POLICY ASSESSMENT OF THE AFLATOXIN CONTROL AND PREVENTION IN UGANDA USING THE OPERA FRAMEWORK

FINAL REPORT

SUBMITTED TO

FOOD RIGHTS ALLIANCE

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Contents

Foreword

Aflatoxins pose a significant threat to human and animal health, food safety and economic development. This therefore calls for multisectoral and multi stakeholder approach to management and control of Aflatoxin in the food system.

For Non-State Actors to engage effectively to push for actions and strategies on Aflatoxin control there is need for them to understand the policy landscape around Aflatoxin control and management in Uganda.

By leveraging the Opera Framework a human rights framework to assess the policy actions around Aflatoxin, this report provides actionable recommendations for food systems actors to engage, collaborate and address the complex policy challenges of Aflatoxin control.

The findings of these report and recommendations are designed to inform evidence-based advocacy ultimately contributing to an enabling environment for management and control of Aflatoxin.

It is Food Rights Alliance utmost desire that this report serves as a valuable resource for food systems actors working on policy issues on Aflatoxin control in the food value chain.

Acknowledgment

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The Team took all caution and due diligence to present and interprete the information collected for this report accurately. Any errors and omissions in the report and policy brief should solely be attributed to the Food Rights Alliance

Thank You,

Acronyms

AfCFTA	African Continental Free Trade Area
ARSO	African Regional Organization for Standardization
ASARECA	The Association for Strengthening Agricultural Research in Eastern and Central Africa
AUC	African Union Commission
ASSP	Agriculture Sector Strategic Plan
CAADP	Comprehensive African Agricultural Development programme
CABI	Centre for Agriculture and Bioscience International
CGIAR	Consultative Group on International Agricultural Research
CEFROHT	Center for Food and Adequate Living Rights
CIMMYT	International Maize and Wheat Improvement Center
COMESA	Common Market for East and Central Africa
CONSENT	Consumer Education Trust
CSO	Civil Society organizations
DALYS	Disability Adjusted Life Years
DDA	Dairy Development Authority
EAC	East African Community
EAGC	Eastern Africa Grain Council
EASC	East African Standards Committee
FARA	Food and Agriculture Regulatory Authority
FAO	Food and Agriculture Organization
FMG	Farmers' Media Group
FRA	Food Rights Alliance
FSSA	Food Safety Strategy for Africa
FtF	Feed the Future
GC12	United Nations General Comment12
HRBAP	Human Rights Based Approach
ICESCR	International Covenant on Economic, Social and Cultural Rights
IEC	Information Education Communication
IFAD	International Fund for Agricultural Development
IFPRI	International Food Policy Research Institute
IGAD	Intergovernmental Authority on Development
ILRI	International Livestock Research Institute
IITA	International Institute of Tropical Agriculture
IPPC	International Plant Protection Convention
ISO	International Standards Organization
ISS	Institutional and Systems Strengthening
JAAC	Joint Advocacy for Aflatoxin Control
MAAIF	Ministry of Agriculture Animal Industry and Fisheries
MDAS	Ministries Department and Agencies
MFPED	Ministry of Finance Planning and Economic Development
MOES	Ministry of Education and Sports
MOH	Ministry of Health
MoLG	Ministry of Local Government
MSME	Micro Small and Medium Enterprises

MTIC	Ministry of Trade Industry and Cooperatives
MWE	Ministry of Water and Energy
NARO	National Agriculture Research Organization
NATWG	National Aflatoxin Technical Working Group
NDP	National Development Plan
NEMA	National Environment Management Authority
OAU	Organization of African Unity
OPERA	Outcome Policy Effects Resources Assessment
PACA	Partnership for Aflatoxin Control in Africa
PDM	Parish Development Model
SAPPCA	Strategic Action Plan for Prevention and Control of Aflatoxin
SEATINI	Southern and Eastern Africa Trade Information and Negotiations Institute
SPS	Sanitary and Phytosanitary
STC	Specialized technical Committee
SUN	Scaling Up Nutrition
TGCU	The Grain Council of Uganda
UCDA	Uganda Coffee Development Authority
UGMA	Uganda Grain Millers Association
UIRI	Uganda Industrial research Institute
UNAP	Uganda Nutrition Action Plan
UNBS	Uganda National Bureau of Standards
UNECA	United Nations Economic Commission for Africa
USAID	United States Agency for International Development
WAHO	World Animal Health Organization
WHO	World Health Organization
WTO	World Trade Organization

Executive summary

Background and rationale for the analysis

The right to adequate food is one of the most fundamental human rights crucial for the sustenance of the planet, and the prosperity of all people. Globally, food safety is one of the most important challenges denying people to having the right to adequate food. The desire to have a safe food supply chain in Africa has been at the centre of commitments adopted by the African Union Commission and, in 2022, to address and mitigate the public health concerns and economic costs of unsafe agricultural products, the AUC developed a new continental Food Safety Strategy for Africa (FSSA) 2022-2036. The FSSA provides a harmonized framework to implement activities that mitigate food safety threats to consumers as well as address non-tariff barriers, such as sanitary and phytosanitary (SPS) measures, for improved agricultural trade and food security. Mitigation of aflatoxin effects to humans and animals is at the fore front having received strong recommendations from the Partnership for Aflatoxin Control in Africa (PACA).

Aflatoxins produced by *Aspergillus flavus* and *A.parasiticus* fungi that reside in soil, are highly toxic metabolites that affect the safety of food and feed in tropical and subtropical regions of the world, including Uganda. These toxins have had significant health and economic impacts in this country and, due to these, during the Financial Year 2018/19, Uganda established the Strategic Action Plan for Prevention and Control of Aflatoxins (SAPPCA). The Strategy had five (5) outcomes each with specific outputs, activities and a budget attached.

Despite the country putting in place the five-year SAPPCA, aflatoxin contamination of major staple foods and animal feeds has been on the increase leading to a number of rejections at the regional and international markets. For example, in March 2021, Kenya banned importation of maize from Uganda, noting there had been an acute increase in chronic aflatoxin in the maize products. In May 2023, South Sudan Bureau of Standards impounded 62 Uganda trucks loaded with maize grains after a lab test found the items contained dangerous aflatoxins. In April this year (2024), the United Grain Millers Association (UGMA) warned of high aflatoxin in Ugandan maize circulating in Kenya and emphasized that maize meal consumers in Kenya could be exposed to high-levels of aflatoxin in maize imports trickling in from Uganda. Their surveillance results indicated high levels of aflatoxins to the tune of over 200 ppb. In a recent study supported by USAID Feed the Future (FtF) Uganda Agriculture Research Activity conducted in 2022, aflatoxin levels determined in maize, sorghum, and groundnuts from Central, Eastern, and Northern parts of the country showed that more than 50% of the samples had aflatoxin levels beyond the 10 ppb regulatory limits. Similarly, in the same study, high aflatoxin levels, beyond the 20 ppb regulatory limits were reported in different categories of animal feeds sold in Uganda.

In May-September 2023, USAID FtF ISS funded a study to establish the economic impact of aflatoxins in Uganda. The study findings indicated that aflatoxin contamination in maize, sorghum and groundnuts increased government and household expenditure on health reducing economic growth and employment by 0.147 and 0.107 percent for FY 2023/24 respectively. Tax collections and business sales are negatively affected by aflatoxin contamination through export rejections. Cumulatively, the study findings indicated that government loses tax collections to a tune of UGX 32.8 billion which is equivalent to US$ 9.2 million over the modeled period (2023/24 – 2026/27).

The study findings further indicated that aflatoxin contamination reduces trade and transport margins for the domestic and export markets by 0.035 and 0.345 percent respectively which slows down business activity. Sales to the industrial commodities contract by US$ 15.6 million while sales of food crops decline by US$ 2.2 million. The animal husbandry commodity sales are also consequently affected and decline to a tune of about US$ 8.9 million largely due to the reduced sales to households and to the meat and dairy processing firms. On the other hand, the effects of aflatoxins cause an increase in health sector sales by an additional US$ 1.87 million of largely due to medical purchases by households and government.

There is therefore a feel that the objectives of the 2018/19-2023/24 SAPPCA may not have been achieved over the five-year period since it expired in June this year (2024). Thus, an analysis of the SAPPCA has been done based on existing Outcomes, Policy Efforts, Resources and Assessment (OPERA) mechanisms in place. From the report, a Policy Brief shall be developed to inform Government practical solutions required to control and manage aflatoxins in food and feed value chains in the country.

Approach

Analysis of the SAPPCA was performed using the OPERA Framework which is a step by step framework for assessing compliance with the obligation to fulfill economic, social and cultural rights. The following steps were followed;

a) *Analysis of the Outcomes:* The participants assessed to what extent the outcomes (health, economic, social, and political) outlined in the SAPPCA, have been achieved clearly identifying the outcome, the targets and the current status.
b) *Policy analysis:* This involved analysis of the Global/International, Continental, Regional and National policy and regulatory frameworks that the government of Uganda has developed, signed or ratified to control aflatoxins since 2018/19 when the SAPPCA was put in place, commitments made and the extent to which commitments have been translated into reality.
c) *Analysis of Resource mobilization and budgeting:* This involved analysis of budget performance reports from relevant Ministries, Departments and Agencies (MDAs) for the Financial Years from 2018/19 to 2023/24 when the SAPPCA was launched and when it is ending, respectively.
d) *Assessment:* This involved an assessment of the state party obligations in ensuring the right to adequate food, and monitoring and evaluation mechanisms of the SAPPCA to establish the systems put in place to ensure that the Plan is being implemented. The assessment also generated a list of stakeholders involved in the prevention and control of aflatoxins.

Results

Human rights-based approach in aflatoxin prevention and control

Based on the OPERA framework and using the human rights approach, in the context of aflatoxin prevention and control, food and nutrition programmes should take into account the following principles:

(i) Accountability of duty bearers and all actors involved in aflatoxin prevention and control within the wider context of ensuring food and nutrition security at all levels (household, community and national);

(ii) Responsibility of duty bearers and rights holders to ensure the respect, protection, and fulfilment of all person's right to aflatoxin-free food and feed;
(iii) Participation and community ownership of process, outcome and benefits of the right to adequate food programmes and initiatives;
(iv) Transparency at all stages of management, policy and financial investments in aflatoxin prevention and control;
(v) Democratic Governance based on the rule of law, Constitutionalism, respect of fundamental freedoms, and international human rights law;
(vi) Legislative capacity that provides jurisprudence to all human rights affected by aflatoxin contamination;
(vii) Independence of the Judiciary arm of the State in aflatoxin prevention and control;
(viii) Freedom of the press and freedom of speech in reporting on aflatoxin contamination, prevention and control; and,
(ix) Socio-economic and political empowerment of the vulnerable and hungry poor, especially vulnerable farmers and households in aflatoxin prevention and control.

