

# Actors' post-harvest maize handling practices and allied mycoflora epidemiology in southwestern Ethiopia: Potential for mycotoxin-producing fungi management

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## Introduction

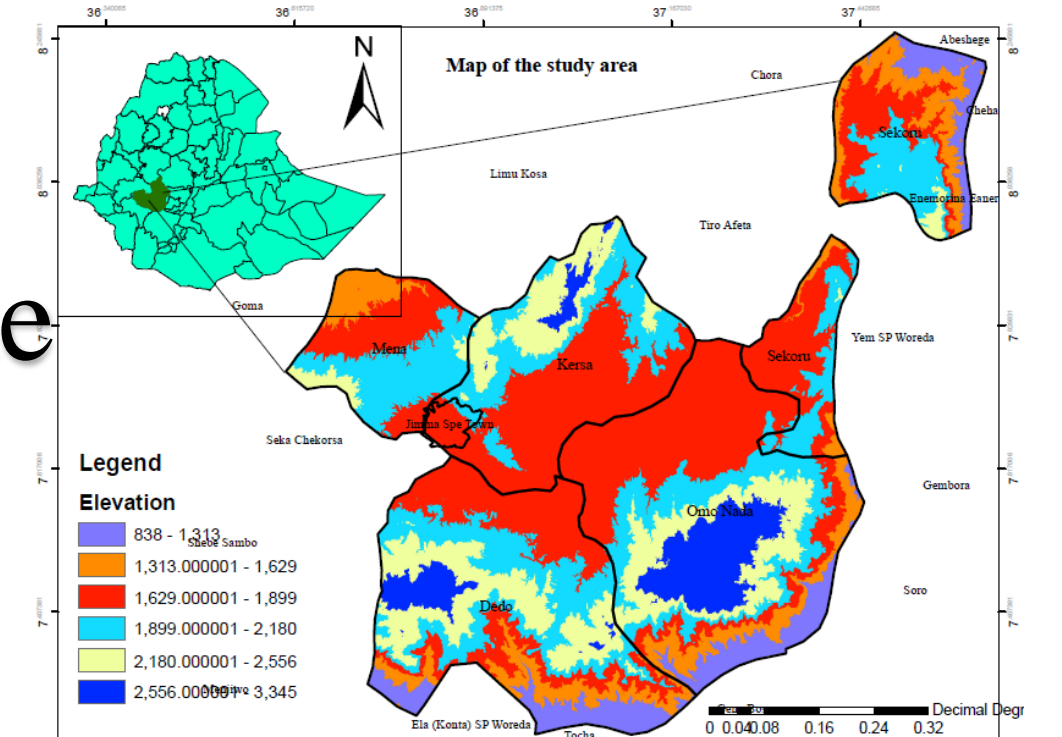
Crop post-harvest losses occur along the whole chain of activities. Thus commodity handling system analysis considered as suitable tactics for reducing post-harvest losses. Fungal pathogens are among major factor resulted in both quantity and quality loss of the grains in the store. However, less information available to tackle the problem in SW Ethiopia, where maize is main staple food crop. The area characterized by hot and humid that aggravates fungal growth. The study assess maize handling practices and associated fungal pathogens under different storage conditions in selected districts in southwestern Ethiopia.

## Materials and Methods

- Five districts
- Multistage sampling technique
- Survey and interview
- Sample size

