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# **Aflatoxin Prevalence and Responses in East and West Africa**

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Country (source)	Findings
<p><b>Burkina Faso</b> (Ware et al 2017, Warth et al 2012)</p>	<ul style="list-style-type: none"> <li>• 84% of cereal-based infant formula contained AFB1</li> <li>• 50% of maize was contaminated; median incidence-23.6µg/kg + contamination of sorghum, millet, etc.</li> </ul>
<p><b>Nigeria</b> (Olaitan et al 2017)</p>	<p>AFB1 found in 95% of powdered milk samples (30-79 µg/kg) &gt; ML</p>
<p><b>Various</b> (Bandyopadhyay 2015)</p>	<p>Benin: Maize (4,000 µg/kg); Burkina: Peanut (925 µg/kg); Nigeria: Rice (372µg/kg); Ghana: sorghum (80µg/kg)</p>



Country/crop	Findings
Kenya, Tanzania and Uganda (Daniel & al 2011)	Over 60% of the maize contains AFB1>ML
Uganda, baby food	20ppb (over limit of 5ppb)
Tanzania, Iringa and Kilimanjaro Srey et al 2014	>80% of young children had AF in their blood
Addis Ababa Gizachew et al 2016	Milk contamination from noug cakes





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## Health consequences of Aflatoxin contaminated food

- Cause of liver cancer – synergistic interaction with HBV
- Child stunting
- Immuno-suppression
- Compounding factor in resistance to antibiotics



## Effects of AF on Trade

- AF contamination is No.1 cause of EU rejection of agricultural goods
- African countries lose \$670M/year in lost exports of cereals, nuts, dried fruits; and \$1.2B/year for all products
- 39% of agricultural commodities from Nigeria rejected by EU is due to AF
- WFP rejected 2,000 tonnes maize from Burkina Faso due to AF
- Total annual loss due to AF in Uganda is US\$38 millions

Sources: AU 2018, RASFF  
2005, Otsuki et al 2001, IITA  
2015



### Health Benefits

- Safe food, averted illnesses/deaths

### Economic and trade benefits

- Commodities can be traded, better prices and higher volumes

### Food security benefits:

- More food/less waste





## Standards and Trade

(Grace et al 2010;  
Gong 2015; FAO  
2012)

- Promote safe food & promote trade
- EAC adopted some standards, but they differ across countries
  - Kenya: 3 standards (B1, B2, G1 and G2)
  - Uganda: 2 standards (B1, B2, G1 and G2)
  - Kenya: 1 standard (M1)
  - Rwanda: some standards but no enforcement
- Reasons for low enforcement include:
  - Lack of clarify of tasks of different bodies
  - Lack of coordination and overlapping of roles
  - Limited resources and capacities
  - Self-consumption and informal market exchanges
- The results are evasion of regulation and secondary/black markets





## THE PARADOX

- Since AF standards and degree of implementation are unevenly distributed between rich and poor countries, and underlying health conditions also differ, **THE BENEFITS AND COSTS ARE ALSO UNEVENLY DISTRIBUTED**



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	<b>Standards</b>	<b>HBV prevalence/ compounding health factors</b>
<b>Rich countries</b>	Stringent, enforceable, high capacity	Low
<b>Poor countries</b>	Spotty or non-existent, hard to enforce, low capacity	High



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## Standards adopted by high-income countries produce asymmetric effects

### High-income countries

- Health gains
- Economic protection (health & hygiene standards=non-tariff trade barriers)

### Low-income countries

- Health losses
- Economic losses
- Trade losses



Does this mean that standards are of no use?

No, standards are important and ultimately the way to go

However, they may not always be effective, at times may be counterproductive (Grace et al 2015)

Need to look at interventions to address the problem more holistically





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Domain	Interventions to reduce AF or minimize effects
Pre-harvest	Suitable cultivars / Breeding for resistance Biocontrol / Chemical control Good Agricultural Practices
Post-harvest	Cleaning / Sorting & segregation Improved storage / drying /transport Ammoniation /Chemical control Electromagnetic radiation
Dietary	Entero-sorbents (animals and humans) Chemo-preventive agents (humans)
Clinical	HBV vaccination

