July 2010

Exchange of information on SPS

This document is a compilation of SPS information received for the STDF Working Group meeting of 2 July 2010 from:

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- The World Health Organization (WHO) ..... page 18
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- **GESELLSCHAFT FÜR TECHNISCHE ZUSAMMENARBEIT (GTZ)**

According to topic number 19 of the annotated agenda of the upcoming STDF working group meeting, GTZ would like to give you some short information on planned SPS-related capacity building activities in Burkina Faso:

GTZ is planning to a project on quality improvement of selected agricultural products from Burkina Faso. In this context the quality infrastructure of selected value chains (rice, maniok, cashew, sesame) shall be strengthened. The measures are clustered in four components:

1. Study: a) Gap analysis of the Quality Infrastructure as well as the institutional and regulative framework in Burkina Faso; and b) Risk assessment along thes elected value chains;

2. Strengthening of the institutional capacities and the national SPS Coordination Mechanism (especially trainings);

3. Based on the outcomes of 1 and 2 a national action plan will be developed, in which the institutional needs as well as the needs along the value chains will be included; and

4. Capacity building of the actors along the value chains, especially risk minimisation and sensitisation in primary production (trainings, handbooks etc.).

- **THE WORLD BANK**

The Jilin Agricultural Product Quality and Safety Project

The World Bank's Board of Executive Directors approved a loan of $100 million to the People's Republic of China to support the government's efforts to enhance food safety and meet increasing demand for higher quality and safer food by the Chinese population.

The Government of China has made food safety a top priority in recent years and is taking clear actions to upgrade their food safety system. It passed the Law on Agricultural Product Quality and Safety in 2006 and the Law on Food Safety in 2009. The Jilin Agricultural Product Quality and Safety Project is part of the national efforts to upgrade food safety infrastructure, procedures and enforcement capacity to implement these new national laws. Jilin Province in northeast China is a major agricultural producer and supplier of agricultural products to other parts of China. The project aims to help Jilin Province improve its agricultural product quality and reduce agricultural product safety risks. This will be achieved through introducing good agricultural practices, improving the implementation of agricultural product safety related regulations, and strengthening the agricultural product safety monitoring system.

Specifically, the project will assist in the development of new standards for good agricultural practices. These new standards include both legal minimum standards and detailed recommendations for farmers on the best agricultural practices available ranging from appropriate cultivation practices, pesticide use, integrated pest management, post harvest practices, animal husbandry practices, aquaculture production practices, to the appropriate use of veterinary medicines. To increase the adoption of standardized good agricultural practices, matching grants will be provided to farmer groups or agricultural product processors to set up 200 to 300 demonstration sites that use improved agricultural practices to produce safer agricultural products.

The project will also finance the upgrading of the agricultural product safety and quality testing, management, monitoring, and enforcement system in agricultural, livestock and aquaculture. The establishment of a risk-based agricultural product safety monitoring system will be piloted. A number of laboratories for testing pesticide and veterinary product residues will be constructed or rehabilitated.

In addition, the project will seek to increase the level of knowledge on agricultural product safety and quality through financing applied research, training and public education. Under the project a public awareness campaign will be carried out through television, radio and newspapers outlets to promote agricultural product safety among farmers and the general public. Eligible private enterprises or farmers associations will receive small loans from the project to develop and demonstrate models for integrating small-scale farmers into high quality, high value and safe agricultural product chains. "The Jilin Agricultural Product Quality and Safety Project provides an ideal platform to test new approaches to implementing agricultural product safety" said Iain G. Shuker, World Bank Task Manager for this project. "Once these approaches have been tested and proven successful, they can be rolled out to other provinces in China".

The $100 million loan from the World Bank will finance 70% of the total project investment. This is the first food safety project that the World Bank has supported in China. It is the largest food safety project ever financed by the World Bank. The Bank's study entitled "China's compliance with Food Safety Requirements for Fruits and Vegetables" in 2006 and policy note entitled "Food Safety in China" in 2008 laid the groundwork for the development of this project.