Analysis of Outcomes

Using the OPERA framework, the five outcomes of the 2018/19-2023/24 SAPPCA were analysed and it has been established that these have not been adequately addressed by Government as indicated below;

a) *Reduced levels of aflatoxins in susceptible foods and feeds:* based on the findings from the most recent studies conducted around the country, aflatoxin contamination is still rampant in both food and feeds. This could be attributed to the narrow coverage of intervention programmes due to budget limitations, variations in environmental conditions resulting from climate change effects, limited and uncoordinated enforcement and limited awareness among the stakeholders. Thus; this outcome is not yet fully achieved, estimated at 30% based on the current findings.
b) *Improved aflatoxin awareness across the entire food and feed system*: Overall, MAAIF and civil society organisations have over the course of SAPPCA implemented many activities that have increased awareness among the key stakeholders. However, the IEC materials and the Extension workers have not reached all the targeted beneficiaries due to limited resources. It is estimated that about 40% of the stakeholders in Uganda are aware of the aflatoxins and their effects.
c) *Reduced impact of aflatoxins on human and animal health*: Given the liver cancer incidence data obtained from both national and regional data bases, it's clear that cancer cases and other aflatoxin related illnesses in both human and animals are on increase. Therefore, the expected target of 20% reduction in the prevalence of aflatoxin related illnesses by 2025 is not yet achieved.
d) *Improved compliance to aflatoxin regulations and standards*: The export rejections are a clear testimony that not much progress has been made in ensuring compliance to national and regional standards. Thus, the target of at least 80% of Stakeholders adhering to aflatoxin regulations was not met. It is estimated that 40% of stakeholders are adhering to aflatoxin regulations.
e) *Aflatoxins prevention and control activities effectively implemented and coordinated*: The NATWG and UMMSC established to coordinate stakeholders that are working towards mitigation of aflatoxins have been inactive. Even among the key government ministries of

Health, Agriculture and Trade, no clear coordination mechanisms exist. Thus, the target of aflatoxins mitigation interventions being well coordinated and monitored by 2022 was not met and the report cannot score the achievement at all.

Policy Effects

As far as the political effects are concerned, analysis established that that six (6) relevant national policies and laws (UNAPII 2020/21-2024/25, National Seed Policy 2018, Plant Health Act (amended 2023), Fisheries and Aquaculture Act (2022), NEMA Act (2019) and Animal Feeds Act 2024) have been established since the 2018/19-2023/24 SAPPCA was launched. None of these directly included aflatoxin control and management. The other policies and regulations have generally been observed to be more than 5 years old and not effectively aligned to the national development plan and issues on aflatoxin control in the country. Key strategies supporting food safety and quality have also expired. In addition, majority of the laws and policies are not adequately enforced and implemented, leading to low levels of compliance, presence of counterfeits, poor quality foods and increasing levels of rejections at the regional and international markets due to aflatoxin contamination. This implies that the food control system in Uganda has not adequately addressed activities included in the 2018/19-2023/24 SAPPCA.

The analysis has further revealed that Uganda as a country is signatory to a number of regional, continental and global regulatory frameworks although mainly in form of standards. Whereas the country has adopted and harmonized most of the aflatoxin-related standards for foods and feed across the EAC region and beyond, enforcement of these standards is still a major challenge in the country, contributing to non-compliance and high rejection levels at regional and international markets.

Analysis of Resources

A review of the national budget for the fiscal years 2019/2020-2023/2024 indicated that there were no specific budgets allocated to implementation of SAPPCA in line with its thematic areas. While a number of activities that are related to prevention and control of aflatoxins were undertaken by the key Ministries of Agriculture, Health and Trade, the amount of money allocated to such activities could not be easily calculated since the budget performance reports focused on outputs that were not aligned to SAPPACA.

Assessment

During the analysis, it was established that the country initiated mechanisms and systems to implement the aflatoxin control and management strategy. These included establishment of 2 committees (National Aflatoxin Technical Working Group; NATWG and the Uganda Mycotoxin Mitigation Steering Committee; UMMSC); launching of the Joint Advocacy on Aflatoxin Control and Management (JAAC) campaign by Food Rights Alliance from FY 2023/24 with support from USAID FtF ISS as well as indirectly addressing aflatoxin issues through other Technical Committees for instance, the UNBS Technical Committee (TC 201) on cereals , legumes, and related products as well as that on Cassava and products, charged with reviewing and establishment of standards for these commodities. However, the NATWG and UMMSC have been inactive, requiring resources to effect their terms of reference including coordination of aflatoxin activities in the country. Furthermore, analysis showed that a number of stakeholders are partnering with MDAs in addressing aflatoxins challenges in the country. These include

development partners, private sector, civil society organizations/non-government organizations, research institutions, Consultative Group on International Agricultural Research (CGIAR), academia and the media. These need to be coordinated and their activities documented for proper management of aflatoxin effects in the country.

A number of constraints hindering aflatoxin control and prevention in the country have been identified. These include effects of climate promoting *Aspergillus spp* infection and thus high chances of aflatoxin contamination, dominance of agriculture by small holder farmers who practice subsistence farming using rudimentary technologies, and Micro-Small and Medium Entrepreneurs (MSMEs) within the private sector thus poor traders and processors who are less bothered with food and feed quality and safety; inadequate food control system with laws and policies scattered among MDAs, poorly coordinated with minimum enforcement; aflatoxin testing is quite expensive, unaffordable by most farmers and traders and the country at the moment has only two government accredited laboratories for aflatoxin testing; there are no simple testing equipment to be used by farmers before the produce enters the food chain; inadequate research funds from Government with majority of the funding coming from development partners and private sector and, there is only one technology in the country that can decontaminate aflatoxin affected grains and this is located in Soroti. It is quite far and expensive, unaffordable by the farmers and MSMEs who dominate the grain value chains. This has led to rejection of the produce within the EAC region and beyond.

Conclusions and recommendations

Conclusions

The analysis of the outcomes of the 2018/19 SAPPCA has indicated that the Strategy has not been adequately implemented and for this reason, aflatoxin contamination of food and feed has continued, causing significant impacts on livelihoods of both humans and animals. The impacts are still on and will continue as long as effective management strategies to address the menace are not implemented. The analysis of policy, regulatory and institutional frameworks has established that since the launch of the SAPPCA, no single framework was developed targeting aflatoxin prevention and control. The existing policies and regulations have generally been observed to be old and not effectively aligned to the national development plan and issues on aflatoxin control and prevention in the country. The analysis of resources has indicated that that despite the mainstreaming of the SAPPCA into the MAAIF's ASSP in 2018, there have not been deliberate efforts to provide a budget for its implementation. There is no direct budget put aside to address the outcomes as outlined in the Strategy. The funds allocated to activities that are related to prevention and control aflatoxins undertaken by the key sector ministries and departments, could not be easily estimated since the budget performance reports focused on outputs that were not aligned to the Strategy. Despite existence of a number of stakeholders involved in aflatoxin control and management, there is no coordination of activities. This is because the monitoring and evaluation systems put in place that involved establishment of the UMMSC and the NATWG have not worked basically due to inadequate resources.

For the country to minimize aflatoxin contamination of food and feed, there is need to address the identified constraints. It should be particularly noted that overall, the SAPPCA still provides relevant aflatoxin management strategies that can be put in place to significantly reduce the effects

of this hazard in the country. In addition, it has been observed that the SAPPCA was designed as a "project" with short term outputs yet aflatoxin prevention and control requires joint, long term, multi-stakeholder and sustainable approaches.

Recommendations

Based on the findings, it is recommended that there is the need to revise the SAPPCA to align it with the MAAIF budget. This will ensure that the aflatoxin mitigation strategies are integrated within the ministry budget and will be able to roll-over for different financial years. To minimize the economic and health impacts of toxins in Uganda, there is need to strengthen the regulatory framework. Advantage could be taken of the on-going efforts to establish the Food and Agriculture Regulatory Authority (FARA) in the country. In the meantime, the enforcement of the existing UNBS standards should be strengthened by investing in human resource and quality infrastructure for monitoring aflatoxin and strengthening awareness of all the relevant stakeholders. There is the need to strengthen the monitoring and coordination of the different actors to ensure efficient utilization of resources and avoid duplication of activities. The coordination structures in place such as NATWG and UMMSC should be given adequate support to enable them carry out their activities effectively.

CHAPTER ONE: INTRODUCTION

1.1 Background

The human right to adequate food is one of the most fundamental human rights crucial for the sustenance of the planet, and the prosperity of all people. Aflatoxin prevention and control is at the centre of food safety, a core tenet of the human right to adequate food. This right has been defined in the United Nations General Comment (GC 12) as realized when *every man, woman and child, alone or in the community with others, have physical and economic access at all times to adequate food or means for its procurement"*. Adequate food is defined in terms of availability of food in quantity and quality sufficient to satisfy the dietary needs of individuals, free from adverse substances, and acceptable within a given culture. The GC 12 also specifies the States Party's obligations to respect, protect, and fulfil the human right to adequate food.[1]

The global food outlook is one of demand and supply uncertainties. Given the fragility of food systems, food-borne illness and the burden of malnutrition continues to surge. Increasingly, unhealthy food environments, sub-optimal diets, inadequate consumer protection and poor consumer behaviour and choices among others, are driving the surge in non-communicable diseases (NCDs) especially the four of the world's top ten leading risk factors causing death: high blood pressure, high blood glucose, cancer, overweight and obesity.[2]

About 8 million deaths annually are attributable to an unhealthy diet that exposes to excess consumption of food high in sodium and other salts, sugars and fats, particularly saturated and *trans fats*, and inadequate consumption of whole grains, pulses, vegetables and fruits.[3] Together, these risks contribute to around one-third of all deaths.[4] Linked to the unhealthy diet issue is the challenge of food safety and quality assurance. Despite no specific globally agreed targets on food safety for 2030, estimates in 2018 indicated an additional global burden of more than 1 million foodborne illnesses, over 56,000 related deaths and more than 9 million Disability Adjusted Life Years (DALYs) from contamination of food.[5]

As the world population is expected to grow to about 9 billion by 2050, consumption patterns are already at above 1.5 times the planet's replenishing capacity. In effect, the current food systems are unsustainable as climate change further increases risks in global food production. Meanwhile, by 2022, an estimated 3 billion people lacked access to a healthy diet globally despite one-third of the world's food being lost along the food chain. Given the unsustainable consumption patterns, more than 1 billion people in the world are living with obesity and this condition among adults has more than doubled since 1990, and quadrupled among children and adolescents.[6]

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[1]Committee on Economic Social and Cultural Rights (CESCR) General Comment No. 12: The Right to Adequate Food (Art. 11 of the Covenant). E/C.12/1999/5 (20th Session). Geneva: United Nations Committee on Economic Social and Cultural Rights, 1999

[2]FAO, IFAD, UNICEF, WFP and WHO The State of Food Security and Nutrition in the World 2023. Urbanization, agrifood systems transformation and healthy diets across the rural-urban continuum. Rome: FAO, 2023

[3]Murray CJ, Aravkin AY, Zheng P, Abbafati C, Abbas KM, Abbasi-Kangevari M, ... & Borzouei S Global burden of 87 risk factors in 204 countries and territories, 1990–2019: a systematic analysis for the Global Burden of Disease Study 2019. The Lancet, 396 (10258), 1223-1249, 2020

[4]WHO Action framework for developing and implementing public food procurement and service policies for a healthy diet. Geneva: World Health Organization, 2021

[5]Gibb HJ et al. Estimates of the 2015 global and regional disease burden from four foodborne metals – arsenic, cadmium, lead and methylmercury. Environmental Research, 174, 188–194, 2019

[6]Phelps NH, Singleton RK, Zhou B, Heap RA, Mishra A, Bennett JE., ... & Barbagallo CM Worldwide trends in underweight and obesity from 1990 to 2022: a pooled analysis of 3663 population-representative studies with 222 million children, adolescents, and adults. The Lancet, 2024

The desire to have a safe food supply chain in Africa has been at the centre of commitments adopted by the African Union Commission (AUC). In particular, the African Union Declarations in Maputo (2001), Abuja (2003) and Malabo (2014) underscored the need to improve food safety on the continent to improve trade of safe and healthy food on the continent. Recently, to address and mitigate the public health concerns and economic costs of unsafe agricultural products, the AUC has developed a new continental Food Safety Strategy for Africa (FSSA) 2022-2036. The FSSA provides a harmonized framework to implement activities that mitigate food safety threats to consumers as well as address non-tariff barriers, such as sanitary and phytosanitary (SPS) measures, for improved agricultural trade and food security. In addition, the Partnership for Aflatoxin Control in Africa (PACA) was established in 2012 as a collaboration that aims to protect crops, livestock, and people in Africa from the effects of aflatoxins. By combating these toxins, PACA contributed to improving food security, health, and trade across the African continent.[7]

In Uganda, there is an increasing prevalence of unsafe food on the market. Unsafe food takes a huge toll on the economy. It limits trade and annually costs Uganda about US$ 5 billion in lost productivity and revenue.[8] The main causes of these challenges include but are not limited to weak management, governance and fragmented enforcement of most of the existing food regulations; inadequate official controls and conformity assessment processes and limited use of scientific data in food safety decision-making.[9]

This report provides an assessment of the aflatoxin prevention and control environment in Uganda based on existing Outcomes, Policy Efforts, Resources and Assessment (OPERA) mechanisms in place.

