Aflatoxin Control to Improve Food Security and Safety in Food Supply Chains in Nigeria

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PROTOCOLS

Ladies and gentlemen good morning! I am delighted to welcome you all to this stakeholders’ workshop on aflatoxin control in Nigeria. With the support of the Bill and Melinda Gates Foundation, the Ministry of agriculture in partnership with Abt-Associates has called this meeting to offer an opportunity to review and discuss the findings from a recent Aflatoxin Country and Economic Impact Assessment.

From the moment I became Minister in 2011, I prioritized the control of aflatoxin in Nigeria because I recognize the unprecedented threat this harmful toxin poses to our health, trade and national food security.

I am pleased to be in the presence of so many stakeholders who all share the same interest in controlling this toxin, not only in Nigeria but around Africa. Ladies and gentlemen, let us not underestimate the role that each and every one of our efforts will play in this transformation; ultimately, our resolve will result in not just a new product, but it will save the lives of millions of Africans. I am confident that over the next two days, we will learn from one another and grow in our resolve to feed Nigeria, and to do so in ways that assures food safety and health of our population.

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Approximately a year ago, the Ministry of Agriculture and Rural Development launched the Agricultural Transformation Agenda. We have vowed to put an end to ‘business as usual’ within the agricultural sector. Our target is to add 20 million MT of food to the domestic food supply and create 3.5 million jobs in the agricultural sector by 2015. Steadily, over the year we have initiated a series of transformational changes in the agricultural sector across entire value chains.

We ended the corruption in the fertilizer sector by taking the government out of procurement and distribution of fertilizers and seeds. We launched some 140 days ago, an electronic-wallet system that allows farmers to receive their subsidies for seeds and fertilizers via their mobile phones – and Nigeria is the first country in Africa to achieve such a feat.

Today, I am pleased that over 1.2 million farmers – majority of them poor smallholder farmers – have been able to access their fertilizers and seeds directly, without rent seekers or government interference or collusion to divert the inputs.

We supported our farmers to plant improved seeds in a massive way. In particular, we provided maize farmers across the country with over 67,000 MT of improved seeds, which they planted on 3.5 million ha of land, with an estimated production of 7 million MT of maize added to the domestic food supply this year alone. We supported the distribution of 30 million stem cuttings of cassava to boost cassava production. As we speak, government is supporting the distribution of 3.5 million pods of high yielding cocoa hybrids to farmers. Government is also supporting the distribution of 9 million sprouted nuts of oil palm seedlings.

Our resolve is clear: this government will not abandon farmers. We will ensure that farmers have the high yielding technologies needed to boost food production. And the results are emerging. This year alone, we estimate that our efforts on the agricultural transformation agenda, through rapid dissemination of new agricultural technologies to farmers, have added an estimated 8.1 million MT of food to the domestic food supply. This is 41% of the target we said we would achieve in 2015.
But even as we ramp up food production, we must pay close attention to issues of food safety and the nexus between food production, nutrition and health. For a well fed and healthy population is central for sustainable growth and development.

Therefore, for this transformation to be complete, we must address the very real threat that mycotoxins such as aflatoxin pose, particularly for grains and cereals. For too many years, we have neglected to regulate aflatoxin in the production of food and the cost to society and the economy are extensive.

Groundnut farmers, more than any other farmers have faced the brunt of insufficient aflatoxin control in Nigeria. In the 1960’s, Nigeria contributed to approximately 42% of global exports. By 1975, this number had diminished effectively to 0%. This was largely due to the discovery of aflatoxin in 1965 and Nigeria’s subsequent failure to regulate the toxin. While importers set strict regulations to control for aflatoxin levels, Nigeria failed to take the necessary actions to meet appropriate standards and inevitably. We lost out in the world ground nut export market. The effects were devastating. Overnight, farmers went from kings to paupers. Hospitals, schools, universities, all public institutions built on the back of groundnut revenue could no longer be funded. Today our farmers are still waiting for a solution, but I believe that under PACA, a sustainable solution is well under way.