For more information on the project, please visit: http://web.worldbank.org/projects
For more information on the Bank's work in China, please visit: http://www.worldbank.org/china

Aflatoxins Workshop
June 17-18 2010
Summary of Outcomes and Next Steps

Introduction

The health and economic impacts of mycotoxins—especially aflatoxins—are devastating. Aflatoxins in maize, groundnuts and other crops have significant health and economic consequences around the world. Many agricultural producers—particularly resource-poor farmers—in developing countries are unable to meet quality standards for aflatoxins and are therefore cut off from participating in formal markets. They often market the food in informal markets where no testing is done, however, and most farm families consume their own crops within their households, also without testing for toxins. Diagnostics are complicated and expensive, but the problem of mycotoxins contamination is known to be widespread in a band from 40 degrees North to 40 degrees South around the world, with particularly dangerous pockets of contamination where growing, harvesting, storage, and handling conditions are conducive to the fungi.

Research indicates that the disability-adjusted life years (DALYs) due to aflatoxin-induced cancer range from 1.32 – 3.63 million with 83% occurring in developing countries. Periodically, conditions in East Africa and India have resulted in multiple deaths attributed to acute aflatoxin poisoning. Recently, conditions in Kenya have been particularly conducive. At least one person has died, and sampling has confirmed alarming levels of aflatoxin, raising public awareness of this long-standing problem.

A diverse group of stakeholders met in Washington, DC on 17 and 18 June 2010 to discuss a systematic strategy to begin addressing aflatoxin-related issues in sub-Saharan Africa. The objectives for the workshop were to identify:

- Opportunities and strategies for advancing research, development and commercialization of promising technology interventions to measure, control and abate aflatoxin and its impacts;
- Key goals and strategy elements for a partnership to work on aflatoxin interventions in SSA;
- Financing needs and options; and
- Next steps related to building a Partnership for Aflatoxin Control (PAC).

The following document provides a brief summary of workshop outcomes and next steps. The participant list and workshop agenda are attached. The workshop was organized by the Bill & Melinda Gates Foundation and hosted by the U.S. Department of Agriculture.

Outcomes

A systematic and holistic strategy is needed to abate and control aflatoxins in developing countries, in particular in sub-Saharan Africa (SSA). The size and scope of the problem requires collaboration among multiple partners to develop and promote robust and integrated strategies that significantly augment food security and safety for consumers in SSA by reducing aflatoxin exposure, and increase profits from agricultural products that meet aflatoxin safety standards.[1] A partnership for Aflatoxin Control should be created that involves the wide array of experts and institutions that are needed to develop and implement holistic strategies. Members should include: foundations; bi- and multi-lateral

[1] An overview of a range of potential partnership objectives provided by participants in advance of the workshop is provided in Appendix D.

donors; research institutions and universities; international institutions; governments; companies; media; and non-governmental organizations.

The Partnership would focus on a range of strategies needed to systematically address aflatoxin issues in SSA. These strategies include, but are not necessarily limited to:

- Developing, commercializing, deploying, and scaling up control technology interventions, including:
  - Biocontrol
  - Chemical control
  - Pre-harvest agronomic practices
  - Harvest practices
  - Post-harvest drying, storage, and processing
  - Alternative uses for contaminated foodstuffs
- Developing more accurate and lower cost diagnostics
- Building and enhancing laboratory capacity
- Strengthening awareness, education, and extension
- Monitoring and evaluation
- Aligning policies, legislation and standards
- Country level implementation
- Improving access to finance
- Addressing barriers to trade and market access
- Linking agricultural interventions to human and animal health and nutrition
- Commercialization

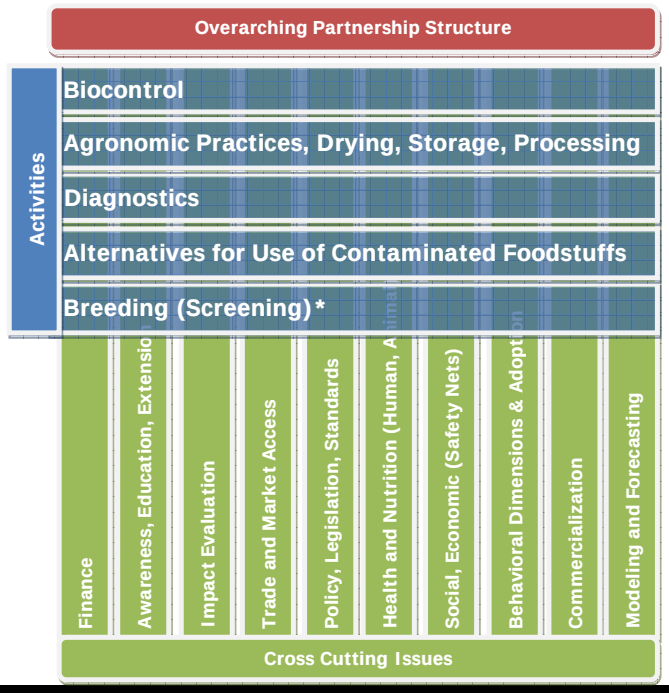
Participants created the following draft framework for the Partnership for Aflatoxin Control to develop and implement holistic strategies to address aflatoxin issues in SSA.