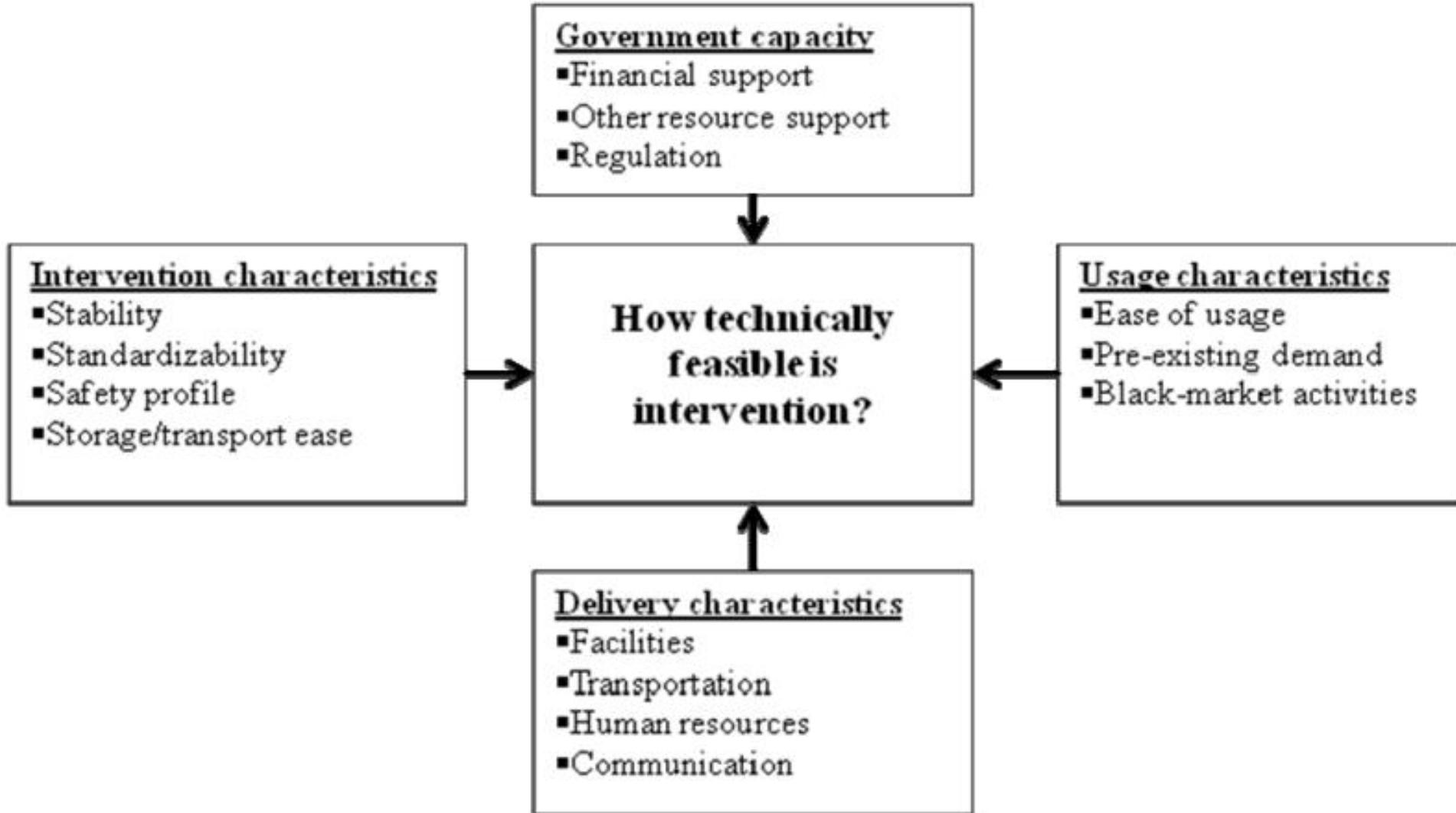
Source: Adapted from Wu and Klangwiset, 2010 and Udomkun et al (2017)





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Source: Wu and Klagwiset (2010b), Figure 1



## Example of Bio-control such as Aflasafe

### Efficacy

- Between 50% and 90% reduction of AF in treated crops

### Cost effectiveness

- VERY HIGH (Wu and Klangwiset 2010a)

### Ease of uptake/adoption: technical feasibility

- HIGH in contexts where farmers get input packages and extension is good (Wu and Klangwiset 2010b)

### Institutional feasibility and financial sustainability

- Open questions: Will governments pay? Will farmers be able to pay some amount? What role for the private sector?



## Feasibility of interventions

- Bio-controls are probably among the interventions with fewer technical constraints and wider positive effects
- Interventions during subsequent steps in the value chains (post-harvest etc.) raise the question of what happens with the discarded food/feed or the one that cannot be combined with binders.
- More studies are needed on the feasibility of other interventions – yet risks seem to be high



## Africa based initiatives

- PACA (Partnership for Aflatoxin Control in Africa)
- AfricaAIMS (Africa Aflatoxin Management System)
- Mitigating the Health and Nutrition Impacts of Aflatoxin in Africa through Uncommon Partnership” (Assis Ababa, 2016) for health and nutrition professionals
- ECOWAS, COMESA and EAC have regional aflatoxin control action plans
  
- Aflasafe BF01 in Burkina Faso (IITA, USAID, INERA) with distribution by *Éléphant Vert*.



