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Information, Pesticide Safety Behaviors, and Perceived Pesticide Health Risks in Maputo and Lusaka

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Introduction

- Increased pesticide use in Sub-Saharan Africa (SSA) brings new health and safety risks to smallholder farmers.
- Farmers in developing countries seldom use complete personal protective equipment (PPE) when handling and applying pesticides, which often leaves them highly exposed to toxic chemicals.
- The high potential for exposure leads to large acute illness risks from pesticide use.
- Researchers agree that improved and targeted extension and training efforts are needed to ensure that farmers use pesticides safely; however literature has not explored in detail the relationships between agriculture information channels and perceived pesticide health risks and safety behaviors.

Objective

- Use mean comparisons and regression analysis to identify the correlations between pest management advice sources and farmers' accuracies in their pesticide health risk perceptions, in markets supplying two large SSA capitals.



Data Collection

Total Sample (n=879):

Random & stratified sample across capital cities in two countries

Mozambique (n=616):

Population of 6,458 horticulture producers supplying Maputo markets

Zambia (n=263):

Population of 427 horticulture producers supplying Lusaka markets

Pesticide Behavior Regression Result Highlights

- Education of the household head has a robust relationship with safety behaviors
- Asset ownership is significantly related to improved safety
- Pesticide safety is significantly improved by:
 - Agricultural training programs in Maputo, and
 - Pest management advice from NGOs in Lusaka

Pesticide Practices and Perceptions

Share of producers using chemicals from each World Health Organization (WHO) toxicity class

WHO Toxicity Class	Maputo	Lusaka
Ib - Highly Hazardous	87%	76%
II - Moderately hazardous	48%	77%
III - Slightly hazardous	1%	16%
U - Unlikely to present acute hazard	53%	75%



Perceived human toxicity of pesticides by actual World Health Organization (WHO) toxicity class

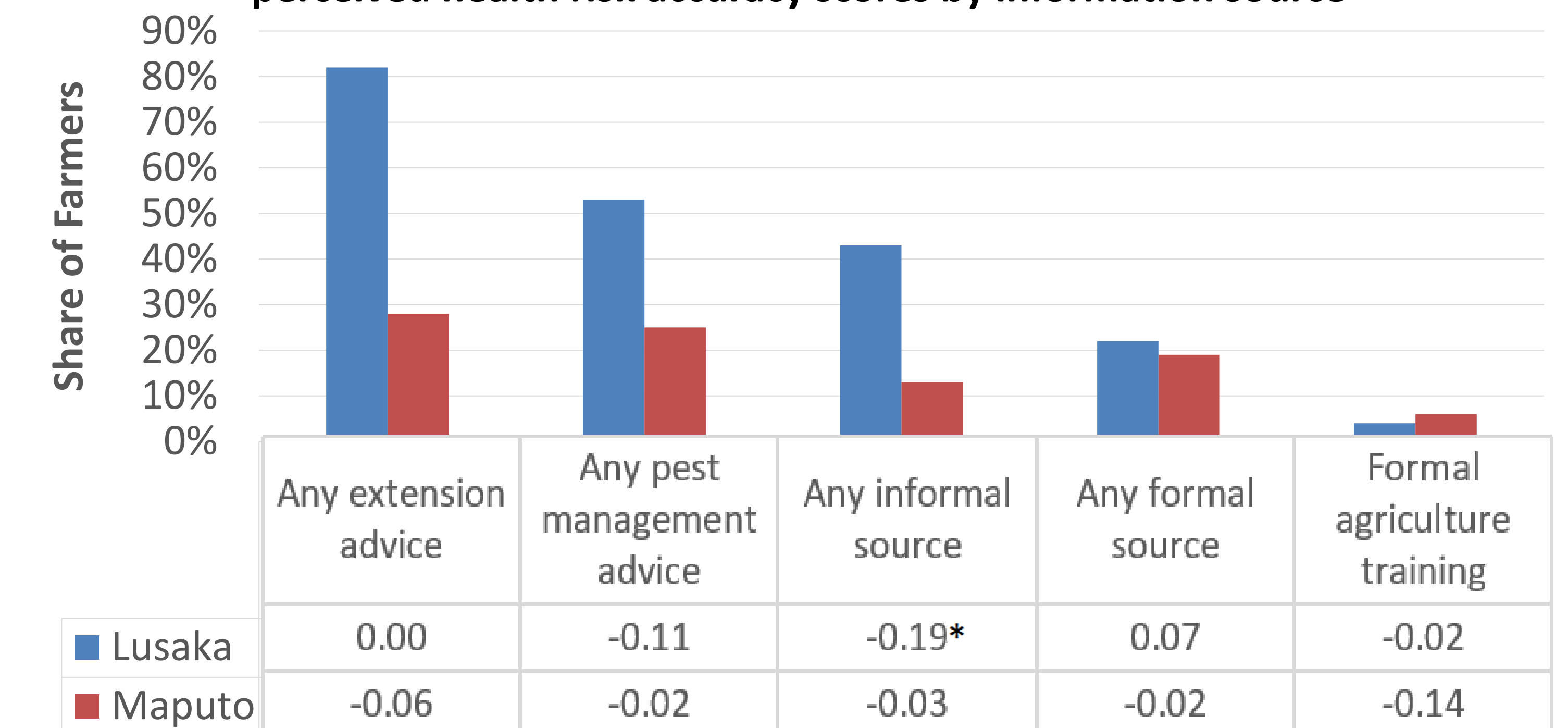
City	Farmer Perceived Human Toxicity	WHO Toxicity Classification			
		Ib	II-III	U	All chemicals
-- Percent of Producers --					
Lusaka (2012)	Highly toxic	86%	83%	69%	80%
	Moderately toxic	11%	14%	24%	16%
	Not toxic	1%	2%	5%	2%
	Do not know	2%	2%	2%	2%
Maputo (2013)	Highly toxic	87%	87%	75%	84%
	Moderately toxic	10%	10%	14%	11%
	Not toxic	1%	1%	1%	1%
	Do not know	3%	2%	10%	5%

80% and 84% of all chemicals used by the horticulture producers interviewed in Lusaka and Maputo, respectively, are perceived to be highly toxic to humans regardless of their true toxicity levels.

Results

- Informal pest management advice and, more specifically, pest management advice from another family member each show significantly improved pesticide toxicity accuracies for Lusaka farmers.
- We find no significant relationships between any pest management advice source or household characteristic and a farmer's mean perceived health risk accuracy score in Maputo.

Share of Farmers receiving advice and differences in mean perceived health risk accuracy scores by information source



The data table gives the difference in mean pesticide perceived health risk accuracy score.

Note that a LOWER perceived health risk accuracy score is BETTER (more accurate).

Formal training defined in Mozambique as a family member participating in a training of at least 3 months in duration at any point, and in Zambia, as participating in a training of any duration in the past 5 years.

Formal source is defined as government extension, NGO, agro-dealer or radio/TV.

Informal source is defined as another farmer or family member.

* denotes a significant difference at the 10% level.

- Lusaka farmers show higher use of PPE items and safer pesticide storage and handling techniques on average than farmers in Maputo.
- Maputo farmers appear to have better access to government extension advice while Lusaka farmers appear to rely more heavily on informal information sharing amongst family members and other farmers.

Conclusions

- The significant relationship between informal pest management advice and improved perceived health risk accuracy in Lusaka together with the fact that those same farmers trust informal sources well beyond all others suggests that we should give greater emphasis to informal information sharing within networks of horticulture producers.
- The prevalent recommendation for formal extension may miss the importance of pest management information diffusion within communities and families.