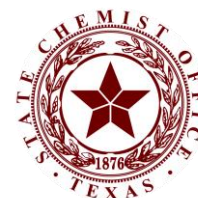


# Interim Report: A National Roadmap to Improve Public Health through Aflatoxin Risk Management in Kenya



Author

## Meru & Marsabit Counties as Models for:

- Harmonized Regulatory Authorities
- Statistically Derived Risk-based Work Plans Customized by County/SubCounty/Ward
- Official Sampling Methods & Chain-of-Custody
- Validated Aflatoxin Testing Platforms
- Qualified Analysts & Laboratory Quality Systems
- Standardized Data & Reporting Processes
- Coordinated Compliance Activities
- Legal Certainty & Transparency
- Food Safety & Confidence in the Marketplace

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RESEARCH

The County Governments of Meru and Marsabit proactively implemented regulatory Aflatoxin risk management strategies to improve the health of their constituents. These efforts were initially supported by a Memorandum of Understanding (MoU) between County Health Services Departments and the Office of the Texas State Chemist (OTSC)-Texas A&M AgriLife Research as an extension of the Aflatoxin Proficiency Testing and Control in Africa (APTECA) program.

As the MoUs near expiration in 2024, a comprehensive national policy is urgently needed to nurture a connected and transparent marketplace that delivers Aflatoxin safe food and feed to all Kenyans. The accomplishments, findings, cost analysis, and recommendations of our research are presented as a model for Aflatoxin risk management initiatives in Kenya and beyond.

## ACCOMPLISHMENTS

County Public Health Services Departments developed and implemented strategies to assess the magnitude of Aflatoxin contamination and manage the risk to public health; and, produced timely, accurate, repeatable, and defensible results to inform regulatory and economic decisions

- Experts mapped the market within each SubCounty and developed a customized, statistically derived, risk-based sampling plan
- Public Health Officers (PHOs) developed chain-of-custody procedures to ensure sample integrity
- PHOs utilized official sampling tools and methods to collect more than 1,500 samples
- 16 PHOs completed analyst qualification and followed standard methods to analyze samples using verified Aflatoxin test kits
- 80-85% of official results were reported within 10 days of collection
- County authorities met with farmers, traders, institutional managers and other relevant stakeholders to disseminate findings and increase awareness
- Laboratories participated in the APTECA global Aflatoxin Proficiency Testing (PT) program
- OTSC verification analysis was performed by High Performance Liquid Chromatography (HPLC)
- County Health Services Departments oversaw interventions to control distribution of Aflatoxin-contaminated products (Figure 1)

## AFLATOXIN >10 PARTS PER BILLION (PPB)

### Findings:

- 46% (111 of 242) of the products sampled at Meru Schools were above 10 ppb (692 ppb max.)
- 26% (17 of 65) of the products sampled at Meru Hospitals were above 10 ppb (425 ppb max.)
- 14% (9 of 62) Food Aid products sampled at Marsabit Schools were above 10 ppb (146 ppb max.)
- Approximately 80% of the Total Aflatoxin variation can be explained by Aflatoxin B1 concentration in the verification samples OTSC analyzed by HPLC with fluorescence detection (Figure 1)