1.2 Situation of aflatoxin contamination in Uganda's food and feed commodities

Aflatoxins are highly toxic metabolites that affect the safety of food and feed in tropical and subtropical regions of the world, including Uganda. They are mainly produced by *Aspergillus flavus* and *Aspergillus parasiticus* fungi that reside in soil. There are four types of aflatoxins that are important in health and agriculture: aflatoxin B1, B2, G1 and G2. Aflatoxin B1 is the most common of the four types.

Aflatoxin contamination of food and feed in Uganda is still a major challenge despite the launch of the 2018/19-2023/24 Strategic Plan for Prevention and Control of Aflatoxins (SAPPCA) and other strategies in place including aflasafe commercialization, establishment of the aflatoxin decontamination facility in Soroti, increased use of animal feed aflatoxin binders and launch of the Joint Advocacy for Aflatoxin Control (JAAC) in March 2024. The most recent aflatoxin levels determined in maize, sorghum, and groundnuts showed that more than 50% samples had aflatoxin levels beyond the 10 ppb regulatory limits (Table 1). Similarly, high aflatoxin levels, beyond the 20 ppb regulatory limits were reported in different categories of animal feeds sold in Uganda (Table 2).

[7]Partnership for Aflatoxin Control in Africa (PACA). Uganda Aflatoxin Control Policy Brief, 2015

[8]Source: Health Management Information System Data-Base.

[9]Kankya, C., Mukungu, T., Hoona, J. J., Mukanga, A., Nantongo, S., Nanyanzi, J., Nasinyama, G., Ayebale, R.and Okello, J. Situational Analysis of Food Safety Control Systems in Uganda, 2020.

Table 1. Levels of aflatoxins in staple foods of Uganda

Commodity	No of samples	% of samples with detectable aflatoxins	Aflatoxin content (ppb)		
			Mean	Highest level	% Above 10 ppb
Maize	55	76.4	28.82	97	56
Groundnuts	40	90.1	32.93	460	55
Cassava	30	76.7	9.94	22	27
Sorghum	30	83.3	13.42	35	53

Source[10]

Table 2. Levels of aflatoxins in animal feeds

Feed type	No of samples	% of samples with detectable aflatoxins	Aflatoxin content (ppb)		
			Mean	Highest level	% Above 20 ppb
Chick Mash	20	90	18.15	40	40
Layers' Mash	20	100	17.95	56	25
Broiler Starter	20	95	18.55	59	25
Cattle feeds	20	95	30.43	77	45
Sow and weaner meal/feed	20	95	30.58	44	40
Rabbit pellets	17	88.2	12.55	35	29
Dog food (puppies)	17	76.5	8.50	28	6
Dog food (Adults)	17	76.5	6.45	12	-

Source[11]

A number of produce have been rejected on the international markets due aflatoxin contamination levels exceeding national limits. For example, in March 2021, Kenya banned importation of maize from Uganda, noting there had been an acute increase in chronic aflatoxin in the maize products[12]. In May 2023, South Sudan Bureau of Standards impounded 62 Uganda trucks loaded with maize grains after a lab test found the items contained dangerous aflatoxins. The consignments were damped at the Elegu border post in July. *"Authorities in Uganda are reportedly set to destroy 1700 tonnes of maize products valued at US$2 million previously seized by*

[10] Feed the Future (FtT) Uganda Agriculture Research Activity. Survey Report on Aflatoxin Prevalence and Incidence in Uganda, December, 2022

[11] Feed the Future (FtT) Uganda Agriculture Research Activity. Survey Report on Aflatoxin Prevalence and Incidence in Uganda, December, 2022

[12] Monitor Newspaper, 8 March 2021.

South Sudan after a fresh independent test carried out by regional experts returned positive results of above-normal levels of the aflatoxin.[13]"

In May-September 2023, USAID FtF ISS funded a study to establish the economic impact of aflatoxins in Uganda[14]. The study findings indicated that aflatoxin contamination in maize, sorghum and groundnuts increased government and household expenditure on health reducing economic growth and employment by 0.147 and 0.107 percent for FY 2023/24 respectively. Tax collections and business sales are negatively affected by aflatoxin contamination through export rejections. Cumulatively, the study findings indicated that government loses tax collections to a tune of UGX 32.8 billion which is equivalent to US$ 9.2 million over the modeled period (2023/24 – 2026/27). The study findings further indicated that aflatoxin contamination reduces trade and transport margins for the domestic and export markets by 0.035 and 0.345 percent respectively which slows down business activity. Sales to the industrial commodities contract by US$ 15.6 million while sales of food crops decline by US$ 2.2 million. The animal husbandry commodity sales are also consequently affected and decline to a tune of about US$ 8.9 million largely due to the reduced sales to households and to the meat and dairy processing firms. On the other hand, the effects of aflatoxins cause an increase in health sector sales by an additional US$ 1.87 million of largely due to medical purchases by households and government. In addition, the appreciation of the exchange rate combined with the rejection of grains in the export market force a reduction in real exports by 0.51 percent (equivalent to US$ 28 million) in the first period (FY 2023/24). Of this fall in export value, agriculture export accounts for US$ 20.7 million. Within the agriculture exports, maize value export reduces by US$ 2.9 million, sorghum US$ 0.1 million and ground nuts US$ 0.04 million.

In April 2024, the United Grain Millers Association (UGMA) warned of high aflatoxin in Ugandan maize circulating in Kenya and emphasized that unsuspecting maize meal consumers in Kenya could be exposed to high-levels of aflatoxin in maize imports trickling in from Uganda[15]. Their surveillance results indicated worrying trends of aflatoxins in the Ugandan cereals to the tune of over 200 ppb, as opposed to the recommended 10-20 ppb in the COMESA region. The Association Chairman, Kennedy Nyaga said that the millers flagged hundreds of bags of maize consignment from Busia border entry point, with aflatoxins above recommended levels, impugning their business. However, he was worried that after rejecting the Ugandan stock, it will still end up in the local market. The association maintained that its members will not be milling the Ugandan maize.

Despite the several interventions Uganda has put in place, aflatoxin contamination of food and feed still remains a big challenge affecting both health and trade. Thus, more innovative interventions are still needed to combat the problem.

1.3 Scope

The assignment involved analysis of the 2018/19-2023/24 SAPPCA in Uganda, the existing policy, regulatory framework and the financial resources dedicated to aflatoxin prevention and control

[13] Daily Monitor, 30 October, 2023

[14] Feed the Future (FtF), Institutional and Systems Strengthening (ISS) Activity. Study on impact of aflatoxins on Uganda's economy, 2023

[15] https://www.trademarkafrica.com/news/millers-warn-of-high-aflatoxin-in-ugandan-maize-circulating-in-kenya/

to identify the key bottlenecks in the management of aflatoxins in Uganda. The information generated from the analysis will be used to generate evidence-based policy recommendations for sustainable prevention and control of aflatoxins in Uganda's food and feed value chains.

1.4. Objectives

The assignment aimed at developing a policy assessment report on Aflatoxin Control and Management in Uganda using the OPERA framework in order to reveal the extent the 2018/19-2023/24 SAPPCA has been effected in the country. From the Report, a Policy Brief shall be developed to inform Government practical solutions required to control and manage aflatoxins in food and feed value chains in the country.

CHAPTER TWO: APPROACH

2.1 Methodology

A three-day retreat was undertaken in Kampala and the participants were drawn from relevant organizations that included Consumer Education Trust (CONSENT), Farmers' Media Group (FMG), Food Rights Alliance (FRA), The Grain Council of Uganda (TGCU) and Academia. Analysis of the Strategy was performed using the OPERA Framework. The OPERA is a step by step framework for assessing compliance with the obligation to fulfill economic, social and cultural rights.

The facilitator came up with a template that participants followed during the analysis. This contained a series of questions that were answered. In order to stick to the OPERA framework during the analysis of the 2018/19-2023/24 Strategic Action Plan for Prevention and Control of aflatoxin (SAPPCA) in Uganda, the team followed the following procedures;

e) Analysis of the Outcomes: The participants assessed to what extent the outcomes (health, economic, social, and political) outlined in the SAPPCA, have been achieved clearly identifying the outcome, the targets and the current status.

f) Policy analysis: This involved analysis of the Global/International, Continental, Regional and National policy and regulatory frameworks that the government of Uganda has developed, signed or ratified to control aflatoxins since 2018/19 when the SAPPCA was put in place, and whether these have been translated from paper into action. The relevant stakeholders working with government to realize the commitments made were also identified.

g) Analysis of Resource mobilization and budgeting: This involved analysis of budget performance reports from relevant Ministries, Departments and Agencies (MDAs) for the Financial Years from 2018/19 to 2023/24 when the SAPPCA was launched and when it is ending, respectively. This helped the participants to establish whether there were considerations and actions taken for aflatoxin control and prevention. The following budget performing reports were reviewed: Ministry of Finance Planning and Economic Development (MFPED) budget, Ministry of Agriculture Animal Industry and Fisheries (MAAIF) budget, Ministry of Trade Industry and Cooperatives (MTIC), National Agricultural Research Organization (NARO), Ministry of Health (MoH) and Ministry of Education and Sports (MoES). For all these organizations, participants put emphasis on activities done, amount of money used, related activity in the Strategic Action Plan and comments in relation to activities done and aflatoxin prevention and control.

h) Assessment: This involved an assessment of the state party obligations in ensuring the right to adequate food, monitoring and evaluation mechanisms of the SAPPCA to establish the systems put in place to ensure that the Plan is being implemented. The assessment also generated a list of stakeholders involved in the prevention and control of aflatoxins including Private Sector, Civil Society Organisations (CSO), Development Partners, and Research Centres (CGIARs). These are key since the Plan is multisectoral in nature.