Draft Framework for Partnership for Aflatoxin Control

Overarching Partnership Structure:
- Enables cross-project activity knowledge capture, information sharing, and—possibly—coordination;
- Provides advocacy, communications, and political messaging on aflatoxin issues;
- Creates linkages to political processes, including CAADP;
- Links to organizations and initiatives focused on health, nutrition, and food safety aspects.

Activity Focus Areas:
- Key elements of a holistic strategy to control and abate aflatoxins;
- Near-term opportunities to scale up and deliver technology interventions to help control and abate aflatoxins.
- Development of reasonably lucrative alternatives for the use of contaminated foodstuffs

Cross-Cutting Issues:
- A set of issues relevant to all types of interventions;
- Potential opportunities to engage and strengthen communities of practice.



An overarching partnership structure for an emerging Partnership for Aflatoxin Control is needed to: enable cross-project activity knowledge capture, information sharing, and—possibly—coordination; provide advocacy, communications, and political messaging on aflatoxin issues; create linkages to political processes, including Comprehensive Africa Agriculture Development Programme (CAADP); and link to organizations and initiatives focused on health, nutrition, and food safety aspects.

Participants recommended that such a Partnership be established this year, and begin its work by developing an integrated set of aflatoxin control strategies that include: biocontrol measures; promotion of good agronomic practices, post-harvest drying, storage, and processing practices and technologies; and development of lower cost and more accurate diagnostics and laboratory testing capacity.[*] Suggested next steps in these three areas are described in Attachment 3.

To effectively integrate the component activities, align with African government priorities and the CAADP Framework, and efficiently share information across disciplines and partners, it was proposed that the Partnership mobilize two small teams, to be based at the regional economic organizations in sub-Saharan Africa (in ECOWAS for West Africa, and COMESA for East and Southern Africa).

These teams would be headed and linked by a coordinator, and would address a broad set of issues including, but not necessarily limited to: finance strategies; awareness, education and extension; impact evaluation; trade and market access; policy, legislation and standards; health and nutrition issues (human and animal); socio-economic issues and safety nets; and human behaviour considerations affecting adoption. It is envisioned that founding partners would maintain substantive engagement through membership in the Partnership's steering committee.

Participants discussed a launch meeting for the Partnership to take place in Africa in the fall of 2010.

Although the impact of aflatoxins is felt around the world and in many developing countries, participants agreed to initially focus their activities on sub-Saharan Africa where the problem is widespread and acute. The Partnership will draw lessons learned from other regions and broadly disseminate its own findings.

Participants were well aware of the importance of other mycotoxins on health of consumers and incomes of smallholder farmers. However, they decided to focus first on aflatoxins and to expand its strategies to other mycotoxins when possible. Participants expect that measures to control and abate aflatoxins will have spill-over benefits for efforts to address other mycotoxins.

This meeting focused on strategies and interventions regarding the agricultural aspects of aflatoxins. Participants acknowledged the importance of strategies and interventions focused on (human and animal) health and nutrition. Understanding that these strategies and interventions are being pursued elsewhere, participants suggested that the Partnership focus on agricultural issues, but explore specific mechanisms to connect and engage with communities focused on health and nutrition issues (e.g., through ongoing conversations with BMGF Global Health Program staff).

Next Steps

This section describes a set of suggested next steps regarding the following topics: vetting and commitment; and overarching partnership structure. More detailed next steps for the development and implementation of strategies regarding the following topics is provided in Appendix C: biocontrol;

[*] Participants agreed that breeding for aflatoxin resistance is an important strategy and suggested that existing breeding programs add screening for aflatoxin resistance to their activities. BMGF will explore with its grantees whether aflatoxin screening can be incorporated in existing breeding programs.

good agronomic practices, storage, drying, and processing; and diagnostics and testing. These next steps may provide a launching point for activities of a Partnership for Aflatoxin Control.

Vetting and Commitment to Partnership

BMGF participants suggested that the foundation is ready to support a Partnership and are encouraging other investors to co-fund relevant activities.

