



Evaluation of Fish Farmers' Practices and Perceptions of Climate Change in Kajiado County, Kenya

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Introduction

- Increased occurrences of harsh climatic conditions in Kenya, such as droughts and varying ambient temperatures attributed to climate change (GoK, 2016)
- Low fish pond water temperature, caused by low ambient temperature directly affects fish growth
- However, current water heating technologies have low adoption rates by small scale farmers due to the high level of skills, capital investment and maintenance required (Imgbian and Cheikyula, 2014)
- Compost heat recovery = reduce temperature shocks in fish ponds= build resilience
- Compost production=reduce anaerobic manure decomposition=reduce methane production on integrated fish farms

Study Objectives

Overall objective

- To evaluate fish farmers' practices and perceptions of climate change, their coping strategies and availability of crop by products and manure in Kajiado County

Specific objectives

1. To document fish farmers' management practices in Kajiado County, Kenya
2. To assess fish farmers' perceptions of climate change and the coping strategies adopted in Kajiado County
3. To document the crop by products and manure available on integrated fish farms in Kajiado County

Materials and Methods

- **Study sites**

Sub county	Households surveyed
Kajiado Central	9
Kajiado West	9
Kajiado East	7
Kajiado South	26
TOTAL	51

- Sampling frame identified using secondary data: N=85 active fish farms

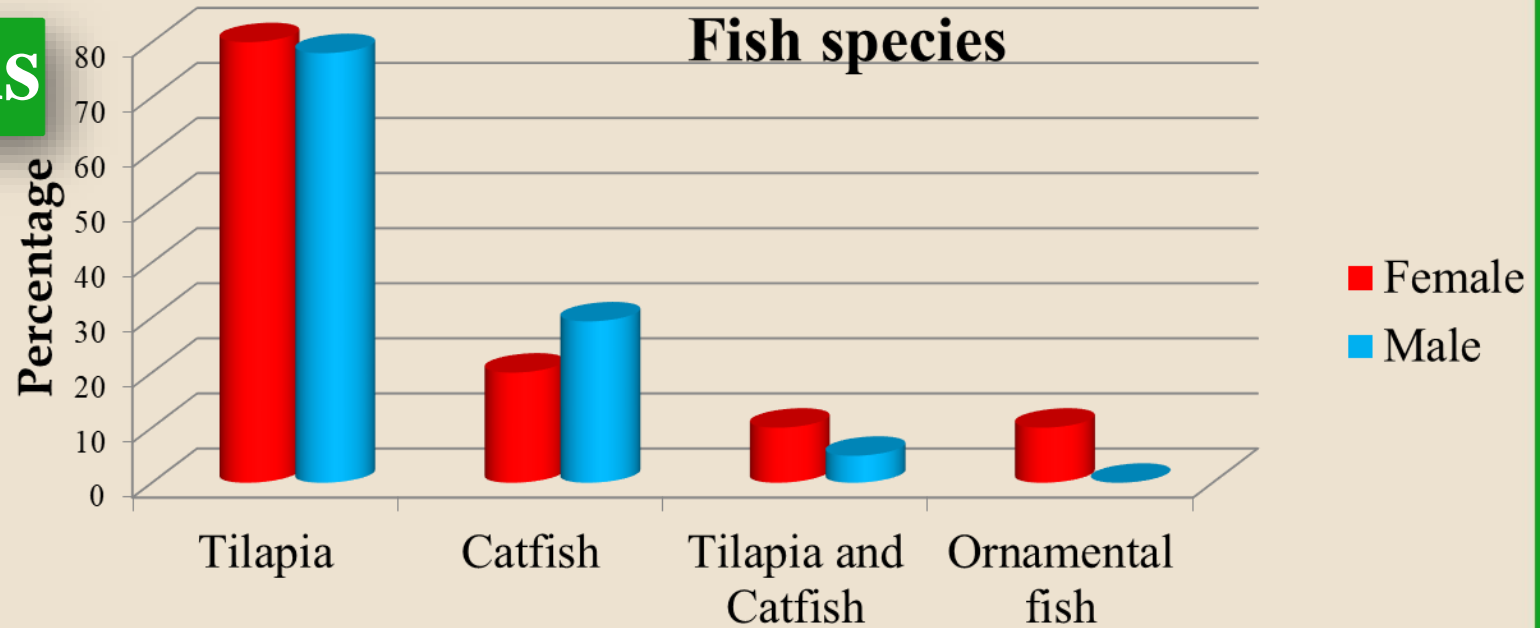
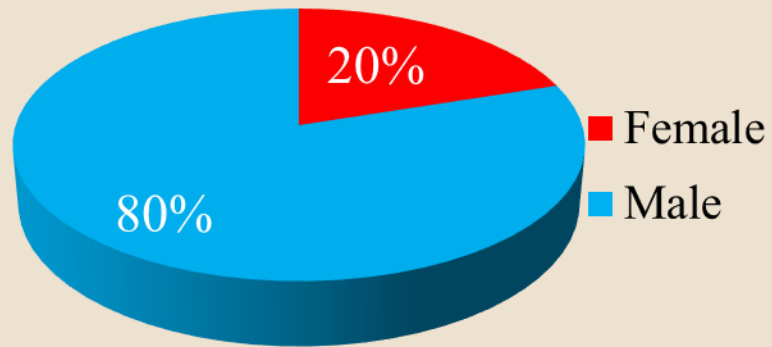
- Sample size: Yamane (1967) formula:
$$n = \frac{N}{1 + Ne^2}$$
 n=71 fish farms targeted