The information gathered during the analysis was summarized and presented in a form of text and Tables.

CHAPTER THREE: EMERGING ISSUES FROM THE STRATEGIC PLAN ASSESSMENT

3.1 Human rights-based approach in aflatoxin prevention and control

As normative and legal standards, human rights claim universal validity and concern most spheres of human life including the organization of human society, economic and social means for survival and welfare, norms for cultural activities and interaction, security and integrity, and standards for health and wellbeing among others.[16] Since human rights are standards essential in the structuring of political space, a Human Rights Based Approach to Planning (HRBAP) thus involves setting achievable and ethically chosen goals whose process involves rights holders and duty bearers in participatory decision-making processes. Given the universality, inter-dependency, inter-relatedness and indivisibility of human rights, when a HRBAP is adopted, the process becomes as important as the outcome.[17]

Through a rights-based approach, the transformation of food systems becomes more inclusive and comes with multiple benefits that include the empowerment of vulnerable groups such as women and smallholder farmers out of poverty and related inequalities. It has the potential to improve food supply and distribution, reduce stress on the environment, improve consumer behaviour patterns with minimum food loss and waste, and improve resilience to risks that disrupt the economy.[18]

In the context of aflatoxin prevention and control in particular, food and nutrition programmes should take into account the following principles:

(x) Accountability of duty bearers and all actors involved in aflatoxin prevention and control within the wider context of ensuring food and nutrition security at all levels (household, community and national);
(xi) Responsibility of duty bearers and rights holders to ensure the respect, protection, and fulfilment of all person's right to aflatoxin-free food and feed;
(xii) Participation and community ownership of process, outcome and benefits of the right to adequate food programmes and initiatives;
(xiii) Transparency at all stages of management, policy and financial investments in aflatoxin prevention and control;
(xiv) Democratic Governance based on the rule of law, Constitutionalism, respect of fundamental freedoms, and international human rights law;
(xv) Legislative capacity that provides jurisprudence to all human rights affected by aflatoxin contamination;
(xvi) Independence of the Judiciary arm of the State in aflatoxin prevention and control;
(xvii) Freedom of the press and freedom of speech in reporting on aflatoxin contamination, prevention and control; and,
(xviii) Socio-economic and political empowerment of the vulnerable and hungry poor, especially vulnerable farmers and households in aflatoxin prevention and control.

[16]Andreassen, B, A. (2007). Political Science, Human Rights and the Right to Food Discourse. In: Eide, W.B and Kracht, U. (eds.) *Food and Human Rights in Development*. Volume II; Evolving Issues and Emerging Applications. Antwerpen – Oxford: Intersentia
[17]Jonsson, U. (2003). *Human Rights Approach to Development Planning*. Nairobi: UNICEF.
[18]El Bilali H, Strassner C, & Ben-Hassen T Sustainable agri-food systems: Environment, economy, society, and policy. Sustainability, 13(11), 6260, 2021

A rights-based decision-making process of nutrition-related programmes is described as a cyclical process of: *assessing* the nutrition-related problem; *analysing* its causes; and taking informed *actions* ('triple-A cycle') to address the identified food and nutrition security challenges.[19] It is thus paramount for aflatoxin prevention and control efforts to be evidence-based and revolve around routinely generated evidence and problem analysis from consultative processes that are focused towards informing policy decision and actions.

3.2 Targeted aflatoxin outcomes in aflatoxin prevention and control and the extent to which they were achieved

The OPERA framework was used to assess the extent to which the outcomes (health, economic, social, and political) outlined in the 2018/19 – 2023/24 SAPPCA in Uganda were achieved. The expected outcomes by the end of the implementation period of the SAPPCA are outlined below;

i. Reduced levels of aflatoxins in susceptible foods and feeds
ii. Improved aflatoxin awareness across the entire food and feed system
iii. Reduced impact of aflatoxins on human and animal health
iv. Improved compliance to aflatoxin regulations and standards
v. Aflatoxins prevention and control activities effectively implemented and coordinated

In Table 3 an analysis of the current status of the expected outcomes against targets is presented.

Table 3. Expected outcomes in Strategic Action Plan for Prevention and Control of Aflatoxin and their current status

#	Outcome	Expected target	Current status
1.	Reduced levels of aflatoxins in susceptible foods and feeds	80% of foods and feeds conforming to aflatoxin standards by 2025.	The most recent studies conducted in several parts of the country indicate no significant changes in the levels of aflatoxins in the most vulnerable crops when compared with past studies before the SAPPCA in Uganda 2018/19-2023/24 was mainstreamed into the Agriculture Sector Strategic Plan (ASSP) for the period 2015/2016 to 2019/2020 by MAAIF. A study conducted in the districts of Mubende, Ibanda, Hoima, Jinja, Mayuge, Buikwe, Mpigi, Masindi and Bugiri districts indicated that aflatoxins levels in maize ranged between 3.8-11.0 ppb[20] while another one that focused in pre-harvest maize samples collected from several regions reported aflatoxin levels that ranged from 1.7 to 9 ppb[21]. In addition, the study conducted by Feed the Future Uganda in Eastern, Western and Central Uganda in

[19]Sabatini, F. (2005). Programming with a Human Rights Approach: A UNICEF experience in operational practice. In: Eide, W.B. and Kracht, U. (eds.) *Food and Human Rights in Development*. Volume I. Antwerpen: Intersentia.

[20] Omara, T. (2019). Aflatoxigenic contamination of white maize (Zea mays L.) from some selected Ugandan districts. Peer J PreprintsJournal Preprints, vol. 7, Article ID e27888v1.

[21] Sserumaga, et al., (2020). Aflatoxin-producing fungi associated with pre-harvest maize contamination in Uganda, International Journal of Microbiology, 313:108376. doi: 10.1016/j.ijfoodmicro.2019.108376

			2022 reported that the aflatoxin levels in 56, 55, 27 and 53% of maize, groundnuts, dried cassava chips and sorghum samples were above the UNBS limit of 10 ppb[22]. The same study reported high aflatoxin levels in animal feeds (12-77 ppb) with 45, 25 and 25% of the cattle feeds, broiler starter and layers' mash being above the UNBS limit of 20 ppb. The results of a study conducted in Kampala Capital City peri-urban centres showed that the mean total aflatoxin levels in both maize (27.9 µg/kg) and groundnuts (37.94 µg/kg) were above the minimum regulatory limit[23] (Atukwase et al., 2024). ***The results from the latest studies show that aflatoxin contamination is still rampant in both food and feeds. This could be attributed to the narrow coverage of intervention programs due to budget limitations, variations in environmental conditions due to climate change effects, limited and uncoordinated enforcement and limited awareness among the stakeholders. Thus; the target outcome of 80% of foods and feeds conforming to aflatoxin standards by 2025 is not yet fully achieved based on the findings from the most recent studies conducted around the country. It is estimated that about 30% of the foods and feeds conform to aflatoxin standards.***
2	Improved aflatoxin awareness across the entire food and feed system	All stakeholders aware of aflatoxins and their effects by 2025	After mainstreaming the SAPPCA into ASSP, MAAIF embarked on the development of a Handbook on Aflatoxin Management in Uganda aimed at increasing awareness among stakeholders. The handbook was completed in 2019 was to be mainly used by Extension Workers to sensitize the public about aflatoxins. In the same year, the MAAIF trained over 200 Extension Staff from various districts of Uganda on Postharvest technology of maize, beans and rice. One of the major topics covered was on aflatoxins. In addition to the manuals and training, MAAIF in collaboration with FtF, USAID developed simple-to-understand Information, Education and Communication (IEC) materials in form of

[22] Feed the Future (FtT) Uganda Agriculture Research Activity (2022). Survey Report on Aflatoxin Prevalence and Incidence in Uganda, December, 2022

[23] Atukwase, et al. (2024). Aflatoxin exposure and risk assessment among peri-urban low income population in Kampala Capital City, Uganda. Measurement: Food, 13, 100122.

			posters/booklets. These materials were translated into the major local languages and were supposed to be distributed across the country. Other efforts such as radio and TV programs have been organised by civil society organisations to sensitize the public about aflatoxins. Most recently, JAAC was launched by FRA in collaboration with the National Aflatoxin Technical Working Group (NATWG) and FtF Uganda ISS Activity. The JAAC has two objectives namely; i. Increasing awareness among key actors along the food value chain about the significance of managing Aflatoxin across the value chain. ii. Establishing a robust network for multi-sectoral collaboration and advocacy to combat aflatoxin contamination in Uganda. ***Overall, MAAIF, private sector and civil society organisations have over the course of SAPPCA implemented many activities that have increased awareness among the key stakeholders. However, the IEC materials and the Extension workers have not reached all the targeted beneficiaries due to limited resources. It is estimated that about 40% of the stakeholders in Uganda are aware of the aflatoxins and their effects.***
3.	Reduced impact of aflatoxins on human and animal health.	20% reduction in the prevalence of aflatoxin related illnesses by 2025	It has been observed that there is no published public health reports on aflatoxin related illnesses from 2019-2024 for Uganda. Whereas there are no attribution studies, there is a notable increase in liver cancer cases, which could be attributed to increased aflatoxin contamination. According to the Global Cancer Observatory[24], 1,963 new cases of liver cancer were recorded in Uganda in 2022, accounting for 5.5% of all new cancer cases. Overall, liver cancer was ranked number 7 in morbidity and number 4 in mortality in 2022, indicating that majority of the liver cancer cases do not recover from the disease. Data obtained from the from the Cancer Registry at the Uganda Cancer Institute in 2023, showed that liver cancer incidence stands at 11% with an incidence (new

[24] https://gco.iarc.who.int/media/globocan/factsheets/populations/800-uganda-fact-sheet.pdf

			cases) rate of 5.3%. This data from the cancer institute agrees with that from Global Cancer Observatory. In a 5 year study (2017–2021) conducted in Arua Hospital, the commonest cancer observed in Arua liver cancer at an incidence rate of 13.7%, irrespective of sex and age[25]. The situation may not be different in other parts of the country since diets of most Ugandans are dominated by maize bread (*Posho*), sorghum *Kalo* which is made using sorghum flour and dried cassava and groundnuts sauce. No official information has been recorded regarding the health impact of aflatoxins in animal health. However, reports of deaths and reduced productivity in poultry, cattle and piggery have been on the rise. Several pets (dogs, cats) have also been reported dead after consuming food that was suspected to be contaminated with aflatoxins. ***Given the liver cancer incidence data obtained from both national and regional data bases, it's clear that cancer cases and other aflatoxin related illnesses in both human and animals are on increase. Therefore, the expected target of 20% reduction in the prevalence of aflatoxin related illnesses by 2025 is not yet achieved.***
4	Improved compliance to aflatoxin regulations and standards	At least 80% of stakeholders adhering to aflatoxin regulations	The National Standards and Quality Policy, 2012 is in force and requires all grain milling companies to be registered and certified; thus complying with grain quality standards. Post Covid-19 pandemic interventions saw over 9,000 millers certified. However, according to the information obtained from the UNBS website, the number of certified millers with valid certificates has since reduced to 4,930, implying that close to half of the certified millers run out of business or are operating under cover. The information from the UNBS Product Certification scheme as of 2024 indicated that there were only 4 certified animal feed millers and only one had a valid permit. Beyond the numbers, Uganda has several unregistered grain millers, scattered across the country whose operations are not regulated. As