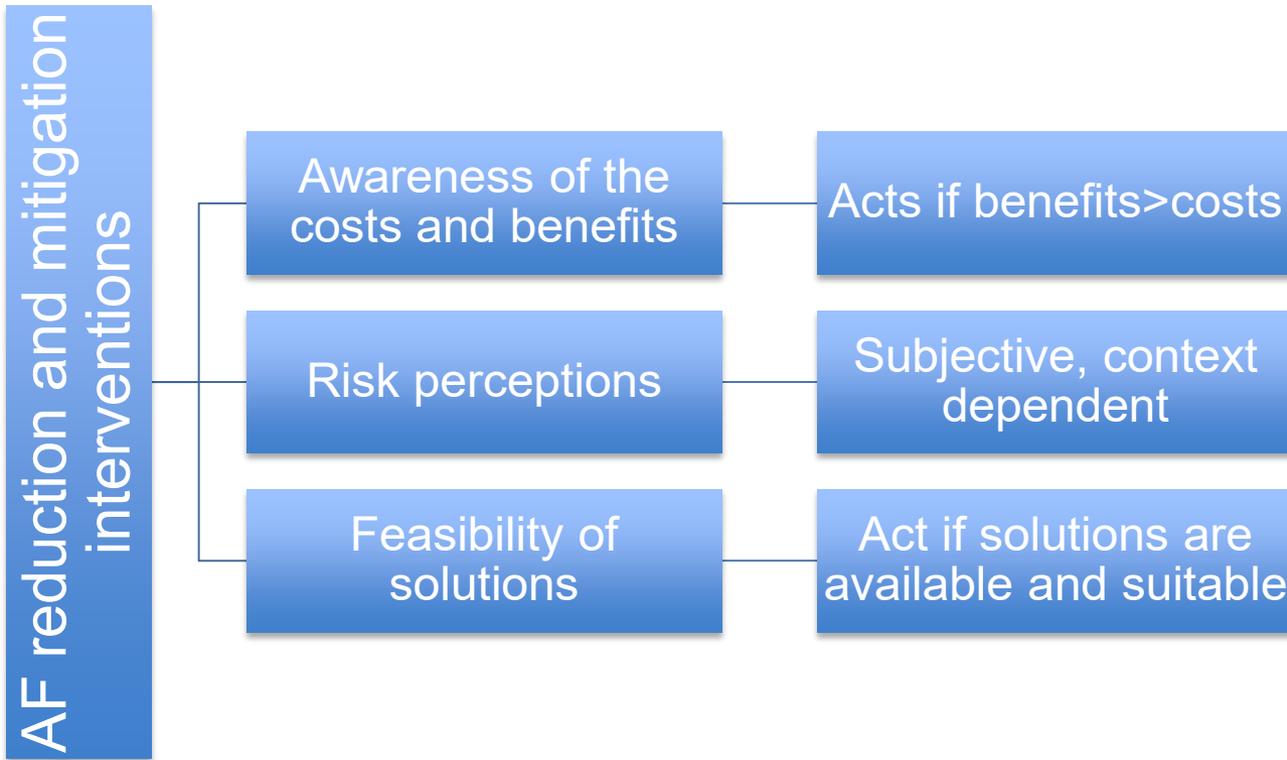
## ACTION/INACTION: WHY?

- The importance of asking the right question
- Is lack of awareness of the risks involved the real constraint to action? If not, why may governments/relevant stakeholders not act?
- Under what conditions would AF reduction interventions be undertaken?



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## AF risks perceptions

- Farmers/consumers' risk perceptions are function of:
  - Poverty – lack of resources
  - Time horizons: short for poor people
  - Other competing risk factors (malnutrition, death, drought)
- Governments' responses to AF risk may depend on:
  - The costs and benefits of action/inaction – including repercussions from the media/public
  - Competition from other policy goals/objectives
  - Availability of viable solutions



## Final questions for reflections

- Who benefits from information about food safety?
  - Poor people may not be able to do anything to avert the unsafe food
- Should information about risks be released at once to all or filtered to actors according to their potential to intervene?
  - Sense of fatality and powerlessness are pervasive among poor farmers, poor consumers but also among low level bureaucrats
- What are the best ways of communication to, and engagement of, relevant stakeholders?
  - Expert consultations
  - Policy forums
  - Use of traditional and new social media



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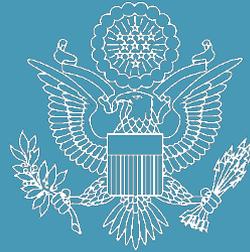


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