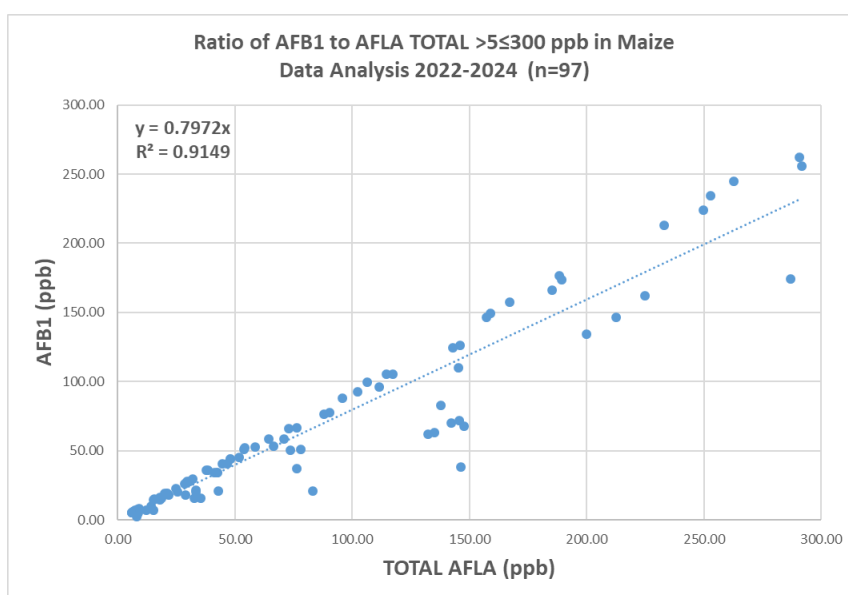


Fig. 2. Total Aflatoxin compared to Aflatoxin B1 in Maize.

## COST ANALYSIS

### County Public Health Departments can provide centralized testing for official & private samples

- Estimated initial investment for a new, free-standing laboratory with capital equipment: \$23,000 (USD).
- Estimated cost (including VAT) to purchase, transport and analyze 600 samples per year:

<i>Expense Category</i>	<i>Per Year (USD)</i>
Building & Capital Equipment	\$1,000
Materials & Supplies	\$15,000
Personnel	\$5,000
Utilities & Internet	\$1,000
<i>Estimated Annual Cost per County</i>	<i>\$22,000</i>
<i>Estimated Cost per Sample</i>	<i>\$37.00</i>

- Estimated annual cost (including VAT) to test products consumed by ~0.03% of the national population (~13,000 samples per year): \$475,000 (USD)

## CALL TO ACTION

### Recommendations based on research findings and input from members of Kenya's Parliament, County officials, subject matter experts and industry stakeholders.

- Support County-based Aflatoxin risk management efforts
- Support laboratory accreditation and recognize County lab results as official
- Promote private sample testing and fee collection at County laboratories
- Address gaps in the national regulatory framework and harmonize authorities
- Require testing prior to product delivery at government institutions such as schools and hospitals
- Direct products containing Aflaxotin >10 part per billion (ppb) to appropriate animal species
- Consider grain replacement programs to alleviate food security concerns when products are seized

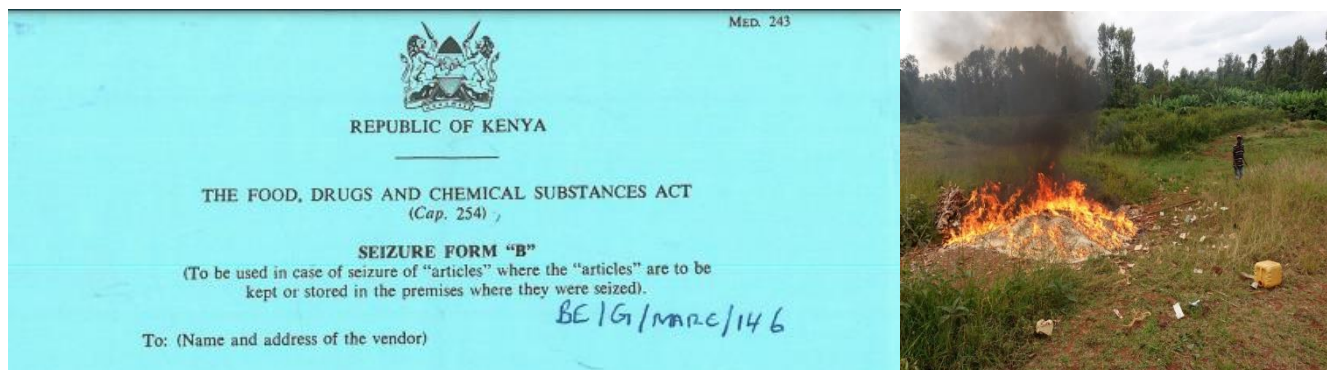


Fig. 1. Example County Health Services Department interventions to control distribution of Aflatoxin-contaminated products.