[25] Angucia et al., (2024). Cancer patterns in Arua district, Uganda: a hospital-based retrospective study, ecancer 18 1688

			result of a weak regulatory framework, Kenya rejected 600,000 metric tonnes of Ugandan maize in 2018, just after the launch of the SAPPCA. In 2023, over 40 metric tonnes of maize was rejected in South- Sudan. Information from Bank of Uganda statistics further indicates that export volumes for maize, sorghum and groundnuts have been decreasing since 2018/2019 financial year[26] (FtF, 2023 unpublished). The decline in exports could be attributed to failure of the produce to comply with aflatoxin standards. ***The export rejections are a clear testimony that not much progress has been made in ensuring compliance to national and regional standards. Thus, the target of at least 80% of Stakeholders adhering to aflatoxin regulations was not met. It is estimated that 40% of stakeholders are adhering to aflatoxin regulations.***
5	Stakeholders are mitigating aflatoxins harmful effects in a harmonized manner	All aflatoxins mitigation interventions are well coordinated and monitored by 2022	The responsibility of coordinating aflatoxin mitigation activities was to be spearheaded by the Uganda Mycotoxin Mitigation Steering Committee (UMMSC) and the NATWG which have been dormant due to lack of resources. In addition, PACA, a regional outfit that was based at the AUCs' headquarters in Addis Ababa, Ethiopia, was supposed to continue supporting coordination activities in collaboration with MAAIF, MTIC and MoH. PACA later transformed itself into the African Food Safety Agency and its activities reduced in Uganda. As a result, the responsibility of coordinating aflatoxin issues has mainly been left to MAAIF and with limited funds to support the coordination activity. ***As result, there is limited coordination of stakeholders that are working towards mitigation of aflatoxins. Even among the key government ministries of Health, Agriculture and Trade, no clear coordination mechanisms exist. Thus, the target of aflatoxins mitigation interventions being well coordinated and monitored by 2022 was not met and the report cannot score the achievement at all.***

[26] Feed the Future (FtF), Institutional and Systems Strengthening (ISS) Activity. Study on impact of aflatoxins on Uganda's economy, 2023

3.3 Policy efforts and regulatory frameworks for aflatoxin prevention and control in Uganda

The government of Uganda has approved and ratified several national, regional and international regulatory, policy and institutional frameworks related to aflatoxin management as outlined in the Table 4. A number of stakeholders have also been involved in implementing these frameworks to either directly or indirectly manage aflatoxins.

Table 4. National, Regional and Global Policy efforts and regulatory frameworks for aflatoxin prevention and control in Uganda

Policies/Regulatory/Institutional frameworks	**Commitments made**	**The extent to which commitments have been translated into reality**	**Stakeholders working with government to realize the commitments made**
National policies and institutional frameworks			
Vision 2040	The overarching government development policy	Food safety and quality assurance recognized in Vision 2040 as a core strategy for increasing competitiveness in food trade and enhanced economic development. However, there is no specific mention of aflatoxin	Development partners Civil Society Organisations Private Sector partners
National Development Plan (NDPIII)	The programme indicated that Over the next five years, Uganda needs to focus on addressing the challenge of low labour productivity in the country, by improving population health and safety. In addition, the Agro-industrialisation Programme Objective 3, emphasizes weaknesses in prevention of non-tariff barriers in regional markets	Food safety emphasized under the agro-industrialization programme. Efforts made on quality assurance of priority cash crops such as coffee and cocoa, with limited investments in priority food crops like maize. Most of the interventions in agro-industrialization around postharvest handling have focused on value addition with limited emphasis for food handling at production, primary processing and storage and distribution, where foods are more susceptible to aflatoxin contamination	Development partners Civil Society Organisations Private Sector partners
Parish Development Model (PDM)	Pillar 1: Is on production, processing and marketing	Whereas PDM Pillar 1 is emphatic on safety and postharvest handling, current implementation is on pillar 3, Financial inclusion	Private sector including farmers and traders; Local Council

Policies/Regulatory/Institutional frameworks	Commitments made	The extent to which commitments have been translated into reality	Stakeholders working with government to realize the commitments made
Uganda Nutrition Action Plan II (UNAP II) 2020/21-2024/25	Emphasizes food safety as one of the underlying determinants of nutritional status. Under section 2.3.5.1 Factors affecting food security in Uganda, the Plan mentions low food safety and clearly puts it that "The enforcement of standards on food handling and hygiene is limited, leading to unsafe food production, processing, packaging, marketing, sale and consumption practices and that at the production level, food is contaminated by chemicals and aflatoxins"	Under objective 2, strategy 2.2, the Plan proposes 2 actions: 1. Support investment in technologies and infrastructure development for food safety along the agricultural value chain and 2. Establish and operationalize a functional food safety index-tracking system along the agricultural value chains Possibly aflatoxins could be addressed here.	Development partners Civil Society Organisations Private Sector partners
National Agriculture Policy 2013	Under objective 3, the Policy indicates the need to establish and enforce safety standards and quality assurance to ensure that agricultural products from Uganda compete effectively in domestic, regional and international markets.	No mention of aflatoxin management. Ugandan produce are still being rejected at regional and international markets.	Development partners Civil Society Organisations Private Sector partners
National Grain Trade Policy 2015	Clearly indicates the potential for high infestation of grains with aflatoxins in the country	The Policy vows to enhance value addition, establishment of storage reserves and Promoting bulk handling and marketing of Grains all which require aflatoxin control although this is not mentioned.	Development partners Civil Society Organisations Private Sector partners
2nd National Health Policy 2010	The safety mentioned has nothing to do with food	No commitment at all; the policy is quite old and requires review.	Development partners

Policies/Regulatory/Institutional frameworks	Commitments made	The extent to which commitments have been translated into reality	Stakeholders working with government to realize the commitments made
			Civil Society Organisations Private Sector partners
National Agriculture Extension Policy (2016)	Food safety is only mentioned in relation to working with the Ministry of Health. However, under strategies, the policy mentions that MAAIF will collaborate with academic institutions to periodically reorient the curriculum and delivery methods at universities, vocational institutes and agricultural training institutions to focus on the practical and strategic needs of the agricultural extension services	Refresher courses for extension workers have been organized by MAAIF and these include aflatoxin management	Development partners Civil Society Organisations Private Sector partners
The National Food and Nutrition Policy 2003	One of the strategies is to continuously monitor and document food safety, food quality and related activities	The policy is under review and hopefully, aflatoxin management will feature in the new policy	Development partners Civil Society Organisations Private Sector partners
National Standards and Quality Policy 2012	Emphasizes that one of the threats is that as Uganda seeks to expand and further diversify its exports, it is increasingly faced with more stringent private standards especially those related to food safety	The policy strives for quality, safety and competitiveness of goods and services	Development partners Civil Society Organisations Private Sector partners
National Trade Policy 2007	One of the policy actions is to Develop and implement a National	No mention of food safety and no commitment. The policy is old and requires review.	Development partners

Policies/Regulatory/Institutional frameworks	Commitments made	The extent to which commitments have been translated into reality	Stakeholders working with government to realize the commitments made
	Sanitary and Phytosanitary Measures Policy so as to protect plant, animal or human health and life		Civil Society Organisations Private Sector partners
Micro, small and medium- sized enterprises (MSMEs) Policy 2015	The policy aims to ensure Sustainable MSMEs for wealth creation and socio-Economic transformation	Whereas majority of food and feed handlers belong to this category, there are no food safety issues mentioned in the policy	Development partners Civil Society Organisations Private Sector partners
National Seed Policy 2018	Aims to ensure a competitive, profitable and sustainable seed sub-sector where farmers and all seed users have access to affordable quality	No commitment to aflatoxin management. Challenge of fake seeds of poor quality still rampant on Ugandan market.	Development partners Civil Society Organisations Private Sector partners
National Sanitary and Phytosanitary (SPS) Policy 2011 (draft)	Emphasizes presence of weak monitoring and surveillance systems for animal health, crop and food safety	The policy is still in draft form for over 10 years now. It needs to be finalized to include issues of aflatoxin as one of the risk factors to be managed by efficient sanitary and phytosanitary measures	Development partners Civil Society Organisations Private Sector partners
National regulatory framework			
The Constitution of The Republic of Uganda (As amended) (1995)	Under objective XXII (Food and nutrition security) the constitution provides that the *State shall encourage and promote proper nutrition through mass education and other appropriate means in order to build a healthy State*	The government has come up with a number of policies and strategies to address food security and nutrition such as UNAP, NDP III and, SUN among others. However, there are still challenges associated with accessing adequate food in several parts of the country and the nutrition outcomes are not yet to expected levels.	Development partners Civil Society Organisations Private Sector partners
Food and Drug Act (1964)	The Food and Drug Act (1964) is the main law that governs food safety issues in Uganda. However, it does not adequately address contemporary food safety challenges	There is inadequate enforcement of the laws due to the overlapping mandates of the different MDAs and limited capacity in terms of human and financial resources at NDA	Development partners Civil Society Organisations Private Sector partners

Policies/Regulatory/Institutional frameworks	Commitments made	The extent to which commitments have been translated into reality	Stakeholders working with government to realize the commitments made
	such as mycotoxin contamination	Efforts are ongoing to create a Food and Agriculture Regulatory Authority that is expected to streamline and strengthen food regulation	
Public Health Act (Amendment) (2023)	This is the law in force that empowers health workers to carry out inspections of public eating places to ensure health, hygiene and safety of the workers and clients. Has a provision for food borne disease where aflatoxins fall	Mainly focuses on inspection of food establishments and personnel. It is silent on non-communicable diseases such cancer	Development partners Civil Society Organisations Private Sector partners
Uganda National Bureau of Standards Act (1983)	The Act mandates the UNBS to formulate and enforce national standard specifications for commodities and codes of practice	UNBS has developed standards for aflatoxins in food and feed and all these have been harmonised at EAC level However, enforcement of standards has been weak	Development partners Civil Society Organisations Private Sector partners
Dairy Industry Act (2000)	The Authority is charged with inspection of raw-milk and milk products to ensure compliance to national standards Aflatoxin M1 is one of the parameters monitored in raw and processed milk	DDA does routine monitoring of milk and milk products and has mobile testing units and kits for monitoring aflatoxin M1	Development partners Civil Society Organisations Private Sector partners
Plant Protection and Health Act 2015	The Act consolidates the law relating to protection of plants against diseases and pests which may predispose the crops to fungal infection and mycotoxin contamination	Enforcement is inadequate	Development partners Civil Society Organisations Private Sector partners