Nigeria is not the only country to experience the economic impact of poor aflatoxin regulation. A World Bank study revealed that the European Union regulation on aflatoxin cost Africa 750 million dollars each year in exports of cereals, dried fruit and nuts. From January 2010 the EU imposed an increased frequency of controls on import on products from certain countries because of the presence of aflatoxin, making standards even more stringent.

The presence and effect of aflatoxin are not widely understood within Nigeria. Most people are not aware that this odorless, tasteless and invisible (to the naked eye) toxin, if left untreated, exists in our maize, sorghum, millet, oilseeds, groundnuts, tree nuts and dried fruit. Its presence in crops such as maize and ground nut which constitute a large portion of the Nigerian
diet must be controlled to reduce any threats to human health. It is estimated in Nigeria that aflatoxin contamination in maize and groundnuts results in 7,761 liver cancer cases resulting in a total burden of 100,965 Disability Adjusted Life Years. The impact of contamination is greater in the North East and North Central regions. It has also been proven to stunt the growth of children by about 25-35%. Raising awareness and changing behavior is a particularly challenging task.

However, we are fortunate in Nigeria to have players that are up to the challenge. The International Institute of Tropical Agriculture (IITA) especially has worked tirelessly to control for aflatoxin and to educate farmers on the harmful effects of this toxin. Let me use this opportunity to salute their efforts and those of their partners.

In partnership with USDA, IITA has created a product called Aflasafe. Aflasafe is a biological control that naturally and cost effectively reduces the level of aflatoxin in the soil by 80-99%. Field testing of Aflasafe in Nigeria over the past four years has produced positive results: aflatoxin contamination of maize and groundnut was consistently reduced by 80 to 90%, and even as high as 99%.

This technology is particularly effective because it addresses the source of aflatoxin- the fungus in the soil-before it can contaminate the crop prior to harvest. There is a common misconception that aflatoxin is a post-harvest problem. While aflatoxin levels can increase substantially in inadequate storage conditions, contamination begins in the fields from increased levels of a toxigenic fungus in the soil.

The Aflasafe technology takes advantage of the fact that the fungus which releases the aflatoxin, Aspergillus Flavus, has both toxigenic and atoxigenic i.e. non-toxic strains. These Atoxigenic strains are found naturally in the soil and can be identified and isolated. If given a substantial food source, which in this case is sorghum, the Atoxigenic strain can out compete the toxigenic strain in the soil. This reduces the aflatoxin levels in the grains without incurring negative environmental effects. Caution has been taken to ensure that all introduced strains are
local and evidence has proved that Aflasafe does not increase the total number of fungus present in the air or soil but simply its composition.

Since 2009, IITA has conducted field trials on over 1000 ha of land with over 1000 farmers and each time, farmers express anxiety over their markets. While they may accept the health benefits, the African farmer will not bear the cost of using Aflasafe in production if there is no guarantee that that there will be a market for this product. With this realization, the Bill and Melinda Gates foundation approached a Nigerian private sector company, Doreo Partners, to leverage their private sector experience to pilot and develop the commercialization of Aflasafe products in Nigeria. Doreo partners have developed a model that successfully incentivizes farmers to use Aflasafe and allows them to realize a substantial return on their investment.

This strategy helps to ensure sustainable production of low aflatoxin products such as maize, by enabling farmers to receive a premium for supply aflatoxin free maize to the livestock feed industry and the food processing industry, to justify their investment in reducing the burden of aflatoxin, through the use of products such as Aflasafe.

Ladies and gentlemen, solving the problem of aflatoxin and any other mycotoxins requires a comprehensive approach, for several reasons. First, knowledge of mycotoxins and the full range and scale of their adverse health effects is incomplete and the known risks are poorly communicated to policy makers. As a result policy makers do not know the extent of the problem and underinvest in control measures.

Second, in comparison, for example, to vaccination programs, malaria control or improved sanitation, the perceived value of interventions to reduce mycotoxins contamination in low-income countries may be relatively low.

