

Oral/Poster: Oral

Scientific topic: Detection and identification of mycotoxigenic fungi and their mycotoxins

Mycoflora epidemiology in postharvest maize (*Zea mays* L.) at producers, collectors and wholesalers levels in Jimma Zone, Southwest Ethiopia: Implication for Mycotoxins producing fungi management

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Study was commenced with endeavor to access disease incidence, severity, grain moisture content and fungal pathogens identifications in postharvest maize including different actors along the chain of selected districts of Jimma Zone, Ethiopia. Multistage sampling technique was employed to select five districts, represent all possible maize producing agro-ecologies. Each district contains three peasant associations with each three producers (45 produces), 15 collectors and 3 whole sellers in total. From each store, samples were collected every month until stored product depleted, mostly up to six months. The result revealed that moisture content of harvested maize during loading stage higher than the recommended amount (13.1 to 28.8%) then moisture content decrease during dry season but increase as storage period increase during rainy season (upto 16.5%). Stored maize cobs disease incidence ranged upto 50% as storage duration increase under producers' store conditions. Blotter test result showed significant variations ($P < 0.05$) in grains infections among different actors' storage structures and duration using. Seven fungal genera have been retrieved from producers' storage technology, namely *Fusarium* spp., *Penicillium* spp., *Aspergillus* spp., *Colletotricum* spp., *Geotricum* spp., *Cladosporium* spp. and *Descheria* spp., with mean proportion dominance for 180 days stored product, *Fusarium* spp (59.63%), *Penicillium* (17.68%), *Aspogilus* (9.23%) and with least dominance occurrence of *Descheria* spp. (0.77%). Similarly, *Fusarium* spp, was the most dominate fungal species both at producers (54.95%), collectors level (53.38%) and 54.98% occurrence at wholesalers storage conditions. *Penicillium* spp. was occurred with 19.94, 30.82 and 23.96% at producers, collectors and wholesalers storage conditions, respectively. While, *Aspergillus*, which ranked third in frequency of occurrence, showed 10.38%, 9.96% and 19.75% at producers, collectors and wholesalers' level respectively. *Colletotricum* species was not recovered from both collectors and wholesalers' storage structures; both *Cladosporium* and *Descheria* were not isolated from wholesalers' storage technology. Aflatoxin analysis result showed 3.33% of the samples showed positive result with 5.16, 38.79, 7.56, and 41.08 and 92.59 $\mu\text{g}/\text{kg}$ total aflatoxin for aflatoxin G2, G1, B2, B1 and total aflatoxin concentration, respectively. Current study showed, *Fusarium*, *Penicillium* and *Aspergillus* spp., which are capable to produce mycotoxins are the most dominate, however the proportion of *Aspergillus* and *Penicillium* increase under collectors and wholesalers storage condition. Similarly, traditional storage structure farmers' use for maize storage structure can be influenced by external climatic condition as it is not airtight, as result

able to mould formation during rainy season. This research highlights need for evaluation of different storage technologies for climatic variables that favorable Mycotoxin producing fungi for different stallholders to design appropriate management option.