Policies/Regulatory/Institutional frameworks	Commitments made	The extent to which commitments have been translated into reality	Stakeholders working with government to realize the commitments made
Fisheries and Aquaculture Act (2022)	The law regulates the conservation, management, development and sustainable use of Fisheries and Aquaculture resources to guarantee quality and safety of fish and fish products	The aquaculture sub-sector is affected by the high aflatoxin levels in the feeds There is limited enforcement of aflatoxin standards in fish feeds	Development partners Civil Society Organisations Private Sector partners
Animal Disease Act (1964)	The Act is in enforcement and focuses on animal health	The Act is old and has not been revised since 1964 Does not include the effects of mycotoxins on animal health	Development partners Civil Society Organisations Private Sector partners
The Animal Feeds Act 2024	Act provides for the establishment and composition of the Animal Feeds Committee; to provide for the regulation of the production, importation, storage, exportation end sell of animal feeds; to provide for the packaging and labeling of animal feeds; to provide for animal feeds inspectors and animal feeds analysts; and for related matters.	It is a new Act which if properly enforced, will address issues of aflatoxins I animal feeds.	Development partners Civil Society Organisations Private Sector partners
Uganda National Council of Science and Technology Act (1990)	Mandated to support and approve research undertaken in the country including aflatoxin research	They have supported and approved several research on aflatoxin in Uganda	Development partners Civil Society Organisations Private Sector partners
NARO Act (1992)	They are mandated to conduct research, develop and disseminate technologies in the	Has supported research on aflatoxin management in food and feed such as development of aflasafe	Development partners Civil Society Organisations

Policies/Regulatory/Institutional frameworks	Commitments made	The extent to which commitments have been translated into reality	Stakeholders working with government to realize the commitments made
	country including aflatoxin research	and local aflatoxin binders in animal feeds	Private Sector partners
Agriculture Seeds and Plant Act (2006)	The Act provides for the promotion, regulation and control of variety release, multiplication, conditioning, marketing, importing and quality assurance of seeds and planting materials.	Limited enforcement hence existence of counterfeit and poor quality seeds on the Uganda markets	Development partners Civil Society Organisations Private Sector partners
Export Promotion Board Act (1996)	The board is charged with facilitating the development, promotion and coordination of all export-related activities that lead to export growth on a sustainable basis.	Not active since Uganda still faces export rejections for aflatoxin susceptible produce This could also be related to the overlaps in the mandates of MDAs	Development partners Civil Society Organisations Private Sector partners
Agricultural Chemicals (Control) Act (2006)	An Act to control and regulate the manufacture, storage, distribution and trade in, use, importation and exportation of agricultural chemicals and for other related matters.	Limited enforcement hence existence of counterfeit and poor quality chemicals on the Uganda markets Wide misuse of agricultural chemicals	Development partners Civil Society Organisations Private Sector partners
NEMA Act (2019)	Provides for sustainable management of the environment including management of agricultural practices.	Management of agricultural practices could contribute to aflatoxin environment.	Development partners Civil Society Organisations Private Sector partners
District ordinances supporting aflatoxin prevention and control in some districts	Nakaseke (maize), Lira (simsim/sesame), Mubende (maize) Developed to enforce quality and safety of dried produce	Delays in enactment due to requirements of approval by the solicitor general. Limited support from the central government in form of human resource, finance and enforcement	Civil Society Organisations, Local Government
Regional and international policies and regulatory framework			

Policies/Regulatory/Institutional frameworks	**Commitments made**	**The extent to which commitments have been translated into reality**	**Stakeholders working with government to realize the commitments made**
Codex Alimentarius Commission (CODEX) (Global)	Uganda is signatory since 1964, committed to protect the health of its population. Codex standards and related texts contain requirements for food aimed at ensuring for the consumer a safe, wholesome food product free from adulteration, correctly labelled and presented.	UNBS is a member and the National Contact point for the FAO/WHO Codex Alimentarius Commission international Food Standards. Uganda has adapted Codex standards (standards for aflatoxin inclusive) -Established technical committees -Published standards aligned to Codex in the National Standard Catalogue	Private sector: Food businesses Farmers Academia Researchers Non-state actors Consumers, *MDAs/Local govts*
ISO	Uganda is signatory to ISO ISO's food standards benefit producers and manufacturers, regulators and retailers and, most important of all, the consumers.	UNBS is a member of the International organization for Standardization (ISO); Adapted all ISO test methods including aflatoxins Established technical committees Published the test methods in the national standard catalogue	Private sector: Food business, Farmers Academia Research Non-state actors Consumers MDAs/Local governments
CAADP Commitments	Uganda is signatory to the CAADP commitments on food safety	UNBS is a member of the Uganda reports annually Uganda on track for post-harvest handling (Performance on safety)	Private sector: Food business, Farmers Academia Research Non-state actors Consumers *MDAs/Local govts*
African Union Commission (AUC)	Uganda is signatory to AU. Sanitary and Phytosanitary (SPS) Policy Framework for Africa October 2019	Draft SPS Policy Sanitary and Phytosanitary (SPS) measures are actions taken to protect human health through the protection and enhancement of	Private sector: Food business, Farmers Academia Research

Policies/Regulatory/Institutional frameworks	Commitments made	The extent to which commitments have been translated into reality	Stakeholders working with government to realize the commitments made
	To address some of the health and trade challenges faced by Africa, the African Union Commission (AUC) made a presentation to AU Member States' Ministers during their Second Ordinary Session of the Specialized Technical Committee (STC) on Agriculture, Rural Development, Water and Environment of October 2017. The presentation underscored the negative effects that mycotoxins, Metals and other contaminants pose on human and animal health and constituted a proposal to establish a Continental Food Safety Reference Laboratory. The Ministers endorsed the proposal and requested the AUC to develop a continental Sanitary and Phytosanitary (SPS) Policy Framework to facilitate harmonization of AU Member States' SPS policy in general and to inform the establishment of the Pan African Food Safety Laboratory in particular.	health and safety of plants and animals. Sanitary or Phytosanitary measures include all relevant laws, decrees, regulations, requirements and procedures including, inter alia, end product criteria; processes and production methods; testing, inspection, certification and approval procedures; provisions on relevant statistical methods, sampling procedures and methods of risk assessment; and packaging and labeling requirements directly related to food safety. 2. Government has over the past years formulated policies aimed at protecting the lives and health of humans, animals and plants; and improving the competitiveness of Uganda's products. Such policies include the Food and Nutrition Policy, National (2003) Animal Feeds Policy (2005) National Meat Policy 2003 National Trade Policy (2008), National Health Policy, (2009) National Drug Policy and Act (1993), and the National Agricultural Research System (NARS) among others. The National Development Plan III – Agro-Indus rationalization measures as being key for competitiveness as well as boosting the health of the population. In addition to the National Policies related to SPS, Uganda is a member of a number of international	Non-state actors Consumers *MDAs/Local Governments*

Policies/Regulatory/Institutional frameworks	Commitments made	The extent to which commitments have been translated into reality	Stakeholders working with government to realize the commitments made
		organizations such as the World Trade Organization (WTO), International Plant Protection Convention (IPPC), and the World Animal Health Organization (WAHO), FAO/WHO Codex Alimentarius Commission for Food Safety; whose activities relate to SPS. Under these Organizations, Uganda is obliged to comply with certain minimum SPS requirements, especially while engaging in international trade.	
ARSO PC 02 cassava value chain ARSO TC Cereals, pulses, legumes and related products	Uganda is signatory since 1977 The African Organisation for Standardisation (ARSO) is Africa's intergovernmental standards body formed by OAU (currently AU) and UNECA in 1977 in Accra Ghana. The fundamental mandate of ARSO is to develop tools for standards development, standards harmonization and implementation of these systems to enhance Africa's internal trading capacity, increased Africas product and service competitiveness globally, and uplift of the welfare of African consumers as well as standardization forum for future prospects in	UNBS is a member of the African Regional Organization for Standardization (ARSO) Technical committees established to ARSO in the cassava and cereals	Private sector: Food business, Farmers Academia Research Non-state actors Consumers *MDAs/Local govts*

Policies/Regulatory/Institutional frameworks	Commitments made	The extent to which commitments have been translated into reality	Stakeholders working with government to realize the commitments made
	international trade referencing.		
WTO	Uganda is signatory since 1st January 1995 Sanitary and phytosanitary measures to country's consumers are being supplied with food that is safe to eat — "safe" by the standards you consider appropriate? And how can you ensure that strict health and safety regulations are not being used as an excuse for protecting domestic producers? The Agreement on the Application of Sanitary and Phytosanitary Measures sets out the basic rules on food safety and animal and plant health standards that governments are required to follow. Together with the Technical Barriers to Trade Agreement, it seeks to identify how to meet the need to apply standards while avoiding disguised protectionism.	Food and feed standards are developed and are in the National Standards catalog UNBS is the National Enquiry Point for the WTO TBT agreement.	Private sector: Food business, Farmers Academia Research Non-state actors Consumers *MDAs/Local govts*
International Convention on Economic, Social and Cultural Rights AU People's Right	Uganda as a signatory and ratified it in 1987 Uganda as signatory	Institutions, frameworks and committees.	Private sector: Food business, Farmers Academia Research Non-state actors

Policies/Regulatory/Institutional frameworks	Commitments made	The extent to which commitments have been translated into reality	Stakeholders working with government to realize the commitments made
			Consumers
Africa Continental free trade area agreement	Uganda as signatory to the African Continental Free Trade Area (AfCFTA) The AfCFTA creates a single continental market for goods and services in Africa. It further aims to reduce trading problems such as different regulations from one African country to another.	Food and feed standards are developed and are in the National Standards catalog	Private sector: Food business, Farmers Academia Research Non-state actors Consumers
COMESA	Uganda is signatory to the COMESA Agreement signed 28-12-1994 Enforcement 17-02-1999 The COMESA Agreement was initiated as a preferential trade zone with the eventual aim of establishing a free trade area among member countries. The agreement later developed into a customs union and then a common market COMESA launched its customs union in June 2009; aiming to reduce and unify external tariffs Initiated as a preferential trade zone with the eventual aim of establishing a free trade area among member countries. The agreement	COMESA has supported trainings in SPS and proficiency testing COMESA Competition Regulations Part 5: Consumer Protection (c) Unsafe or defective goods in the market in accordance with articles 31/32 of the regulations, which prohibit persons in trade or commerce from supplying goods which do not comply to prescribed consumer product safety and product information standards.	Private sector: Food business, Farmers Academia Research Non-state actors Consumers

Policies/Regulatory/Institutional frameworks	Commitments made	The extent to which commitments have been translated into reality	Stakeholders working with government to realize the commitments made
	later. developed into a customs union		
African Union – Inter African Bureau for Animal Resources (AU-IBAR)	Uganda is signatory, founded in 1951 to study the epidemiological situation and fight rinderpest in Africa, AU-IBAR's mandate covers all aspects of animal resources, including livestock, fisheries and wildlife, across the entire African continent.	MAAIF and UNBS are members of respective established technical committees.	Private sector: Food business, Farmers Academia Research Non-state actors Consumers
Intergovernmental Authority for Development (IGAD)	The central strategic role of IGAD is to promote regional cooperation and integration among its member states with the aim of improving the welfare of all citizens. To achieve this, IGAD works through the two programme areas of trade, industry and tourism, and infrastructure development.		Private sector: Food business, Farmers Academia Research Non-state actors Consumers
East African Community (EAC) East African Standards Committee	Chapter Thirteen Co-operation in Standardisation, Quality Assurance, Metrology and Testing Article 81 Standardisation, Quality Assurance, Metrology and Testing 1. The Partner States agree that standardisation, quality assurance, metrology and testing can facilitate sustainable	East African Standards Committee (EASC). UNBS is a member of the UNBS is also the National Contact point for the FAO/WHO Codex Alimentarius Commission international Food Standards. Uganda has adapted codex standards (standards for aflatoxin) -Established technical committees	Private sector: Food business, Farmers Academia Research Non-state actors Consumers

Policies/Regulatory/Institutional frameworks	Commitments made	The extent to which commitments have been translated into reality	Stakeholders working with government to realize the commitments made
	modernisation in the Community. 2. The Partner States also recognise the significance of standardisation, quality assurance, metrology and testing in the enhancement of the standard of living, reduction of unnecessary variety of products, the facilitation of interchangeability of products, the promotion of trade and investment, consumer protection, the enhancement of savings in public and private purchasing, improved productivity, the facilitation of information exchange, the promotion of health as well as the protection of life, property, and the environment. 3. The Partner States undertake to evolve and apply a common policy for the standardization, quality assurance, metrology and testing of goods and services produced and traded within the Community. 4. The Partner States agree to conclude a protocol on Standardization, Quality Assurance, Metrology and	-Published standards aligned to codex in the national standard catalogue	

Policies/Regulatory/Institutional frameworks	Commitments made	The extent to which commitments have been translated into reality	Stakeholders working with government to realize the commitments made
	Testing for the goods and services produced and traded in the Community.		

