MASSP POLICY NOTE 21 • April 2015

MALAWI
Strategy Support Program

INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE
IFPRI
A member of the CGIAR Consortium

# PROMOTING EXPORTS OF LOW-AFLATOXIN GROUNDNUT FROM MALAWI

**Brent Edelman and Noora-Lisa Aberman**

## INTRODUCTION

Malawi's National Export Strategy is built on the premise that the promotion of exports and domestic value addition can contribute to economic growth and poverty reduction in a meaningful way. Groundnut shows particularly high potential because regional demand is strong and Malawi's farmers are already quite familiar with improved methods for growing the crop (Government of Malawi, 2013). In spite of institutional weaknesses that make exporting tedious and time consuming (Aberman & Edelman, 2014), groundnut exports volumes grew by 18 percent per year between 2004 and 2014 (International Trade Centre, 2014; Malawi Revenue Authority, 2014). However, high levels of aflatoxin contamination threaten to disrupt these positive trends: 49 percent of groundnut sold in Malawi's local markets and 60 percent of those sold in shops and supermarkets were found to have aflatoxin levels exceeding those considered safe for human consumption (Emmott & Stephens, 2014).

This note explores the barriers to increasing Malawi's access to low-aflatoxin export markets, the progress currently underway to this end, and gaps in knowledge needed to fully address and surmount the barriers. The researchers undertook semi-structured interviews with seven large-scale firms currently engaged in processing or exporting of groundnut, held a focus group interview with a groundnut producing farmers' group, met with numerous key stakeholders working in the sector to triangulate the lessons learned from these interviews, and reviewed grey and formal literature on Malawi's groundnut sector. The lessons learned from these investigations are summarized here.[1]

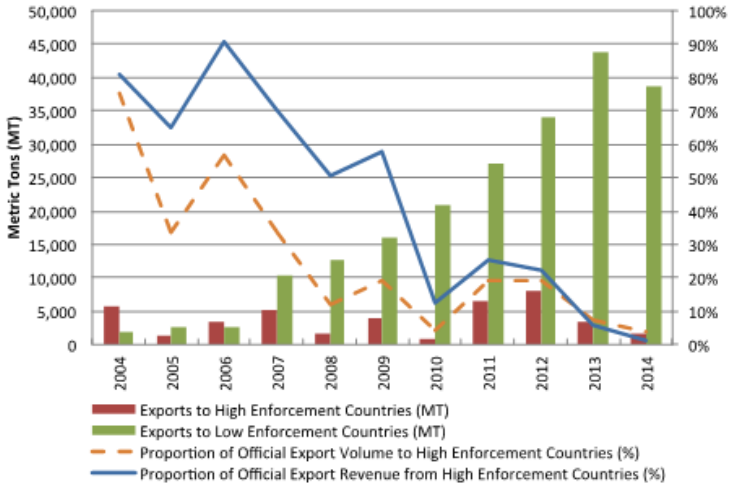
## AFLATOXINS AND EXPORTS

Many crops, particularly grains, oilseeds, and tree nuts, are susceptible to aflatoxins. Aflatoxins are highly toxic metabolites produced by fungal infection of these crops and are exacerbated by poor handling practices. Aflatoxins affect 4.5 billion people globally through chronic exposure (US Centers for Disease Control and Prevention, 2014), resulting in cancer, liver diseases, stunting, and death (Emmott, 2012). Groundnut comprises an important part of the average Malawian's diet and is particularly susceptible to aflatoxin contamination. As most is sold in poorly regulated markets with no monitoring or testing, aflatoxins threaten to undermine ongoing efforts to improve nutritional outcomes and strengthen food security in a country already battling with a high incidence of disease and malnutrition (Emmott, 2013; Malawi National Statistics Office, 2012).

While the humanitarian implication of these consumption trends is reason enough to do everything possible to reduce aflatoxin levels in groundnut, aflatoxins also pose a barrier to export-led economic growth for Malawi. Through the National Export Strategy, Malawi has prioritized groundnut as an export commodity with high poverty-reduction potential and economic spillovers to other sectors (Government of Malawi, 2013). And indeed, exports have increased significantly in the last ten years (see Figure 1).

Yet of these exports, most are never tested for aflatoxins. Exports to destinations that consistently regulate aflatoxin levels of groundnut imports, including South Africa and the European Union (EU), accounted for just seven percent of all groundnut exported

**Figure 1—Malawi groundnut exports, 2004 to 2014**




Source: Authors' calculations based on ITC (2014), MRA (2014) and Famine Early Warning System Network Malawi (2014).