Third, the approaches needed to control mycotoxins contamination, although potentially simple, are multifaceted, requiring interventions at numerous points along the entire value chain, from farm level, storage, packaging, transportation and distribution.
Fourth, the highest exposures occur in communities that produce and consume their own food and thus regulatory measures to control exposure are largely ineffective.

Finally, the mycotoxins problem sits at the interface of agriculture, health and economics. Appreciating the full burden to the country of contamination of its food by mycotoxins therefore requires an inter-sectoral approach at government level.

To this end, the various Nigerian stakeholders have developed a 5 year, 4 step commercialization plan. All parties involved, IITA, Doreo, and the government, have critical roles to play over the next five years to ensure that there Aflasafe treated food crops are successfully introduced into the market.

The first phase is to generate a supply of low cost aflatoxin maize. This is already underway due to the efforts of the Ministry of Agriculture, USDA, IITA and private sector partners. The second phase is the enforcement of regulatory policy. Regulation is critical. In the short term, it ensures that the product is able to be sold commercially and the quality control ensures that the right product is entering the market. In the long term, regulation can center on industrial buyers and enforce rules and regulations that penalize purchase of non Aflasafe treated produce.

The third phase will focus on the promotion of health awareness to value chain actors over a five year period. Sufficient health campaigns will be used to educate consumers and increase their willingness to pay for Aflasafe produce and reduce their willingness to buy (or pay less) for non Aflasafe treated produce. This has already begun in Nigeria, the Ministry of Agriculture and Rural Development, via the World Bank Commercial Agriculture Program, has put up billboards that promote the use of Aflasafe and organized interactive forums to encourage discussion and knowledge dissemination on the subject. Care has to be taken to target the message to the distinct players in the value chain; the farmer, the industry buyer and then the end consumer.
The fourth and final stage is enabling market forces to drive sustainability. With sufficient regulation, the market can provide a pull mechanism which stimulates the demand for Aflasafe treated produce. At this phase, buyers would pay a premium for the produce and this premium would be enough of an economic incentive to spur and sustain Aflasafe use at the farm level.

When we consider the potential benefits of Aflasafe, it is ultimately the smallholder farmer who stands to gain the most benefits. Take the case of maize, the Abt study reveals that farmers consume 65% of the maize they produce thus they stand to benefit the most from the improved health benefits of Aflasafe maize. Trading in Aflasafe products also increases small holder’s opportunity to access premium and foreign markets where the product is in demand.

It is particularly pertinent that it is the small holder farmer who will reap the majority of the benefits from the successful control of Aflatoxin. From the moment I came into office, I said we are here to serve the farmers. For too long, our farmers have sown in hope and reaped in tears. Now is the time to ensure that they are at the forefront of our agricultural revolution.

Smallholder farmers produce the lion share of food in Nigeria and indeed in Africa. They form the centerpiece of “pro-poor” agricultural growth agenda. To ensure that smallholders become greater market participants - both domestically and globally - they need to be better prepared to understand the rapidly changing dynamics of food safety and sanitary and phytosanitary requirements that now dominate agricultural trade.

Globalization has created new opportunities for small farmers to enhance their position in the international marketplace. Niche markets, and the increasing demand for high-value organic, specialty (e.g. cocoa) and “fair-trade” products, have shortened the distance between producer and end-market, permitting small farmers and processors to link directly with retailers (and even consumers). An aspect of globalization is the rising dominance of consumer influence in the market place, as consumers are becoming better informed about issues around the food they consume, food production, distribution and sales.
As the supermarket sector develops, leading chains are rapidly adopting more stringent food safety measures and deploying technological and governance changes in their product procurement systems. Farmers have to meet these increasing food safety demands of local, regional and global supermarkets. The successful adoption of Aflasafe, and other aflatoxin mitigation technologies and strategies, will ensure that our farmers are not left behind in this wave of change.

