

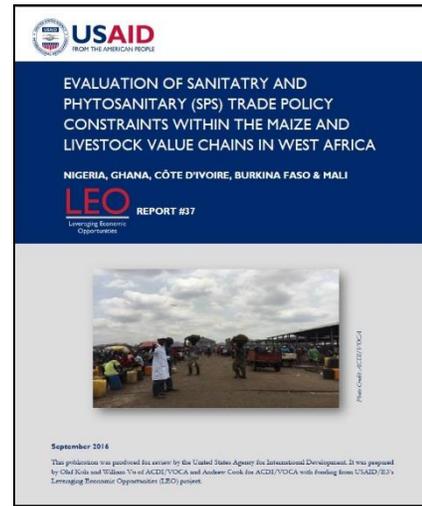


EVALUATION OF SANITARY AND PHYTOSANITARY (SPS) TRADE POLICY CONSTRAINTS WITHIN THE MAIZE AND LIVESTOCK VALUE CHAINS IN WEST AFRICA

SUMMARY BRIEF I: TRADE IMPACTS

USAID’s Bureau for Food Security commissioned the study *Evaluation of Sanitary and Phytosanitary (SPS) Trade Policy Constraints within the Maize and Livestock Value Chains in West Africa* through the Leveraging Economic Opportunities (LEO) project¹. The study is one of three regional assessments carried out in East, Southern, and West Africa regions to identify key SPS-related constraints to trade within priority Feed the Future value chains, in order to gauge opportunities for potential SPS-related investments. This study covered Nigeria, Ghana, Côte d'Ivoire, Burkina Faso, and Mali. This brief identifies and details major trade impacts on the poultry and livestock of SPS issues in West Africa.

The estimated costs to trade are enormous, as indicated by the text box below; yet, the base for calculation is conservative, as there are significant challenges to accurately estimating these figures. For the purposes of this study, the economic cost of SPS factors is based upon an estimated 15 percent reduction in productivity and post-harvest losses to maize; a 20 percent loss due to mortality and morbidity in livestock; and for Avian influenza, an estimated live bird value of \$2.50 per kilo. The largest societal and economic cost might be the cost of stunting due to aflatoxin absorption. While environmental enteric disorder (EED) is now assumed to be the leading cause of stunting and exposure to aflatoxins is one of the causes of EED, the casual relationship of aflatoxins to EED requires additional research.



SPS-Related Impacts on Trade in West Africa: Highlights

- SPS losses to livestock and maize potentially exceeds \$32.3 billion (2013 dollars) in the study countries.
- Avian influenza has cost over \$5 million between January and June 2016.
- Excessive pesticide residue in food in Nigeria has caused over 200 fatalities in 2015.
- Estimated opportunity cost from aflatoxin’s contribution to stunting exceeds \$255 billion.

Below, this brief more fully explores trade impacts related to aflatoxin, avian influenza, insect and viral maize pests, post-harvest insect damage, pesticide residue, and livestock diseases.

Aflatoxin. Aflatoxin in West Africa principally infects maize and groundnuts. Maize fed to ruminants and poultry leads to further concentration of aflatoxin in eggs and meat products; human consumption of

¹ For more information on LEO, and to access the full studies for East, West, and Southern Africa, visit www.microlinks.org/leo.

eggs and meat further concentrates the aflatoxin. Aflatoxin diminishes the productivity and increases the mortality of fed animals. Aflatoxin concentration in poultry has wiped out whole flocks.² Aflatoxicosis in animals leads to gastrointestinal dysfunction, reduced reproductivity, reduced feed utilization and efficiency, anaemia, and jaundice. Aflatoxin is concentrated in slaughtered contaminated animals and is passed on to humans. For decades the principal known risk of aflatoxin to humans was as a carcinogen. Recent research has identified aflatoxin as a principal cause of EED, one of the leading causes of stunting in infants and children (SHINE 2015). Aflatoxin's contribution to stunting is not yet fully understood but the economic cost is enormous, measured as the increase in infant mortality and the permanent reduction in brain development resulting in lifelong loss of productivity and income³.

Avian influenza (AI). As of June 2016, over 2 million birds were recorded lost either to the disease or culling as a mitigation measure. To date, the virus has been identified in all four of the countries in question, and others as well in the region. AI control is currently the principal pre-occupation of veterinary service agents in each of 4 countries researched. The risk of AI jumping over into human populations is the principal public-health concern. Counting only current loss of flock at an estimated live-bird value of US \$2.50 per kilo, the cost of AI to member states exceeds \$5.0 million dollars to date

Insect and viral maize pests. The economic cost of insect pests occurs during production and post-harvest storage both in terms of reduced yields and post-harvest losses. Insects are the principal cause of post-harvest losses in maize. There are few reliable measures of crop losses. Thirty percent of total crop value is frequently cited, though less frequently substantiated. Without use of crop pesticides and storage fumigants, the actual losses can easily exceed 30 percent.