Note: Low enforcement countries: Zambia, Tanzania, Kenya, and Zimbabwe; high enforcement countries: South Africa, European Union member states, and all other importers.

[1] In addition to the informants for this study, the authors also acknowledge the guidance of Neil Orchardson and the Malawi Oilseeds Transformation project, detailed comments on earlier drafts by the EU and Andrew Emmott, and insightful discussions with participants in the South African Trade Hub meeting on "Developing a model for in-shell buying of groundnut for Valid Nutrition and supply chain partners" (28 January 2015). All of these interactions helped to frame this policy note.

**Table 1—Malawi groundnut exports: formal and informal markets, 2004 to 2014**

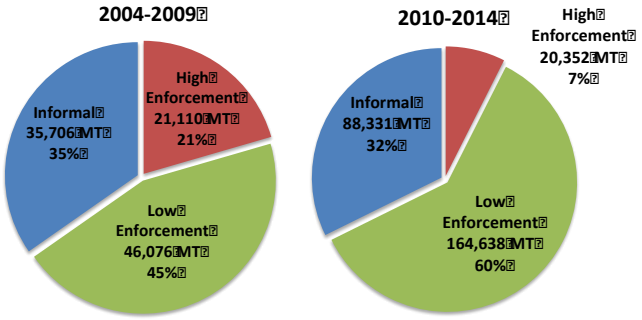
| | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Informal Exports, mt** | 3,569 | 7,942 | 5,410 | 10,181 | 2,170 | 6,434 | 10,046 | 26,635 | 16,317 | 16,015 | 19,317 |
| **Formal Exports, mt** | 7,584 | 3,992 | 5,844 | 15,416 | 14,322 | 20,028 | 21,938 | 33,607 | 42,134 | 47,214 | 40,097 |
| **Informal exports as a percentage of total exports, %** | 32 | 67 | 48 | 40 | 13 | 24 | 31 | 44 | 28 | 25 | 33 |

Source: Authors' calculations based on the Famine Early Warning System Network Malawi (2014) for informal exports and International Trade Centre (2014) and Malawi Revenue Authority (2014) for formal exports.

formally from Malawi in 2013 and four percent in 2014.[2] As recently as 2009, however, South Africa alone accounted for 19 percent of Malawi's exports by volume and 57 percent by value.

In addition to these official exports sent through formal channels, increasing amounts of groundnut are also exported on the informal market; these exports leave Malawi without any formal documentation and are not tested for aflatoxins. Informal exports increased from approximately 3,500 metric tons in 2004 to 27,000 metric tons in 2011 (Table 1). In 2011, 44 percent of all groundnut exports went through informal channels. Informal exports dropped in 2012-13, both in absolute and relative terms. In 2014, informal exports increased from 2013 levels by approximately 3,000 MT to 19,300 MT, one-third of all groundnut exports from Malawi.[3]

**Figure 2—Composition of Groundnut Exports. 2004-2009 vs. 2010-2014**




Sources: Authors' calculations based on ITC (2014), MRA (2014), and Famine Early Warning System Malawi (2013).

Note: Percentages may not sum due to rounding.

Based on the official export statistics presented in Figure 1 and these informal export trends, it is clear that Malawi is becoming more and more dependent on exports to markets with low or no aflatoxin standards. From 2004 to 2009, Malawi exported groundnut totaling 103,000 MT, with 21 percent going to high enforcement destinations (Figure 2). From 2010 to 2014, Malawi groundnut exports totaled 273,000 MT. However, during this period, exports to high enforcement destinations were just seven percent of all groundnut exports. Over the 2010-2014 time period, informal exports increased by 147 percent relative to the 2004-2009 period, while official exports to low enforcement destinations more than trebled.

These trends raise at least two questions: why are more groundnut exports not making it to high-value destinations, like South Africa and the EU, that consistently test for aflatoxins? And why is Malawi able to export so much of the commodity without having them tested for aflatoxins? We explore several possible explanations to these questions below.

First, the costs of appropriate handling and risk involved in attempting to meet the aflatoxin standards of high-value markets minimize the price premium exporters are able to offer for low-aflatoxin groundnut. Firms targeting these markets report that there are significant additional costs involved in procuring, handling, and testing, including the need to sort out a large amount of damaged or otherwise questionable nuts. Coupled with the risk created by the potential of aflatoxin levels increasing during shipment to these high-value destinations—such that a consignment may be destroyed, used as animal feed for a much lower price, or even returned at the seller's expense if the levels upon arrival are too high for human consumption—there is little if any price premium offered for supplying groundnut to these markets that test for aflatoxins regularly. For one firm, the riskiness of exporting to the EU is so high that it has halted exports there until it has a better understanding of how aflatoxin levels may increase during transit.