Materials and Methods Contd.

- Survey tool were pretested on 8 fish farms (cronbach alpha =0.7) then administered in a household survey in June and July, 2021
- Data collected using semi structured questionnaires administered through face to face interviews by 8 trained enumerators
- All integrated fish farms (interdependence with crops and/ or livestock) with more than 10 years farming experience were targeted
- Data was validated using information from key informant interviews (4), Focus Group Discussions (17 fish farmers) and Meteorological data
- Descriptive statistics: %, standard deviations, means, and frequencies; Inferential statistics: binary logistic regression analysis

Results and Discussions

Gender of household head



	Gender	N	Min	Max	Mean	SEM	SD
Farm size (acres)	Female	10	3	35	11.9	3.32482	10.51401
	Male	41	0.24	200	23.1114	6.25127	40.02766
Family members living on-farm	Female	10	0	11	4	1.247	3.944
	Male	41	0	24	6.46	0.669	4.284
Age of household head	Female	10	40	81	56.4	4.41	13.946
	Male	41	30	82	56.56	2.082	13.332

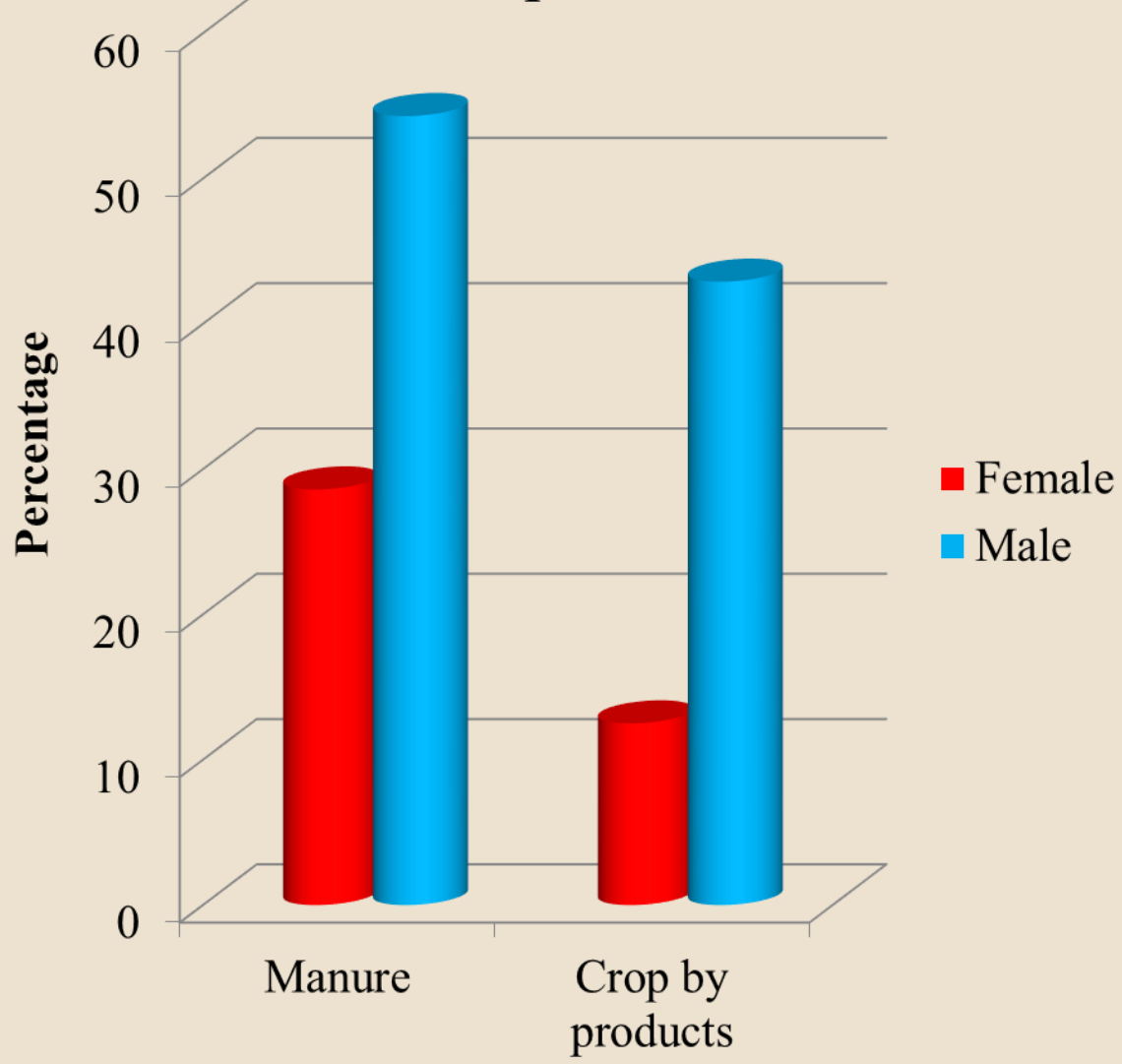
Results and Discussions

Gender of household head: **Male** , Outcome variable: **Perception of extreme temperature occurrence**