Over the course of the next two days, I encourage you to not just become better informed of the progress that has been made, but to work together to think through the challenges that still remain.

Several areas need to be given attention in solving the problems of Aflatoxin and other mycotoxins. There is need to broaden farmer education through extension systems. Farmers need support to invest in better on-farm storage facilities that prevent their farm products from becoming further contaminated. Farmers should be provided with low-cost aflatoxin testing kits to allow them to detect even low levels of aflatoxin in foods. Access to better technologies for drying produce to meet maximum moisture levels required for grains will be needed. Investments in warehouse receipt systems which will allow farmers to store their grains in bonded warehouses and allow them not only to secure credit, but reduce post-harvest losses from improper storage, while assuring grades and standards in commodity markets. In this regard, Nigeria is currently working to develop an Agricultural Commodity Exchange, which will use our network of completed silos around the country to store food and improve grades and standards for domestic and international trade.

As Nigeria and other African countries make headway on the control of aflatoxin, we should remain aware that it is only a part of the wider problem of Mycotoxins in food. Low level of Aflatoxin does not necessarily rule out the presence of other mycotoxins in food. The exact figures for world economic losses resulting from mycotoxin - contamination may never be available. Apart from the obvious losses of food and feed, there are losses caused by lower productivity; losses of valuable foreign exchange earnings; costs incurred by inspection, sampling and analysis before and after shipments; losses attributable to compensation paid in
case of claims; farmer subsidies to cover production losses; research, training and extension programme costs; costs of detoxification; etc. When combined, these costs may be staggering. In the long term, it is necessary to broaden the research and interventions to control mycotoxins generally in human food and livestock feed.

We must therefore accelerate efforts to help our producers to realize that good agricultural practices (GAP) which reduce contamination of cereals with mycotoxins and good manufacturing practices (GMP) during the handling, storage, processing, and distribution of cereals for human food and animal feed are the keys for expanding market access. In addition, we must ensure wider use of Hazard Analysis Critical Control Point (HACCP) set of principles in our food supply system. Contamination can be significantly reduced or eliminated if the HACCP principles are properly applied in accordance to the guidelines. HACCP is a preventive system and can improve food safety to almost 100%.

Evidence suggests that hermetic technologies like Purdue Improved Crop Storage (PICS) triple layer hermetic bags could be effective against key legume storage pests. They may provide an improved alternative for insecticide-free, long-term storage of common beans with minimal grain damage. PICS bag was introduced in 2008 into Nigeria as a pilot project by the Promotion of Green Resources (PROGREEN) in the states of Benue, Federal Capital Territory, Kogi, Kwara, Nassarawa, Niger, Plateau and Taraba States. The PICS technology extended with support from the International Institute of Tropical Agriculture and Purdue University, USA, has been widely adopted in several states. Farmers were reported to have solicited for the technology for the purpose of storing other crops such as maize, sorghum and other grains.

So, we know there are emerging technologies and solutions to the problem of Aflatoxins. What we need now is a comprehensive policy framework that is inter-sectoral, to aggressively implement an integrated set of control measures to reduce aflatoxins in the food supply chains. We owe it a duty to farmers. We owe it a duty to consumers. We owe it a duty for the health and food security of our nation. For a well feed and healthy people is vital for the future of a nation.
I know that with the kind of expertise and sharp minds in this room today, you will come up with robust framework and policies for further accelerating Nigeria’s efforts in addressing the problem of aflatoxins and making sure that we better improve the safety of our food supply chains. Let us not forget the impact that this transformation could have on the health and incomes of millions of small holder farmers and consumers across Africa.

Therefore, let us put on our thinking caps and address the challenge of Aflatoxin in Africa once and for all. By so doing we will secure the capacity of our agricultural transformation to meet the food needs of our people and feed a healthy population. Then, we can claim back the lost glory we once had in groundnuts – and other agricultural produce in export markets. For agriculture was Nigeria’s past and in mycotoxin free agriculture lies Nigeria’s future!

Thank you for listening and God Bless you.