

Feed the Future Innovation Lab for Livestock Systems

Mycotoxin Prevalence and Mitigation Measures in Ethiopia

Mycotoxins in livestock feed pose a direct threat to livestock health, reduce feed quality and availability, and could affect human health through exposure via the consumption of animal products. The major determinants of mycotoxin production are environmental conditions related to climate and weather patterns, physical damage to crops by factors such as hail, insects, or mechanical equipment, and the presence of high moisture and aerobic conditions anywhere in the production chain, from the field to processing and storage.



Ethiopian weather patterns, between as well as within seasons, are highly variable, and agricultural practices vary due to the presence of a wide range of production systems. These factors make mycotoxin production patterns in Ethiopia particularly hard to predict.



Objectives

This study aims to assess mycotoxin levels in the feed supply network of Ethiopia through an initial broad sampling survey of feed materials at farmer cooperative unions.

The objectives of this project are to: (1) use mycotoxin prevalence data to assess risks to the Ethiopian livestock industry in areas where testing is conducted; (2) enhance mycotoxin testing capacity in an important segment of the livestock feed supply in Ethiopia; and (3) communicate mycotoxin risk information to stakeholders in order to enhance risk management strategies.

Expected Outcomes

The expected outcomes include:

- validating baseline data for mycotoxin prevalence in Ethiopian livestock feed materials that will be made available to stakeholders to assist in the development of rational mitigation strategies
- expanding mycotoxin testing capacity at cooperating institutions within Ethiopia
- determining livestock exposure levels to mycotoxins of concern and performing risk characterizations for mycotoxins of concern in relevant feed materials.

Research Approach

Exactly 933 representative feed ingredient samples were collected from 22 feed distribution locations spread through the major livestock-producing regions of Ethiopia. The samples were ground and analyzed in Ethiopia using lateral mycotoxin strip test kits and associated readers (Charm Sciences Inc.). Test validation was done using duplicates of 108 samples shipped to the Veterinary Medical Diagnostic Laboratory at the University of Missouri for analysis of aflatoxins, fumonisin, vomitoxin, and ochratoxin, using HPLC methods.

Toxin concentrations were characterized in terms of levels of concern that were defined as 20 ppb for aflatoxin, 5 ppm for fumonisin, 100 ppb for ochratoxin, and 5 ppm for vomitoxin. The distribution of mycotoxins was characterized by mapping the results, separated into two feed ingredient groups: oil seed cakes and non-oil seed cakes.

Contacts and Key Partners

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