Participants were asked to vet the creation of a Partnership for Aflatoxin Control with their colleagues and to respond to Ms. Alex Kardasheva of BMGF (alex.kardasheva@gatesfoundation.org) by June 30th citing their interest in joining the Partnership and the potential role their organizations could play. To facilitate the process of vetting the creation of a Partnership with participants' colleagues, BMGF developed a cover letter that briefly describes the need for and next steps in creating a Partnership (see cover letter to this summary).

In addition, participants are encouraged to continue their discussions on the BMGF Agriculture Policy and Statistics Toolkit.2 Relevant information can also be obtained from International Food Research Institute (IFPRI)'s AflaControl website.[3]

Overarching Partnership Structure

It was recommended that the overarching partnership structure be embedded in COMESA and ECOWAS, with a linkage/coordinator between them. Technical teams with the following expertise should be created at each regional institution:

- Agriculture, and food security;
- Health, nutrition, and food safety (Hazard Analysis Critical Control Point (HCCP));
- Communications, advocacy, and political messaging;
- Commercialization

A coordinator would oversee and link the technical teams and a fundraising specialist who would support the implementing partners' and both teams' activities. The technical teams would be supported by administrative staff.

The Partnership needs a voice in NEPAD and AU. The African Agricultural Technology Foundation (AATF) has requested a seat in those entities and offered to represent the Partnership for Aflatoxin Control in those fora.

Resource commitments for the Partnership could come from a number of organizations, including but not limited to the following:

- World Bank (e.g., Global Food Security Trust Fund; and Trade Facility Trust Fund)
- USAID (e.g., current resources at country and regional level; and possibly Feed the Future initiative)
- AATF (e.g., representing Partnership interests through its AU and NEPAD position)
- FAO (e.g., emergency funds; technical cooperation programs; manuals and other materials; ongoing technical expertise, field staff and workshops; and the Standards and Trade Development Facility)

[2] https://agpolicyandstats.centraldesktop.com/collaborationextranet/doc/4632933/w-Foodsafety. Please contact Diana Grusczynski if you are having trouble accessing the site.

[3] http://programs.ifpri.org/afla/afla.asp

- USDA (e.g., possibly through Feed the Future; existing SPS advisors in Kenya, South Africa, and Senegal; APHIS and FAS staff in Africa; and local procurement program funds)
- ECOWAS and COMESA

Implementation partners for the Partnership could include, but are not limited to, the following (categories of) organizations:

- Private Sector
- Health and Nutrition Organizations, including World Health Organization (WHO), Centers for Disease Control and Prevention (CDC), UNICEF
- World Food Program (WFP)
- Alliance for a Green Revolution in Africa (AGRA)
- IFPRI
- Civil Society

Implementation activities should provide explicit linkages to trade issues and private sector engagement.

Appendix A: Workshop Participants

Ranajit Bandyopadhyay, IITA
David Bergvinson, BMGF
Susan Bradley, USAID
Paula Bramel, IITA
Martha Byanyima, COMESA
Steve Collins, ACDIVOCA
Peter Cotty, USDA
Kerstin Garcia, GTZ
Diana Grusczynski, BMGF
Orin Hasson, BMGF
Hans Jöhr, Nestle
Jean Kamanzi, WorldBank
Nicolaus Kowollik, Bayer
Jennifer Maurer, USAID
Margaret McDaniel, USDA
John McMurdy, USAID
Jacob Mignouna, AATF
Arlene Mitchell, BMGF
Seth Murray, TAMU
Clare Narrod, IFPRI
Mary Palm, Office of the President
Maya Pineiro, FAO
Bertrand Salvignol, WFP
Pippa Trench, IFPRI
Prem Warrior, BMGF
Eileen Watson, Syngenta
Rebekah Young, Canadian Ministry of Finance

Facilitators:
Rex Raimond, Meridian Institute
Todd Barker, Meridian Institute

Appendix B: Workshop Agenda

***Aflatoxins* Workshop**
June 17-18, 2010

U.S. Department of Agriculture
South Building
1400 Independence Avenue SW; Room 3109
Washington, DC 20250

Objectives:

The objectives for the workshop are to identify:

- Opportunities and strategies for advancing research, development and commercialization of promising technology interventions to measure, control and abate aflatoxin and its impacts;
- Key goals and strategy elements for a partnership to work on Aflatoxin interventions in SSA;
- Financing needs and options; and
- Next steps related to building a Partnership for Aflatoxin Control.