The analysis of policy, regulatory and institutional frameworks has established that six (6) relevant national policies and laws (UNAPII 2020/21-2024/25, National Seed Policy 2018, Plant Health Act (amended 2023), Fisheries and Aquaculture Act (2022), NEMA Act (2019) and Animal Feeds Act 2024) have been established since the 2018/19-2023/24 SAPPCA was launched. None of these directly included aflatoxin control and management. The other policies and regulations have generally been observed to be more than 5 years old and not effectively aligned to the national development plan and issues on aflatoxin control in the country. Key strategies supporting food safety and quality have also expired. In addition, majority of the laws and policies are not adequately enforced and implemented, leading to low levels of compliance, presence of counterfeits, poor quality foods and increasing levels of rejections at the regional and international markets due to aflatoxin contamination. This implies that the food control system in Uganda has not adequately addressed activities included in the 2018/19-2023/24 SAPPCA.

The analysis has further revealed that Uganda as a country is signatory to a number of regional, continental and global regulatory frameworks. However, majority of these are in form of standards and, Uganda as a country is signatory especially through UNBS. There are several committees established to ensure that relevant draft food and feed standards are developed, publicized for public review and confirmed. Whereas the country has adopted and harmonized most of the aflatoxin-related standards for foods and feed across the EAC region and beyond, enforcement of these standards is still a major challenge in the country, contributing to non-compliance and high rejection levels at regional and international markets.

3.4 Resources allocated to aflatoxin prevention and control

The analysis of resources focused on the implementation period for the SAPPCA (2018/19-2023/24). It was noted that despite the mainstreaming of the SAPPCA into the MAAIF's ASSP in 2018, there were no deliberate efforts to provide a budget for its implementation. A review of SAPPACA indicated that a total budget of USD 33,877,000 had been proposed to facilitate its full implementation over the five year period. The budget was spread over 5 thematic themes namely;

i. Effective aflatoxin management in agricultural value chains (USD 18,241,000)
ii. Public awareness and advocacy (USD 9,265,000)
iii. Public health management (USD 5,113,000)
iv. Policy and legislation (USD 320,000)
v. Effective Coordination; monitoring and evaluation (USD 938,000)

A review of the national budget for the fiscal years 2019/2020-2023/2024 indicated that there were no specific budgets allocated to implementation of SAPPCA in line with its thematic areas.

While a number of activities that are related to prevention and control of aflatoxins were undertaken by the key Ministries of Agriculture, Health and Trade, the amount of money allocated to such activities could not be easily calculated since the budget performance reports focused on outputs that were not aligned to SAPPACA. Some of the funds spent on activities related to aflatoxin prevention and control over the 5 year period by relevant ministries are summarised in Table 5.

Table 5. Expenditures related to aflatoxin control and prevention since launching of the 2018/19 Strategy

#	Activity linked to aflatoxin prevention and control	Ministry	FY	Amount (UgX, billion)	Notes
1.	Coordinated the training of 15 millers by the Uganda National Bureau of Standards (UNBS) in the 4 Hubs to enable them improve the standard of their oil	MAAIF	2019/2020	0.135	The activities have potential to reduce aflatoxin contamination
2.	Developed technologies of commodity value chains of rice, maize and beans	MAAIF	2019/2020	0.029	
3.	Conducted training of value chain actors in Agribusiness skills, value addition and post-harvest management in Western and Eastern Uganda	MAAIF	2019/2020	0.045	
4.	Identified and sensitized the critical players in the seed extension services and value addition in the maize, and rice value chains across 25 districts	MAAIF	2019/2020	0.152	
5.	Conducted capacity building of value chain actors in quality standards, business development services, market linkages in maize, soybean and rice producing districts	MAAIF	2019/2020	0.078	
6.	Improved post-harvest handling practices of priority commodities (Maize and Beans) promoted.	MAAIF	2019/2020	0.03	
7.	Trained farmers on agronomic practices of the five selected crops (sorghum, maize, cassava, millet, sweet potatoes)	MAAIF	2019/2020	0.012	
8.	2 Clay based anti-aflatoxin formulae identified for pre-treatment of maize bran-based feeds.	MAAIF	2019/2020	0.293	This is a technology for the management of aflatoxins in feeds
9.	Develop standard operating procedures (SOPs) for aflatoxin management at farm level	MAAIF	2020/2021	12.67	

10.	Develop training manuals	MAAIF	2020/2021	0.029	To improve post-harvest handling practices at the primary production level
11.	Training extension workers in recommended agricultural practices that minimizes aflatoxin contaminations at the farm level	MAAIF	2020/2021	0.45	
12.	Training of farmers in aflatoxin management practices (both pre-and postharvest practices)	MAAIF	2020/2021	0.96	
13.	Support NARs in conducting applied research	MAAIF	2020/2021	0.15	Provide evidence on the magnitude of the problem to inform decision-making
14.	Develop and disseminate advocacy materials that promotes the Integration of aflatoxin control in local governments' policies, plans and budgets	MAAIF	2020/2021	0.082	Increase advocacy and communication on aflatoxin prevention and control
15.	Develop ordinances governing the production and post-harvest handling of groundnuts, maize cassava, rice, beans and sorghum at local government levels	MAAIF	2020/2021	0.098	Strengthen legal and regulatory environment at sub-national level
16.	Train 15 Laboratory scientists and 15 technicians in the analysis of food and feed for aflatoxin contamination	MAAIF	2020/2021	3.833	Improving food control system capacity
17.	Procure 5 VICAM and consumables for aflatoxins analysis in the MAAIF Laboratory	MAAIF	2020/2021	4.04	
18.	Strengthen coordination of aflatoxin control services amongst the different institutions	MAAIF	2020/2021	0.288	Improved harmonized and coordinated approaches to aflatoxin prevention and control
19.	Conduct a ToT of 600 leaders of cooperatives and (traders, transporters and processors) and district technical officers on matters of international food safety quality requirements and compliance	MTIC	2020/2021	2.231	Improve capacity for aflatoxin prevention and control

20.	Support farmers to acquire postharvest handling and processing equipment namely; shellers, mills, hullers, threshers, sorters, weighing scales, and moisture meters for cassava, maize, beans, rice and coffee	MAAIF	2021/2022	2.37	Though the activities are not directly linked to aflatoxin control, improved postharvest handling leads to reduced aflatoxin contamination
21.	Support to farmer organizations to construct storage facilities and procure value addition equipment	MAAIF	2021/2022	10.1	
22.	Review and submission of the Animal Feeds Bill and Veterinary Practioners Bill to MFPED for a certificate of Financial Implication Meetings to discuss the draft inventory of standards for Livestock Commodities which is in conformity with bi-lateral international standards and international specialization market demands Meetings to discuss the Draft National Food Safety Policy with different stakeholders	MAAIF	2021/2022	0.2	The Feed Bill was enacted into law in May 2024 and will be key in enforcement of aflatoxin standards and animal feeds Aflatoxin is among the regulated contaminants and a food safety issue covered in the standards and policies discussed
23.	Procured a mobile laboratory van for DDA	MAAIF	2021/2022	0.776	The mobile van has provision for testing aflatoxins
24.	Trained Agriculture Extension Workers in better agronomic practices	MAAIF		0.56	The money spent covered other crops other than those susceptible to aflatoxin contamination
25.	Provided guidance to factory operators/store managers on management of storage pests in selected grain and pulse growing districts	MAAIF	2021/2022	0.195	
26.	Stakeholders consultation on the draft Consumer Protection Bill	MTIC	2021/2022	0.02	The interventions supported have potential to address aflatoxin issues

27.	Updated NGTPIS (2022-2026) to include policy briefs and a GANTT chart of activities with costs to address low production and productivity, poor post-harvest handling, inadequate storage facilities, limited value addition, weak regulatory framework and quality Standards.	MTIC	2021/2022	0.0044	Interventions supported have potential to address aflatoxin issues
28.	Integrated Cancer and Radiology Diagnosis support supervision conducted in 4 Health Regions of Fort Portal, Hoima, Jinja, and Soroti.	MOH	2021/2022	0.178	The activity could have covered liver cancer as well
29.	Supervised the implementation of the National Sanitary and Phytosanitary policy	MAAIF	2022/2023	0.395	SPS activities contribute to improved crop health and reduction in aflatoxin contamination
30.	Developed a draft National Post Harvest Handling and Food Safety bills	MAAIF	2022/2023	0.695	If passed into law, such bills provide a legal framework for enforcement of existing standards
31.	Supported farmers to acquire postharvest handling and processing equipment namely; shellers, mills, hullers, threshers, sorters, weighing scales, and moisture meters for cassava, maize, beans, rice and coffee.	MAAIF	2022/2023	3.833	Activities implemented have potential to reduce aflatoxin contamination
32.	Supported 149 farmer organizations to construct storage facilities	MAAIF	2022/2023	10.1	
33.	Post-harvest handling capacity gaps & required primary processing equipment identified among 120 farmer associations from 40 districts distributed across 10 sub- regions	MAAIF	2022/2023	0.549	
34.	Training of Agricultural Inspectors and farmers on aflatoxin management	MAAIF	2022/2023	1.55	

35.	Increase market access and competitiveness of agricultural products in domestic and international market	MAAIF	2022/2023	1.096	
36.	Dissemination of the Aflatoxin action plan 2018-2023	MAAIF	2023/2024	0.007	
37.	Conducted Surveillance for crop storage pests and guidance of maize, beans bananas citrus, mangoes and cassava on control provided in 20 major grain-growing districts from all regions.	MAAIF	2023/2024	0.016	
38.	Conducted capacity building of 17 Extension workers on harvesting, post-harvest handling, primary processing, storage, and safety technologies including the use of Hermetic Bags, Pics bags, Silos, and Dryers	MAAIF	2023/2024	0.005	
39.	Procurement of assorted aflasafe research equipment	NARO	2023/2024	0.755	

3.5 Assessment

3.5.1 State party obligations in ensuring the right to adequate food

The human right to adequate food has the potential to profoundly influence every aspect of human existence.[27] When food systems function well, they have the power to unite families, communities and nations. When they fail, the resulting disorder threatens education, health, peace, and security.[28]

Every State Party to the International Covenant on Economic, Social and Cultural Rights (ICESCR), pledges in Article 2.1 and 2.2 to 'undertake steps to the maximum of its available resources, and devoid of any kind of discrimination, with a view of achieving progressively the full realization of all ESCR'. State Party Obligations[29] vary and are thus categorised in relation to respect, protect, and fulfill the human right to adequate food:

(i) The obligation of respect requires the States Parties to refrain from interfering directly or indirectly with the enjoyment of the human right to adequate food and other associated economic, social and cultural rights;

(ii) The obligation of protect requires States Parties to undertake measures that prevent third parties from interfering with the enjoyment of the human right to adequate food and associated economic, social and cultural rights; and,

(iii) The obligation obliges the state to fulfil the people's rights, by way of facilitation or – as a last resort – by way of provision.

   a) The obligation of facilitate requires States Parties to adopt appropriate legislative, administrative, budgetary, Judicial, promotional and other measures towards the full realization of the right to adequate food.
   b) The obligation of provide requires that States Parties directly provide food aid, resources and or services to acquire food, to those who are unable to acquire or access adequate food by all means at their disposal.