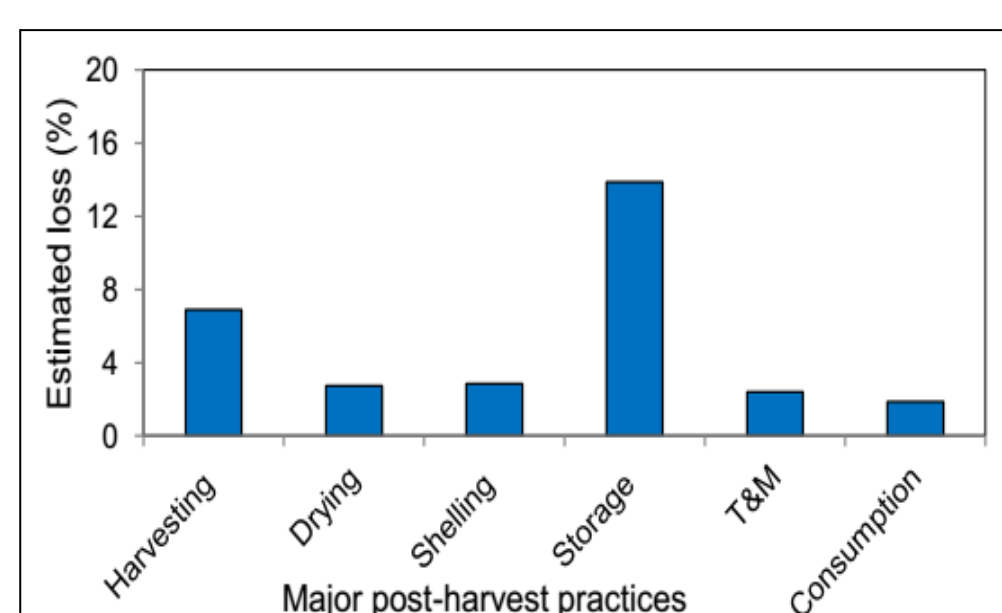
$$n = \frac{N}{1 + N(e)^2}$$

- Totally 342 respondents
- 63 maize samples/ month