Second, there is extremely high domestic and regional demand for untested groundnut and little enforcement of standards. Of those countries formally importing 96 percent of Malawi's groundnut in 2014—Zambia, Tanzania, Kenya, and Zimbabwe—each of them has laws setting maximum allowable aflatoxin limits for groundnut. However, according to exporters, only Kenya has the ability to test for aflatoxin at its borders, and even there enforcement is lax (Table 2). Aflatoxin levels are measured in parts per billion (ppb), or how many parts of aflatoxin fungus per billion parts of groundnut.

Malawi has strict domestic aflatoxin regulations in place, limiting levels to less than 3 ppb, in comparison to the European Union's level of 4 ppb (Malawi Standards Board, 1990). However, enforcement of these standards is very limited, consisting of two random checks per year, according to Malawi Bureau of Standards officials. In fact, there is no government testing entity certified to International Organization of Standards (ISO) specifications, the industry norm for testing groundnut.

Exporters, both formal and informal, dealing in markets where there is no requirement to test for aflatoxins can afford to offer a somewhat higher price for all groundnut they obtain from farmers. Because they do not have to comply with the regulations binding exporters targeting low-aflatoxin markets and do not face risk of rejection upon arrival, they are able to profitably provide farmers

[2] See Table 2 for distinction between "low enforcement" and "high enforcement" destinations. There are multiple destinations that imported Malawian groundnut intermittently between 2004 and 2014, including India, Pakistan, and Vietnam, for which we did not study the degree of enforcement; for the purposes of this study, we consider these destinations as high enforcement destinations. If anything, these figures overestimate high enforcement exports values and understate those for low enforcement countries.

[3] While it is challenging to find accurate data on informal exports, we are able to find estimates collected from the major border crossings of Malawi by the Famine Early Warning System Network Malawi (2014). Because of the difficulties involved in monitoring all border crossings at all times, these estimates are likely underestimates of the total amount of informal groundnut exports.

**Table 2—Aflatoxin limits and enforcement in destination countries for Malawi's groundnut exports**

| Destination | 2014 share of official exports from Malawi, % | Aflatoxin limit (ppb) | Enforcement |
|---|---|---|---|
| **Kenya** | 39 | 10 | Limited |
| **Tanzania** | 30 | 10 | None |
| **Zimbabwe** | 17 | 25 | None |
| **Zambia** | 9 | 15 | None |
| **South Africa** | 2 | 10 | Strict |
| **European Union** | 0 | 4 | Strict |

Sources: Share of exports from MRA (2014) and aflatoxin limits and enforcement compiled by authors from Otsuki et al. (2001), Chipinga (2011), Abt Associates (2012), SAMRC (2009), Mutegi et al. (2013), and PACA (2014a).

Note: Reported aflatoxin limit is total aflatoxin limit set for direct human consumption. ppb = parts per billion.

with a price for untested groundnut above what it would be if such regulations were enforced. However, without a price incentive, farmers are not likely to adopt groundnut planting, harvest, handling, and storage techniques designed to mitigate the risk of aflatoxins that incur additional costs or labor inputs for the farmer, even if they are sufficiently trained in these practices and aware of the health implications associated with aflatoxins.

Third, incentives for farmers and traders and appropriate systems and technologies for aflatoxin management are lacking. Farmers trained in good post-harvest practices to reduce aflatoxin contamination—including training on when to harvest, how to dry, to leave the nut in the shell, and to sort out damaged or broken nuts—have opportunities to sell into higher-value low-aflatoxin supply chains. However, evidence suggests that these farmers still prefer to sell shelled nuts to informal traders and aggregators over engaging in low-aflatoxin supply chains (Emmott & Stephens, 2014; USAID, 2014). Ensuring low aflatoxin groundnut requires grading-out of some portion of the harvest, often close to 25 percent, depending on post-harvest handling practices. Grade-outs are highly contaminated and thus damaging to human and animal health.[4] Therefore, as they have minimal commercial value, price premiums must be high enough to offset those losses. In addition, informal traders also come directly to the farm gate. As a result, farmers do not incur transportation costs and are provided cash immediately, both of which are major incentives for credit-constrained farmers coming out of the lean season of the annual agricultural cycle.