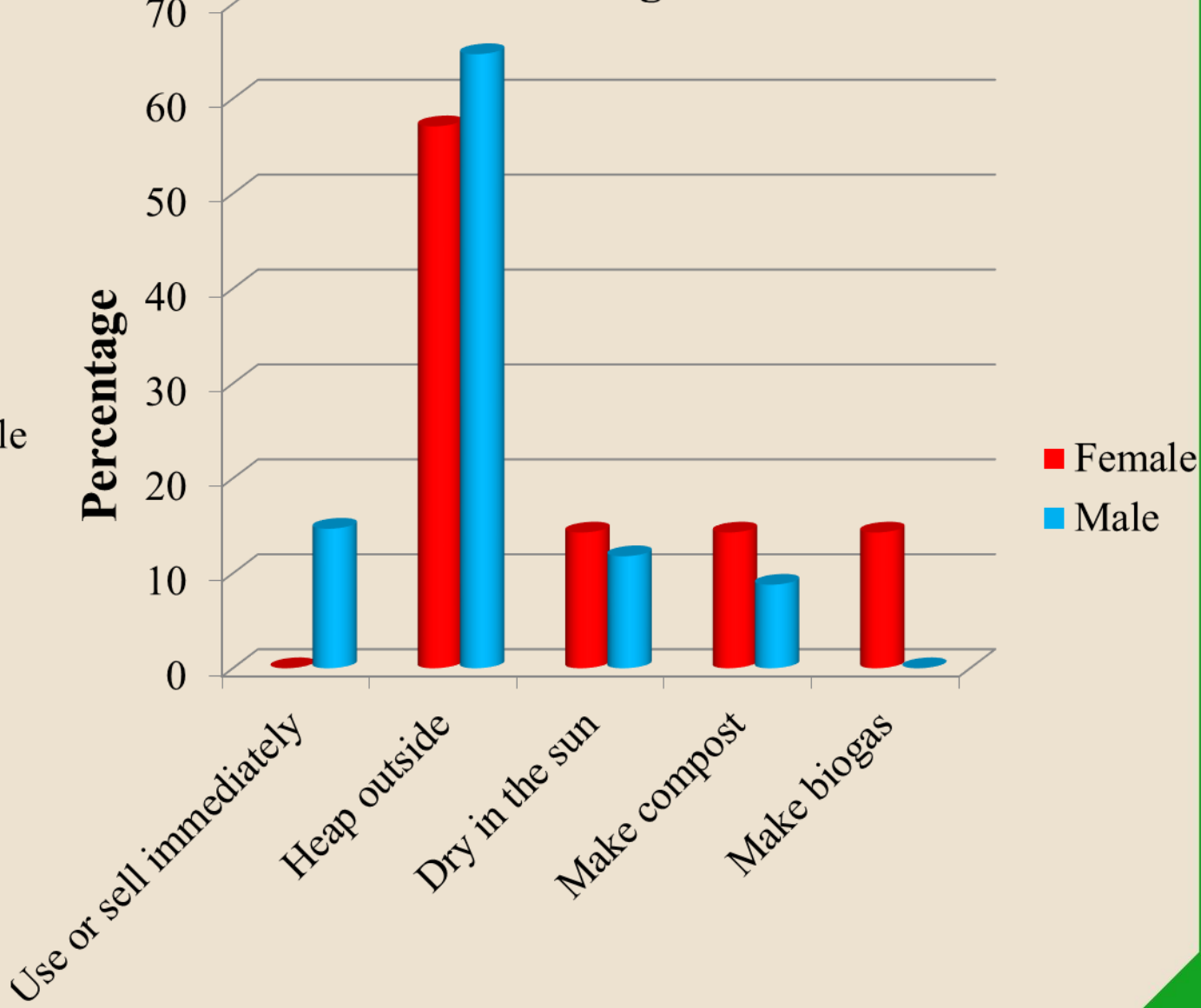
Predictor variables	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
							Lower	Upper
Farm size acres	0.164	0.082	3.966	1	0.046*	1.178	1.003	1.384
Family members living on-farm	-0.006	0.17	0.001	1	0.973	0.994	0.713	1.387
Age of household head	-0.057	0.039	2.095	1	0.148	0.945	0.875	1.02
Household head education level			7.536	3	0.057			
Household head education level(Secondary)	-2.772	1.463	3.587	1	0.058	0.063	0.004	1.101
Household head education level(College)	-4.361	1.659	6.909	1	0.009*	0.013	0	0.33
Household head education level(University)	-1.718	1.535	1.252	1	0.263	0.179	0.009	3.637
Constant	4.169	2.434	2.934	1	0.087	64.634		

Results and Discussions

Sufficient quantities



Manure storage methods



Conclusion and Recommendations

- Most of the fish farmers in the county keep Tilapia in monoculture systems
- The perception of extreme temperature occurrence on fish farms in Kajiado County can be predicted using farm size and education level of male household heads
- There is low availability of crop by products and manure for use in compost production as a coping strategy to climate change on integrated fish farms in Kajiado county
- Further studies on viability of compost production and compost heat recovery on integrated fish farms having adequate amounts of manure and crop by products to increase their resilience and to reduce greenhouse gas emissions from fish farms

Acknowledgements

- Sponsors – World Bank through the Kenya Climate Smart Agriculture Project
- Training institution – University of Nairobi
- Source of meteorological data – Kenya Meteorological Department, Ministry of Environment & Forestry
- Data collection - Fisheries Officers and interns, County Government of Kajiado