Post-harvest insect damage can be caused by loss of weight to the grain due to insect feeding, and loss in quality due to factors such as:

- Impurities like droppings, cocoons and parts of insects, which may also lead to microbial
- infestation as a result of increased temperature and moisture
- Reduction of nutritional value
- Reduction in germination ability for seeds
- Creation of localized hot spots within the grain that may initiate wet heating, causing stack collapse due to weakening of bag fiber
- Blockage of processing machinery by webbing, at times destroying milling machinery
- Cross-contamination of processed foods by insect vectors in milling machinery.

Table 1 - Maize Production and Post-Harvest Losses (2013)

Country	2013 Maize production ('000 MT)*	Value (\$'000) @ \$253. US/MT**	Production and post harvest loss estimates from SPS (Billion \$)***
Ghana	1,800	275,400	\$ 0.6
Nigeria	7,200	1,101,600	\$ 2.2
Cote d'Ivoire	700	107,100	\$ 0.2
Burkina Faso	1,500	229,500	\$ 0.5
Total	11,200	1,713,600	3.4
*Source: FAO Stat			
** Estimated farmgate maize prices (field interviews)			
*** Estimated production and post-harvest losses (field interviews)			
**** Mortality and morbidity losses from animal pests and diseases (field interviews)			

Source: FAO 2013

² Field interviews

³ An increase in GDP of 11% could be achieved with a 20% decrease in stunting.

Pesticide Residues. Improper use and disposal of pesticides on standing crops can cause downstream damage to fisheries and human water sources. Harmful pesticide residue can be found in crops and stored grains. Use of banned and/or counterfeit pesticides is an additional problem exacerbated by porous land borders and poor monitoring by customs authorities. Aluminium phosphide, or phostoxin is frequently used in grain storage as both an insecticide and a rodenticide. In several of the countries visited for this research, the team noted a significant misuse of phostoxin as a fumigant. The recommended use is to treat a storage facility prior to grain storage, with a second fumigation through the oxidation of the pellets in a warehouse. Multiple traders however practiced placing a phostoxin pellet in each bag of grain. Not only is this costly for the trader, but the powdery residue from oxidation is a rodenticide and equally dangerous to humans. In Ghana, the private industry association, the Ghana Grains Council (GGC), conducts education for farmers and traders on the appropriate use of pesticides on the field and in storage.

Livestock diseases: Interviews with veterinary directorates from the four study countries suggest that animal mortality and morbidity reaches or exceeds 20 percent of livestock by value. The principal contributing factor to these losses is the lack of widespread vaccination use by pastoralists and backyard poultry producers. Larger poultry operations and most ranches access vaccines in a timely and effective fashion. Estimating lost value to the livestock and maize sectors as an opportunity cost for the four study countries exceeds a potential \$32 billion annually, based on the 2013 figures provided by FAOSTAT. Table 2 documents these costs.

*Table 2 - Economic Costs from SPS Issues ****

Country	Cattle Meat Consumption in \$ (2013)	Sheep & Goat Meat Consumption in \$ (2013)	Chicken Meat Consumption in \$ (2013)	Eggs Consumption in \$ (2013)	Maize Consumption in \$ (2013)	Loss of 20% for livestock and 15% for maize
Burkina Faso	1,670,916,000	15,218,793,000	308,610,000	202,901,408	558,558,616	\$ 3,564,027,874
Côte d'Ivoire	716,210,000	3,166,605,000	355,352,500	155,492,958	204,859,480	\$ 909,461,014
Ghana	387,672,000	8,501,340,000	413,222,500	97,702,209	546,617,330	\$ 1,961,979,941
Nigeria	6,682,000,000	118,988,601,000	1,274,955,000	527,490,000	3,023,570,077	\$ 25,948,144,711
Total	9,456,798,000	145,875,339,000	2,352,140,000	983,586,575	4,333,605,502	\$ 32,383,613,540

Source: FAOSTAT 2013

***The report makes estimations by obtaining the most recent production and price data from FAOSTAT (2013). Production data was in units of tons/year, and this was multiplied by the average price of the commodity/ton in 2013 by country. Although price data was sourced from FAOSTAT, not all prices could be obtained from a specific country for a certain commodity, and thus a proxy from the region was employed or data obtained from secondary sources. In the case of Côte d'Ivoire and Burkina Faso, the price data for eggs utilized represented a regional annual average from Mali of \$3,380.28/ton. In Ghana, this figure was \$2,364.24/ton. In Nigeria, the value of about \$527 million was obtained from a secondary source (<http://www.thepoultrysite.com/reports/?id=1596>). For maize, the price proxies of Mali (\$352.31/ton) was utilized for Burkina Faso; Togo prices (\$309.79/ton) served for Ghana and Côte d'Ivoire. The \$32.8 billion figure serves as an illustrative estimation given the difficulty of obtaining precise data, and demonstrates the potential magnitude of the opportunity cost.

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