Agenda:
17th June, 2010

Breakfast (on your own)

7.50 Mini bus departs the Sofitel hotel with the attendees accommodated there

8.30 Registration

Participants collect nametags and meeting materials in front of conference room

8.45 Welcome Address
Patricia R. Sheikh, Deputy Administrator for Capacity Building and Development, U.S. Department of Agriculture (USDA) Foreign Agricultural Service (FAS)

9.00 Meeting Objectives, Agenda Review, and Introduction of BMGF and Facilitation Team
Prem Warrior, Arlene Mitchell, and Diana Grusczynski, Bill & Melinda Gates Foundation (BMGF)

BMGF provides a 20-minute overview covering the following topics:
- Key needs and priorities in sub-Saharan Africa context for aflatoxin control.
- Potential technology interventions in four categories: biological control; chemical control; diagnostic tools; and post-harvest management.
- Proposed focus areas for technology intervention and related resource requirements.
- Relevant BMGF investments.
- Potential goals for a Partnership for Aflatoxin Control (e.g., information exchange, coordination, data collection and analysis, donor commitment and support).

9.30 Participant Introductions

Participants provide brief (3 minute) overviews of their own background, institutions' interests and activities in the area of aflatoxins.

10.30 Coffee

11.00 Overview of Potential (Technology) Interventions for Aflatoxin Control

Expert presentations on the following topics:
a) Biological Control, Ranajit Bandyopadhyay, IITA
b) Chemical Control, Nikolaus Kowollik, Bayer
c) Diagnostic Tools, Seth Murray, Texas A&M University
d) Post-Harvest Management, David Bergvinson, BMGF
e) Value Chain Approach, Hans Joehr, Nestle

Five presenters use 3-5 slides to present in 10-15 minutes:
- Core technology;
- Stage of R&D;
- Options for dissemination and/or commercialization;
- Key needs, including resource needs, for further development and dissemination/commercialization of relevant interventions.

Brief opportunity for questions following each presentation.

12.15 Discussion of Potential (Technology) Interventions

Participants discuss these potential areas for technology intervention. Questions for discussion include:
- Are these the right areas to focus on to create near-term implementable technologies that will have an impact?
- Should there be a link to breeding/genetics programs? If so, how?
- What are the barriers to sustainable commercialization of each intervention? How can these barriers be overcome?
- What are the implications and timing issues regarding policy and advocacy programs? How could policy and advocacy efforts be linked to each area?

12.45 Lunch

14.00 Discussion of Financing Needs and Potential Mechanisms
Orin Hasson, BMGF and Rebekah Young, Finance Canada

Participants explore possible financing mechanisms to support further development of potential technology interventions.

14.45 Discussion of a Potential Partnership for Aflatoxin Control
Arlene Mitchell, BMGF

Participants explore the need for a Partnership for Aflatoxin Control. Questions for discussion include:
- Who is investing in relevant activities, including technology development?
- What appear to be the main needs for additional investment (e.g., technology development; sustainable commercialization approaches; policy and advocacy; etc.)?
- Would a Partnership for Aflatoxin Control be a helpful intervention?

15.30 Break

15.45 Discussion of Goals for a Potential Partnership for Aflatoxin Control
Group discussion regarding potential Partnership goals and possible models for a partnership (e.g., a consortium). Goals may include, but are not limited to:

- Knowledge capture and information exchange, including linkages to relevant activities beyond the scope of this convening (e.g., to breeding/genetics activities)
- Coordination
- Donor commitment and financial support

17.00 Adjourn for the Day
Attendees staying at the Sofitel will be transported back to the hotel.

18.30 Group Dinner
Oyamel, 401 7th Street, NW, Washington, DC 20004
http://www.oyamel.com/

18th June, 2010

Breakfast (on your own)
7.50 Mini bus departs the Sofitel hotel with the attendees accommodated there

8.30 Recap of Day 1
Facilitators
8.45 Discussion on Strategies for a Potential Partnership for Aflatoxin Control
Building on the discussions on Day 1, participants continue discussion regarding potential Partnership goals and approaches to achieve these goals.
Small working group discussions, if appropriate.