## WHAT IS BEING DONE?

In general, addressing aflatoxin-relevant issues comprehensively along the groundnut supply chain is required to decrease risk of engaging in high-enforcement high-value markets and compete with the current high demand of regional low-enforcement markets. Good post-harvest practices and the development of groundnut supply chain infrastructure required to decrease aflatoxin contamination will decrease risks to those exporters further along the supply chain who seek to supply high-enforcement export markets.

Government and development partners in Malawi are actively engaging with groundnut farmers to reduce aflatoxins throughout the value chain. Interventions include farmer training on soil management, planting, and post-harvest processing and consumer awareness campaigns to increase demand for low-aflatoxin groundnut.[5]

The government of Malawi is doing little, however, to provide incentives to exporters to monitor aflatoxin levels in the groundnut that they trade.[6] This inaction poses a risk to the future of Malawi's groundnut export potential as regional trading partners have either already or plan soon to increase enforcement of aflatoxin levels in groundnut imports.[7] According to exporters, South Africa has virtually banned the import of untested groundnut from Malawi and the export statistics (Figure 1) show the results. Furthermore, through the Partnership for Aflatoxin Controls in Africa (PACA), Malawi's trading partners are working towards adopting and enforcing common maximum allowable levels for aflatoxins in groundnut. Tanzania, one of PACA's five pilot countries and the largest importer of Malawian groundnut over the past five years (ITC, 2014; MRA, 2014), recently passed legislation limiting aflatoxin levels to 10 parts per billion and is working aggressively towards establishing rapid mobile testing capacity at its borders (PACA, 2014b).

The implications of Malawi's inaction in promoting exports of low-aflatoxin groundnut are two-fold. First, tougher standards for exported groundnut could lead to a decrease in exports, leading to a significant fall in the domestic price for groundnut. These price signals could have a dramatic impact on Malawian farmers' willingness to plant groundnut. Second, exporters might increasingly choose to export groundnut informally in order to avoid these tougher aflatoxin standards, resulting in Malawi losing out on the tax revenue and foreign exchange generated by formal exports.

## RECOMMENDATIONS AND KNOWLEDGE GAPS

Malawi has taken steps towards reducing aflatoxin levels in groundnut through the promotion of improved planting, handling, and marketing techniques. It has also developed standards and guidelines for aflatoxin management, and is currently engaging with regional partners to address this critical problem. However, the success of these initiatives will likely be impeded by low enforcement capacity; agronomic limitations, such as pervasive low soil fertility; and lack of development of a low-aflatoxin supply chain.

Another limiting factor is a general misalignment of the incentives faced by key actors in the supply chain: the effectiveness of these efforts to promote exports of low-aflatoxin groundnut from Malawi will hinge on how responsive key actors are to the interventions themselves. As such, we identify the following critical information gaps:

First, the high risk faced by exporters when trying to supply to high-enforcement markets must be mitigated. Careful testing of groundnut packing techniques must be undertaken to understand how best to decrease the risk of aflatoxin contamination of consignments while in transit. Furthermore, affordable and effective sampling protocols for aflatoxin testing will decrease risk.

Second, exporters who opt to engage in these challenging markets should also be given an incentive for ensuring the safety and quality of their consignments, such as through tax incentives for

[4] Gradeouts are often put back into the food stream, sold locally as is or as groundnut flour, and then consumed. This negative consequence of initiatives to decrease aflatoxins for higher value markets is detrimental to Malawian consumers' health and nutrition status.

[5] See ExAgris Africa (2014), USAID (2014), TWIN (Emmott & Stephens, 2014), and PACA (2014b).

[6] Source: Consultations with Malawi Ministry of Industry and Trade.

[7] Source: Consultations with Partnership for Aflatoxin Control in Africa.

low-aflatoxin exports. Such an initiative would signal that Malawi cares about its reputation as a major regional groundnut exporter and is willing to invest in its brand. It also recognizes the reality that the region is moving towards a harmonized approach to reducing aflatoxins in groundnut trade. This scheme could be implemented through a tax credit for exporters testing with an ISO-certified facility. Currently, groundnut exporters are entitled to a 25 percent tax credit for exporting groundnut (Malawi Investment and Trade Centre, 2014); this credit could be increased for those who test for aflatoxins, or rescinded for those who do not.

Third, farmer incentives must be better understood through rigorous research methods. The current state of evidence of farmer preferences in Malawi's groundnut sector, while consistent and compelling, is limited and must be strengthened. Better understanding farmer's preferences and constraints will both promote their engagement in the high-enforcement supply chain and also help to mitigate risk for exporters further up the supply chain.