The above obligations of duty bearers (respect, protect and fulfill) have been arraigned against the components of nutrition security (food security, adequate care, adequate prevention and control of disease) to yield a 'right to food and nutrition security matrix'[30] that provides for identification of performance indicators relevant to aflatoxin prevention and control.

Based on the analysis done, we observed that during the period 2018/19-2023/24 when SAPPCA was in force, government undertook interventions that were generally aimed at improving production, quality and safety of agricultural produce. However, aflatoxin being a unique food safety issue, it requires specific interventions the very purpose for which SAPPCA was put in place. This compromised government's effectiveness to address aflatoxin issues along the value chains

[27]Valente FLS Towards the full realization of the human right to adequate food and nutrition. Development, 57(2), 155-170, 2014.
[28]United Nations Human Security Handbook: an integrated approach to the realization of the Sustainable Development Goals and the priority areas of the international community and the United Nations Systems. New York: United Nations Trust Fund for Human Security, 2016
[29]The understanding of the nature and level of States Parties obligations on the right to food adopted in GC 12 by the CESCR (1999), owes much of its impetus from the 'Eide typology', a 3 tiered system of the State's obligations of respect, protect and fulfil. It was born out of a seminal presentation by Asbjørn Eide on Food as a Human Right, at Gran, Norway in 1981. It generated debates and a subsequently a thematic study by the same scholar in 1989 on recommendations of the United Nations Economic and Social Council (ECOSOC) further elaborated the levels of State Party obligations and how they are legally binding to all States Parties' to the ICESCR.
[30]Oshaug, A., Eide, W.B. and Eide, A. (1994). Human Rights: A normative basis for food and nutrition-relevant policies. *Food policy 19(6):491-516*.

3.5.2 Monitoring and evaluation

3.5.2.1 Enforcement and Monitoring of the Strategic Plan for Aflatoxin Control and Prevention

During the analysis, it was established that the country initiated mechanisms and systems to implement the aflatoxin control and management strategy. These included the following;

a) The country established and launched the UMMSC. This is a Multisectoral Committee that involved Top Management of staff from relevant MDAs and was chaired by the Permanent Secretary, MAAIF. However, upon inauguration, the Committee held only one meeting within the period of five years, has never been financed, has remained dormant and some of the members who had knowledge of aflatoxins have left the MDAs and others have retired. It needs to be revitalized and its terms of reference revisited.
b) The country put in place The Uganda Aflatoxin Technical Working Group. Its membership included MDAs, Civil Society, Private sector and Academia. This Committee was supposed to provide technical advice, coordinate all activities regarding aflatoxin control and management in the country and give feedback to the UMMSC. The Committee held several meetings focusing on aflatoxin management and technical issues but not really monitoring, till resources could no longer allow. It has thus also been dormant until last year when they participated in validating the May-September 2023 FtF ISS Report on Economic Impact of Aflatoxin in Uganda and they also participated in launching of JAAC in March this year.
c) Joint Advocacy on Aflatoxin Control and Management (JAAC) campaign by Food Rights Alliance from FY 2023/24 with support from USAID Feed the Future ISS. This activity will be very instrumental in fulfilling thematic area 2 on Public awareness and advocacy.
d) Other Technical Committees indirectly addressing aflatoxins have also been established. For instance, the UNBS Technical Committee (TC 201) on cereals , legumes, and related products as well as that on Cassava and products, charged with reviewing and establishment of standards for these commodities, do consider aflatoxins as a serious food contaminant

3.5.2.2 Stakeholders involved in implementation of the Strategy

Several stakeholders were identified as playing roles either directly or indirectly in the control and management of aflatoxins and these are presented in Table 6.

Table 6. List of stakeholders involved in aflatoxin control and management in Uganda

Stakeholder category	Examples	Role played
MDAs	MAAIF, MoH, MTIC, MoLG, MWE, MoES	Policy and regulatory frameworks, including ordinances and bylaws, standards development and enforcement; training and awareness creation
Development partners	WFP, USAID FtF, FAO, IFAD, CABI, World Bank, Trademark Africa, IFPRI	Resource mobilization (for research, technology development, material

		development, dissemination, meetings etc.).
Private Sector	EAGC, TGCU, DDA, UCDA, Grain-Toxin Solutions LLC, food processing industry at large, Nutrinova Limited	Capacity building (training and infrastructure), participate in standards development, Quality control and assurance, aflatoxin decontamination
Regional and Continental Economic Communities	EAC, COMESA, IGAD, AU	Resource mobilization, Policy development, research, Standards development, proficiency studies, capacity building (Training and infrastructure)
CSOs/NGOs	Sasakawa Africa 2000, FRA, CEFROHT, SEATIN, CONCENT, World Vision, etc.	Advocacy, Capacity building
CGIAR	IITA, ASARECA, CYMMIT, ILRI	Research and technology development
Research Institutions	NARO, UIRI	Research
Academia	Universities e.g. Makerere University, Gulu University, Mbarara University of Science and Technology and Busitema University	Capacity building (training), Research, technology & innovations development, dissemination
Media	Print and electronic media houses	Advocacy and awareness creation

The analysis of stakeholders established that there is limited coordination and collaboration in implementing and reporting on interventions on aflatoxin prevention and control. Thus, sometimes there is duplication of efforts especially in research and capacity building.

3.5.3 Constraints in fulfilment of state obligations in aflatoxin prevention and control

The country has had a number of constraints in fulfilling the state obligations in aflatoxin prevention and control. These include;

a) Climate challenges: The country lies along the equator within 40° South and North, which is the area prone to *Aspergillus spp.* infection and thus high chances of aflatoxin contamination. This means that stringent measures are required to mitigate the effects of this environment to prevent proliferation of these fungi. Secondly, the country has continued to face climate change challenges chracterised by excessive rainfall during harvesting periods when farmers are supposed to be drying their produce like maize, sorghum and groundnuts, and also frequent droughts when the aflatoxin susceptible produce is in the field. All these predispose produce to mould infection and aflatoxin contamination. Moreover, the country is less resilient to effects of climate change, with

little efforts done for mitigation measures. In addition, farmers over depend on rain-fed agriculture.

b) Dominance of agriculture by small holder farmers who practice subsistence farming. These farmers are resource-constrained, have low awareness about aflatoxins, have poor mindset and are stuck to cultural behaviours. In addition, these farmer have poor adoption of relevant solutions to aflatoxin mitigation and overall, they practice traditional and rudimentary technologies for handling, processing and storage of food and feed hence leading to poor hygiene and sanitation thus non-compliance and compromised quality and safety of food products.
c) The dominance of Micro-Small and Medium Entrepreneurs (MSMEs) within the private sector thus poor traders and processors who are less bothered with food and feed quality and safety; they have inadequate appropriate infrastructure to handle produce, and majority use informal marketing structures which make compliance monitoring difficult or non-existent.
d) Poor food control system with laws and policies scattered among MDAs; they are poorly coordinated and there is minimum enforcement. In addition, some of the laws and policies are quite old requiring immediate review. There is no food safety law to specifically address aflatoxins issues; moreover, the NATWGA and the UMMSC are not facilitated to implement their Terms of Reference (ToRs).
e) Aflatoxin testing is quite expensive, unaffordable by most farmers and traders and the country at the moment has only two government accredited laboratories for aflatoxin testing. There are no simple testing equipment to be used by farmers before the produce enters the food chain.
f) Inadequate research funds from Government; majority of the research funding is from development partners and private sector to some extent.
g) There is only one technology in the country that can decontaminate aflatoxin affected grains and this is located in Soroti. It is quite far and expensive, unaffordable by the farmers and MSMEs who dominate the grain value chains. This has led to rejection of the produce within the EAC region and beyond.

Chapter 4: Conclusions and recommendations

4.1 Conclusions

The analysis of the outcomes of the 2018/19 SAPPCA has indicated that the Strategy has not been adequately implemented and for this reason, aflatoxin contamination of food and feed has continued, causing significant impacts on livelihoods of both humans and animals. The impacts are still on and will continue as long as effective management strategies to address the menace are not implemented.

The analysis of policy, regulatory and institutional frameworks has established that since the launch of the SAPPCA, no single framework was developed targeting aflatoxin prevention and control. The existing policies and regulations have generally been observed to be old and not effectively aligned to the national development plan and issues on aflatoxin control and prevention in the country.

The analysis of resources has indicated that that despite the mainstreaming of the SAPPCA into the MAAIF's ASSP in 2018, there have not been deliberate efforts to provide a budget for its implementation. There is no direct budget put aside to address the outcomes as outlined in the Strategy. The funds allocated to activities that are related to prevention and control aflatoxins undertaken by the key sector ministries and departments, could not be easily estimated since the budget performance reports focused on outputs that were not aligned to the Strategy.

Despite existence of a number of stakeholders involved in aflatoxin control and management, there is no coordination of activities. This is because the monitoring and evaluation systems put in place that involved establishment of the UMMSC and the NATWG have not worked basically due to inadequate resources.

For the country to minimize aflatoxin contamination of food and feed, there is need to address the aforementioned constraints. It should be particularly noted that overall, the SAPPCA still provides relevant aflatoxin management strategies that can be put in place to significantly reduce the effects of this hazard in the country. In addition, it has been observed that the SAPPCA was designed as a "project" with short term outputs yet aflatoxin prevention and control requires joint, long term, multistakeholder and sustainable approaches.

4.2 Recommendations

Based on the findings, it is recommended that there is the need to revise the SAPPCA to align it with the MAAIF budget. This will ensure that the aflatoxin mitigation strategies are integrated within the ministry budget and will be able to roll-over for different financial years.

To minimize the economic and health impacts of toxins in Uganda, there is need to strengthen the regulatory framework. Advantage could be taken of the on-going efforts to establish the Food and Agriculture Regulatory Authority (FARA) in the country. In the meantime, the enforcement of the existing UNBS standards should be strengthened by investing in human

resource and quality infrastructure for monitoring aflatoxin and strengthening awareness of all the relevant stakeholders.

There is the need to strengthen the monitoring and coordination of the different actors to ensure efficient utilization of resources and avoid duplication of activities. The coordination structures in place such as NATWG and UMMSC should be given adequate support to enable them carry out their activities effectively.