- Isolation and identification of fungal pathogen



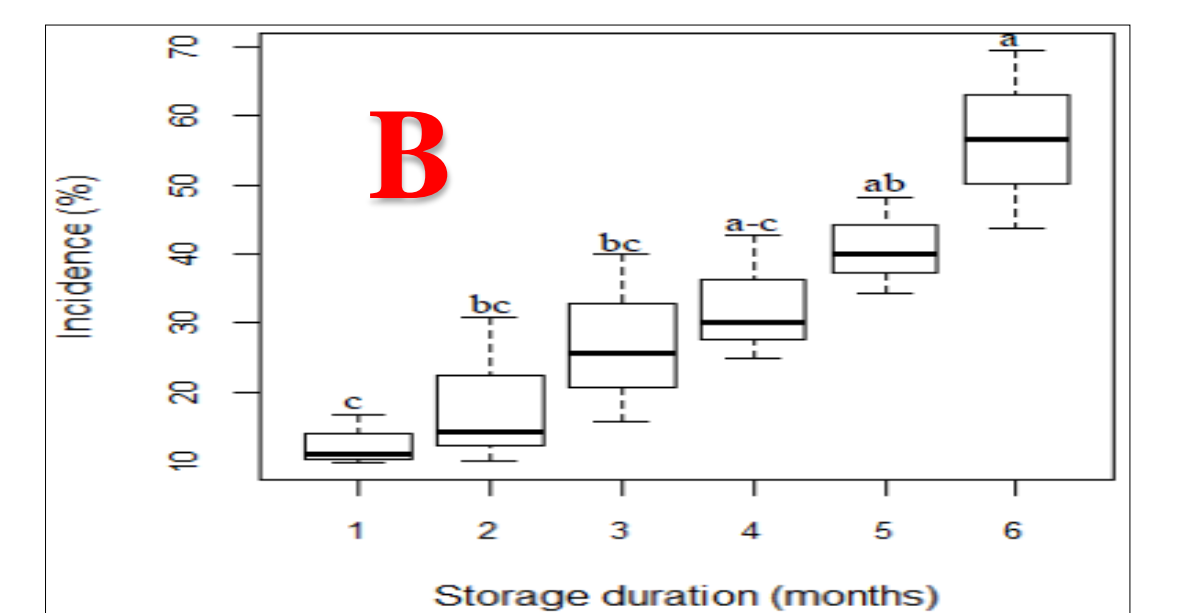
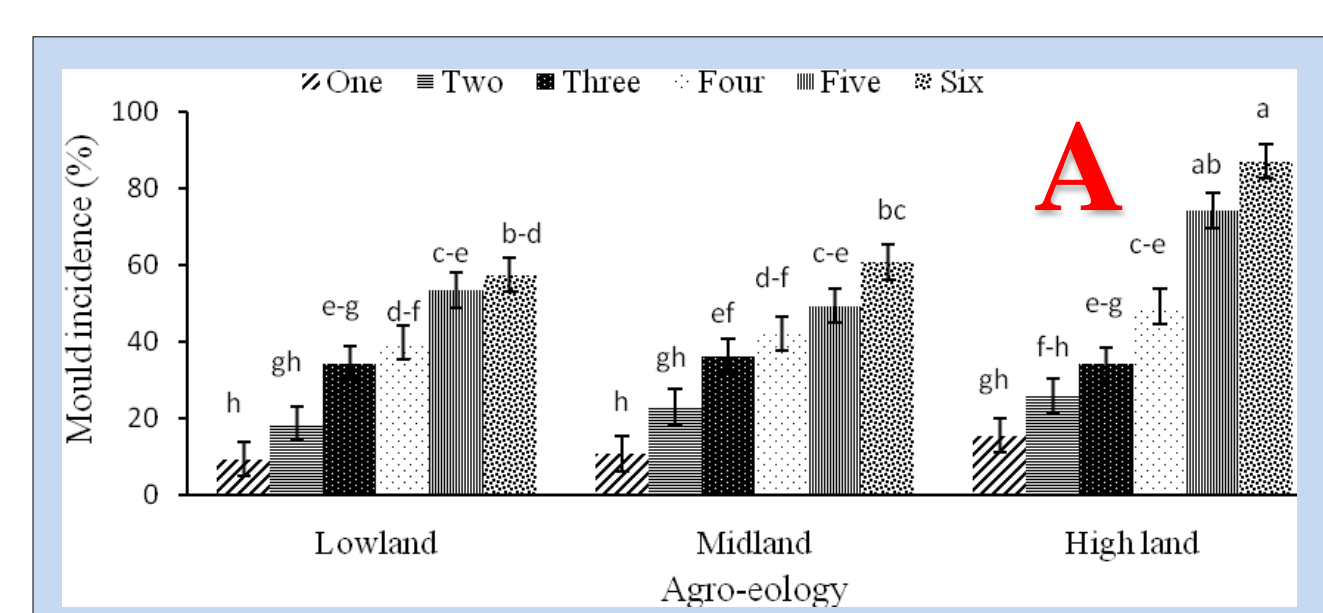
## Results