10.30 Break
11.00 Discussion of Strategies for a Potential Partnership for Aflatoxin Control (continued)
12.00 Lunch
13.30 Closing Discussion – Emerging for a Partnership for Aflatoxin Control

14.30 Next Steps, Wrap Up and Thanks
Prem Warrior, BMGF
15.00 Adjourn

Appendix C: Draft Action Plans for Biocontrol, Good Agronomic Practices and Post Harvest Management and Technologies, and Diagnostics and Testing

Biocontrol

Steps in Aflatoxin Biocontrol R-4-D

1. Strain identification and optimization
   - Sample collection
   - Strain characterization
   - Atoxigenic strain identification (lab)
   - Genetic and molecular characterization
   - Detection and monitoring methods
   - On-station field efficacy
   - Optimizing treatment protocols
   - Cost-effective formulations
   - Create African strain library
2. Building partnerships
   - Sensitizing stakeholders
   - Training of regulators for biopesticide registration
   - Harmonization of biopesticide regulations
   - Experimental Use Permit or provisional registration
   - On-farm efficacy testing
   - Cost effectiveness analysis
   - Farmer-market linkages in value chain, including catalyzing farmer groups

Steps for promoting biocontrol for wide adoption

3. Commercialization
   - IP issues
   - Identification of potential manufacturer
   - Full registration
   - Business plan
   - Manufacturing plant
   - Product stewardship
   - Technical backstopping
   - Monitoring & evaluation
4. Capacity development
   - Farmer training in integrated aflatoxin management
   - Industry and regulatory agencies for aflatoxin monitoring
   - Students and national program staff in product development, deployment and monitoring
   - Regulatory agencies and commercial manufacturer for quality control

Focus countries and stages of development:

Country	Strains	Partnerships	Commercialization	Capacity development
Nigeria (1)				
Senegal (2))				
Burkina Faso (2)				
Ghana				
Cote d'Ivoire				
Kenya (1)				
Malawi (3)				
Mozambique (3)				
Tanzania				
Ethiopia				
Mali				

Completed **Partially started** **Yet to start**

Proposed near-term focus countries and activities:

Kenya:

- Start-up: sensitizing stakeholders; field efficacy trials; lab infrastructure; capacity development
- Expansion: identifying and developing partnerships; training biopesticide regulators; developing manufacturing processes; permit acquisition; field efficacy trials; business planning; IP issues; optimizing treatment protocols
- Commercialization: identifying and developing partnerships; sensitizing stakeholders; fine-tuning manufacturing processes; establishing manufacturing facility; stewardship, technical backstopping; monitoring and evaluation
- Aim: Make product available in 3 years. Participants noted that this timeline is significantly compacted as a result of applying lessons from IITA and its partners' experiences in Nigeria.
- Partnership: IITA, USDA, AATF, KEPHIS, PCCB, KARI, NGOs, Market, Government
- Budget: $1.8 million + manufacturing facility + $400,000 lab infrastructure (3 years)

Nigeria:

- Expansion: identifying and developing partnerships; training biopesticide regulators; permit acquisition; field efficacy trials; business planning; IP issues; optimizing treatment protocols; pilot manufacturing plant
- Commercialization: sensitizing stakeholders; fine-tuning manufacturing processes; establishing manufacturing facility; stewardship; technical backstopping; monitoring and evaluation
- Aim: make product available in 2 years. Note: participants discussed whether it would be possible to commercialize the product faster, including beginning to distribute the product so farmers can try it out and become familiar.
- Partnership: IITA, USDA, AATF, NAFDAC, NGOs, Market, Government
- Budget: $1.5 million + manufacturing facility + $800,000 pilot manufacturing plant

Participants suggested carefully assessing cultural acceptance issues and planning stakeholder engagement. Also, they indicated a need for baseline evaluations, in order to allow for an impact evaluation.

