐

Adding fresh animal (livestock) manure as it is without composting,

☐

Adding the composted animal manure,

☐

Adding the dried animal manure,

☐

Any other, please specify: _____

37. If your answer is **no** for question number 39, how do you handle and dispose the waste from your crop farming activities? _____

38. What is the alternative and computing use of the waste (animal manure) from your livestock farming activities? _____

F. Household income from farming activities

39. What is the annual income of your household from the farming activities in ETB? _____

40. What is the contribution of your farming activities to your total income?

☐ Highest ($\geq 70\%$),

☐ Moderate (69-31 %),

☐ Low ($\leq 30\%$),

☐ None,

41. Who in the household decides on how to use the income from farming? _____

G. Land characteristics

42. What is the form of your land tenure?

☐ Inheritance,

☐ Purchased,

☐ Hired/rented in,

☐ User right,

☐ Open space with no user right,

☐ Share cropping,

☐ Any other (please specify): _____

43. Please estimate the total land holding of your farm in hectare (Ha=10,000 m²).

☐ 0.5-0.99,

☐ 1-1.99,

☐ 2-2.99,

☐ 3-3.99,

☐ 4-4.99,

☐ 5-5.99,

☐ 6-6.99,

☐ 7-7.99,

☐ 8-8.99,

☐ 9-9.99,

☐ 10 ha or more

44. Does the land you manage touch a stream, river, drain line, ditch or wetland?

☐ Yes,

☐ No

45. If the answer for question number 59 is yes, please specify: _____

46. How is the fertility status of your soil?

☐ Highly fertile,

☐ Moderately fertile,

☐ Less fertile,

☐ Infertile,

47. Do you have soil and water conservation measure on your land?

☐ Yes,

☐ No

48. If your answer is yes for question number 62, mention the types of soil and water conservation on your land namely? _____

49. What is the type of soil of your land? _____

50. How is the slope of you land? _____

H. Problems encountered

51. What type of problems and challenges do you face in your crops production?

- | | | | | |
|---|---|--|--|-------------------------------------|
| ☐ Marketing (low price of products), | ☐ Shortage of irrigation water, | ☐ High cost of irrigation | | |
| ☐ Shortage of funding, | ☐ Shortage of labour, | ☐ Drought, | ☐ High cost of labour, | |
| ☐ Delayed delivery of inputs, | ☐ High cost of inputs, | ☐ Storage, | ☐ Shortage of land, | |
| ☐ High cost of rental land, | ☐ Diseases, | ☐ Insects, | ☐ Lack of extension services, | |
| ☐ Transportation, | ☐ Lack of attention and support from the city administration and the government, | | | ☐ Conflicts, |
| ☐ Conflicts with wild animals, | ☐ Processing | | | |
| ☐ Others, (please specify): _____ | | | | |

52. What type of problems and challenges do you face in your livestock production?

- | | | | |
|---|---|---|--|
| ☐ Marketing (low price of products), | ☐ Shortage of grazing areas, | ☐ Shortage of feeds, | |
| ☐ Shortage of funding, | ☐ Shortage of labour, | ☐ Drought, | ☐ High cost of labour, |
| ☐ Lack of veterinary services, | ☐ High cost of feeds, | ☐ Storage, | ☐ Shortage of land, |
| ☐ High cost of rental land, | ☐ Diseases, | ☐ Insects, | ☐ Lack of extension services, |
| ☐ Conflicts with wild animals, | ☐ Lack of attention and support from the city administration and the government, | | |
| ☐ Transportation, | ☐ Processing, | ☐ Conflicts | |
| ☐ Others, (please specify): _____ | | | |

Thank You.