- Ten post-harvest activities practiced by different actors
- Post-harvest loss estimated to be 31%
- Loss during storage identified as critical point
- Loss due to fungal pathogens ranked on top



## Mould incidence (%) of maize kernels stored under farm condition

Agro-ecology	Storage duration (months)						P-value
	1	2	3	4	5	6	
Lowland	10.5±2.7 <sup>k</sup>	24.7±2.7 <sup>hi</sup>	30.9±2.7 <sup>g-i</sup>	37.8±2.7 <sup>e-h</sup>	45.2±2.7 <sup>d-f</sup>	51.8±2.7 <sup>b-d</sup>	0.001
Midland	17.1±1.6 <sup>jk</sup>	27.6±1.6 <sup>hi</sup>	34.2±1.6 <sup>f-h</sup>	41.7±1.6 <sup>d-g</sup>	49.6±1.6 <sup>cd</sup>	61.6±1.6 <sup>b</sup>	
Highland	21.8±2.7 <sup>i-k</sup>	28.4±2.7 <sup>g-i</sup>	41.9±2.7 <sup>d-g</sup>	49.2±2.7 <sup>c-e</sup>	59.9±2.7 <sup>bc</sup>	78.9±2.7 <sup>a</sup>	



Mould incidence of stored maize A) collector B) whole-sellers store

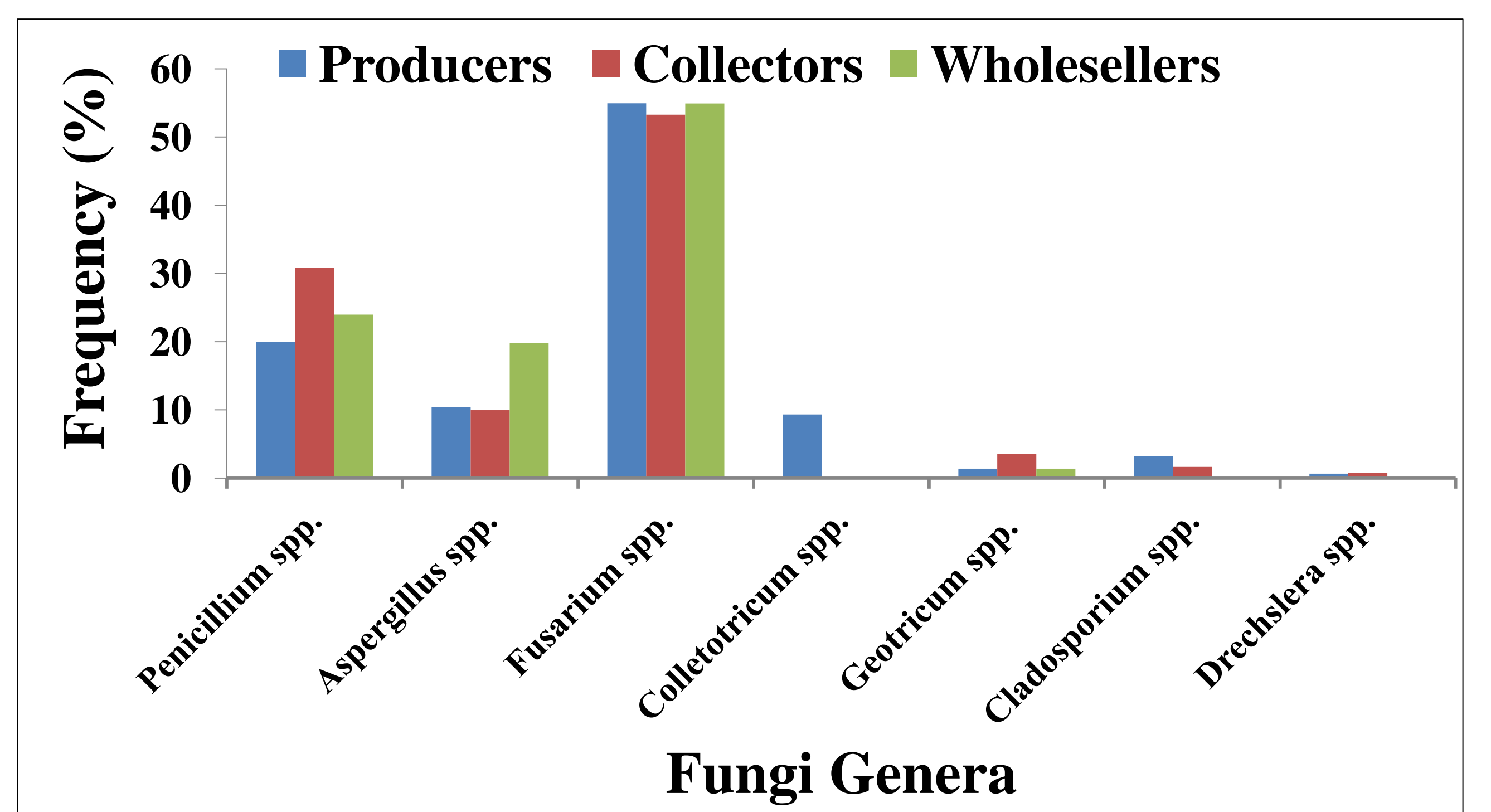
## Fungal pathogen diversity

Fungal genera	Producers and traders in districts/town											
	Sokoru		Omonada		Kersa		Dedo		Mana		Jimm a town	
	P	T	P	T	P	T	P	T	P	T	WH	
<i>Fusarium</i>	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red
<i>Penicillium</i>	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red
<i>Aspergillus</i>	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red
<i>Colletotricum</i>	Red	Green	Red	Green	Red	Green	Red	Green	Red	Green	Red	Green
<i>Geotricum</i>	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red
<i>Cladosporium</i>	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Green
<i>Descheria</i>	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Green

Where: Red shades =presence, green =absence; P, T and WH represents producers, small traders and whole sellers respectively

**References:** DUBALE, B., WAKTOLE, S., SOLOMON, A., GEREMEW, B. SETHU, M.R., 2012. Influence of agro-ecologies, traditional storage containers, and major insect pests on stored maize (*Zea mays* L.) in selected woredas of Jimma Zone. Asian Journal of Plant Sciences 11, 226 – 234.

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**Conclusion:** Most of the post-harvest practices are not effective in reducing post-harvest losses. The top three fungi genera are able to produce mycotoxins and cause health hazards both to humans and animals that feed on it.