Agronomic Practices and Post-Harvest Drying, Storage, and Processing

- Medium term activities:
    - Testing and Innovations: Storage and Dryers –
        - What approaches work in different environments
            - Participants mentioned storage technologies developed by FAO, CRS and CIMMYT (metal silos), East African Grain Council and Kentainers (modified plastic tank). The scan and analysis for existing technologies and practices would be comprehensive (i.e., not, limited to those mentioned at the meeting).
        - Trust: how does this affect ability to store communally (e.g., small vs. large stores)
            - 10 tonne storage (a truck load) could be a cost effective approach; local banks should be engaged to provide financing
        - Cost effectiveness: storage pays for itself quickly if you take into account losses. Need to bring in local community and local manufacturers and entrepreneurs.
            - Work is needed to better understand effectiveness and cost of various storage and drying technologies. IFPRI will be doing work on cost effectiveness of various technologies with support from the Government of Finland.
            - Beyond cost effectiveness, there are many challenges that affect adoption of drying and storage technologies. Creative approaches will be needed to overcome these activities.
        - Adequate storage approaches will help farmers' attempts to meet grades and standards, which will help move farmers from informal to formal sector in the long run.
- Near term activities:
    - Quicker wins to improve practices:
        - Lay on plastic / keep off the ground / cloth
        - Drying: stalk drying / time to dry, bite test
        - Insecticides, marigolds
        - Pallets BUT challenges with adoption (e.g., pallets being burned for firewood)
        - Improved Seed
        - Soil remediation
        - Residue management
        - Crop diversification
            - Need to understand effectiveness, efficacy. Challenge with current diagnostics
            - Bring down / assess costs
- Local Partnerships are key to education. Need a concerted education program using every possible avenue, including:
    - Posho mills
    - Local brewers
    - Groundnut coops
    - Youth promoters
    - Producer/trade groups
- Donor Relationships
    - Ag donor working group – bilateral mission: chaired by Ministries of Agriculture, facilitated by FAO

        - Great way to create country-level consistency, build awareness, identify opportunities to integrate with existing programs.
    - Finnish government and international agricultural research centers are supporting linkages to health
    - Leverage existing post-harvest/extension projects (CRS, Farm Radio, Strategic Food Security Support for East Africa)
- Countries:
    - Tier 1: Kenya, Nigeria, Malawi
    - Tier 2: Ethiopia, Mali, Mozambique (Note: extent of aflatoxin issues in Ethiopia is not yet clear; BMGF is working with government of Ethiopia to develop an agriculture strategy and aflatoxins will likely be part of the strategy)

<u>Diagnostics and Testing</u>

Challenges and opportunities for enhanced or new diagnostics tools to contribute to holistic strategies for addressing aflatoxin issues exist at two levels:

1. For use at the value chain level (large scale buyers of grains from farms such as but not limited to Nestle, Mars, Kraft, WFP, breweries)

2. For use at the farm level (growers, farmer associations, extension specialists; potential customers – donor agencies for distribution to farmers in developing countries)

3. Value Chain Level (Cash Crop)
    a. Different standards across countries
        i. Quantitative
            1. 0-200ppb (buy, straight, blending, feeding, etc.)
            2. 200+ ppb (outright rejection, non-food/feed uses)
    b. Sampling (appropriate protocols and accurate)
    c. WFP and Nestle have two testing types
        i. Aggregate (region) farm level – allows direct feedback
        ii. Bulk Aggregate test (500 tons)
    d. Tests MUST be consistent across all users and crops
    e. Fixed equipment must be simple and cheap (NOT HPLC)
    f. Field condition robustness (no refrigeration)
    g. Private vs. Public labs (prefer private)
    h. May have to be suitable for multiple mycotoxins
    i. Two types of goals
        i. Short term (meets some requirements)
        ii. Long term (meets all requirements – might even work with US funding agencies)
    j. Users:
        i. WFP
        ii. Nestle, other companies
        iii. Breweries
        iv. Small commercial companies
        v. Many in the Developed World

Opportunity: Using Advance Market Commitments to create an incentive to develop better diagnostics. Funders would determine a price point and specific requirements, and ensure that X

million tests will be purchased. Creates opportunities for local small businesses – individuals can buy fixed testing equipment and build grain quality labs around this with guarantee of X tests being performed.

4. Staple Crops / Breeding / Grain Traders
    k. Diagnostic tools MUST be:
        i. Robust across all conditions
        ii. Extremely low cost (family could afford to test 100 samples a year)
        iii. Extremely easy to use
    l. Does not need to be as accurate (i.e. six levels: 0, very low, low, moderate, high, DANGER!)
    m. Will be used at local level:
        i. Women
        ii. Located at mill?
        iii. Allows education/ feedback about food supply
    n. What is SAFE to consume vs. LEGAL as PART of diet
        i. Will depend on how much maize is consumed as proportion of diet
        ii. Will depend on time
    o. Use of diagnostics will inform:
        i. Which maize should be discarded, fed, etc.
        ii. How much maize should be consumed?
        iii. Are practices (agronomic and storage) effective?
        iv. Does it need cleaning?
        v. Which varieties are best?
        vi. Do we need clay binder (i.e. Novasil)
    p. These diagnostics should be accompanied by "safe utilization plans" that describe safe alternative uses for different levels of contaminated crops. In addition, food security alternatives are needed to provide alternative food and feed sources for affected farmers.