In addition, mechanisms for engaging informal traders in the high-enforcement groundnut supply chain must be explored. Traders are dynamic and efficient actors in the groundnut supply chain, purchasing and aggregating groundnuts and, in doing so, providing a market for farmers as well as liquidity and even access to credit. Given the right incentives, traders are likely to react quickly to change their behaviors. As such, efforts should be made to incorporate traders rather than bypass them

Effective action in all of the above areas are likely to increase the price incentive exporters can afford to give to those lower down the supply chain. As such, analysis to determine what magnitude of price would be required to incentivize practices to reduce aflatoxin would help provide clear targets for the sector.

## REFERENCES


Aberman, N.-L., & Edelman, B. 2014. *Challenges to Soya Export Promotion: An Institutional Analysis of Trade Policy in Malawi.* Washington DC: International Food Policy Research Institute.

Abt Associates. 2012. *Literature Review to Inform the Aflatoxin Country Assessments: Tanzania and Nigeria.* Washington, DC: Meridian Institute.

Chipinga, E. 2011. "Survey of Fungi and Mycotoxins in Food Commodities in Malawi with Particular Reference to Chronic Diseases." MSc Thesis, University of Johannesburg, South Africa.

Emmott, A. 2012. *Technical Report : Value Chain Approach - Aflatoxin (Groundnuts) Final Report.* Gaborone, Botswana: Southern Africa Trade Hub.

Emmott, A. 2013. *Market-led Aflatoxin Interventions: Smallholder Groundnut Value Chains in Malawi.* 20-20 Focus Brief. Washington, DC: International Food Policy Research Institute.

Emmott, A., & Stephens, A. 2014. Nut In-Shell Assessment. Lilongwe, Malawi. Lilongwe, Malawi: UK Aid.

ExAgris Africa. 2014. *Our Interests Regarding Aflatoxin Management.* Lilongwe.

Famine Early Warning System Malawi. 2013. *Malawi Food Security Outlook Update November.* Lilongwe.

Famine Early Warning System Network Malawi. 2014. *Informal Cross Border Trade Database.* Lilongwe.

Government of Malawi. 2013. *Malawi National Export Strategy*. Lilongwe.

ITC (International Trade Centre). 2014. *Trade Map.* Geneva: www.trademap.org. Accessed 29 December 2014.

Malawi Investment and Trade Centre. 2014. *Investment Guide: Incentives.* Lilongwe.

Malawi National Statistics Office. 2012. *Third Integrated Household Survey (IHS3) 2010/11.* Zomba.

MRA (Malawi Revenue Authority). 2014. *Trade Statistics Database.* Blantyre.

Malawi Standards Board. 1990. *Groundnut Specification.* Lilongwe.

Mutegi, C., Kimani, J., Otieno, G., Wanyama, R., Christie, M. E., Mallikarjunan, K., & Kaaya, A. 2013. "Incidence of Aflatoxin in Peanuts (*Arachis hypogaea* Linnaeus) from Markets in Western, Nyanza and Nairobi Provinces of Kenya and Related Market Traits." *Journal of Stored Products Research* 52: 118-127.

Otsuki, T., Wilson, J. S., & Sewadeh, M. 2001. "What Price Precaution? European Harmonisation of Aflatoxin Regulations and African Groundnut Exports." *European Review of Agricultural Economics* 28 (2): 263–284.

PACA (Partnership for Aflatoxin Control in Africa). 2014a. *The First Partnership Platform Meeting of PACA 7 – 9 October 2014.* Addis Ababa, Ethiopia.

PACA (Partnership for Aflatoxin Control in Africa). 2014b. *Regional Workshop on the Aflatoxin Challenge in Eastern and Southern Africa.* Lilongwe.

SAMRC (South African Medical Research Council). 2009. *Guidelines on Mycotoxin Control in South African Foodstuffs.* Tygerberg, South Africa.

US Centers for Disease Control and Prevention. 2014. *Understanding Chemical Exposures: Aflatoxin.* Atlanta, Georgia.

USAID. 2014. *Gender and Value Chains Assessment.* Lilongwe.



**INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE**

2033 K Street, NW | Washington, DC 20006-1002 USA | T+1.202.862.5600 | F+1.202.457.4439 | Skype: ifprihomeoffice | ifpri@cgiar.org

**IFPRI-LILONGWE**

P.O. Box 31666 | Lilongwe 3, Malawi | T +265-1-771780 | ifpri-lilongwe@cgiar.org



This publication of the Malawi Strategy Support Program is made possible by the generous support of the American people through the United States Agency for International Development (USAID). It has not been independently peer reviewed. The contents are the responsibility of the author(s) and do not necessarily reflect the views of USAID, the United States Government, or the International Food Policy Research Institute.