Advance market commitments may not be as effective because customers have extremely limited disposable incomes; should be research type grants and education/extension type programs for educating people on best practices.

Other Thoughts:

- Promote cleaning of grain (Hand harvested grain is much more contaminated than combine harvested because of worst (lighter kernels)
- What is safe to consume? Risk assessment work has been done by FAO and others.
- Can WFP use the aggregate tests, with FAO's statistical geography to develop a "hot-spot map?" i.e. Early Warning System?
- Research users and small commercial businesses will benefit: in both developing and developed world.
- For both types of diagnostics, cost of sampling and sampling protocols for the different types of products being sampled and tested should be considered.
- Cost of testing (in particular at the farm level) should be reduced.
- Regulatory structure around these issues is important (e.g., confiscating and disposing of contaminated batches can only be done by a regulator). Inspections and enforcement by

government agencies are the prescribed means. Testing seems to be important for the private sector, but inspections and enforcement should be based on regulatory standards that are not country-specific.

Appendix D: Pre-Workshop Survey Responses – Potential Partnership Objectives

If a Partnership for Aflatoxin Control were to be formed, what do you think should be its objectives?

I. OVERARCHING GOAL

- Reduction of aspergillus flavus in the field
- Develop and promote robust and integrated strategies that significantly augment food security and safety for consumers in Africa by reducing aflatoxin exposure, and increase profits from agricultural products, which meet aflatoxin safety standards.
- Control Aflatoxins contamination in food crops, specifically in maize and peanuts using all available control methods (biological and post harvest)
- Support activities for developing and testing aflatoxin management practices on the foundation of a good knowledge base on key biological, environmental, institutional and policy drivers that influence contamination.
- Support activities for scaling-up of cost-effective technologies, increasing awareness, and improving regulatory framework (formulating policies and strengthening institutions for monitoring and enforcement) for reducing aflatoxin exposure.
- To encourage collaborative research through funding multi-sectoral projects and link research institutions with organizations and institutions that work with rural communities to ensure uptake of results.
- Provide a platform for a consortium of donor, research, farm, trade and regulatory institutions for steering the partnership.

Control Strategies

- Systematically evaluate control strategies along the value chain in terms of effectiveness in reducing risk in different agro-ecological zones
- Agreement on the method to evaluate control strategies
- Effective measures to reduce aflatoxin-contamination during stocking
- Control mechanism for anti-nutrient developed local testing (strains)
- To explore effective bio control methods and compliment traditional practices such as good agricultural practices (GAPs)
- Areas of rapid intervention (e.g. drying) (to leverage different investments in PHH capacity building, development of new technologies etc. with the goal of better measuring the extent and effect of aflatoxin incidents and decreasing them)
- Areas of slow intervention (e.g. agri practices)

Extension and Education

- Dissemination/extension of existing technologies (or expanded pilots) to reduce the impact of aflatoxin on human nutritional status, and to add value to susceptible crops
- Extension: Gov/General Public/Local Population exposed Rural
- To provide education and cost effective solutions for smallholder farmers, using as many "best practice" approaches as practical, and to provide incentives for adoption which may be related to trade and market access for their produce.
- Aflatoxin testing and education worldwide first. Then integrated solutions the three most promising, with different advantages and disadvantages are: atoxigenic strains, breeding for resistance, and clay binders.

Policies, Legislation & Standards

- To harmonize policy actions across the region and establish a harmonized and enabling policy, legal and regulatory framework in the region
- To lobby national and international governments on common standards
- Legislation on continent including NRS legislation (if biocontrol of)
- Agree on common regulations (to work towards common messaging so that the public at large but particularly Government policy makers are informed by relevant expertise in a consistent and coordinated fashion)
- Define (WHO/FAO) level of real toxicity. CODEX is not defined for aflatoxin, should it be 20 ppb or higher?

Country Level Implementation

- To implement appropriate programs at country level
- Work with national Governments in high risk areas to put in place a comprehensive strategy to respond to the problem and provide the technical expertise to implement same strategy.

Diagnostics / Laboratory Capacity

- Increase lab capacities and knowledge of their capacities
- Aflatoxin testing and education worldwide first. Then integrated solutions the three most promising, with different advantages and disadvantages are: atoxigenic strains, breeding for resistance, and clay binders.

Monitoring and Evaluation

- Monitor and evaluate impact of aflatoxin management practices on farmers' income, food security and health
- Surveillance (to collate and share information amongst relevant bodies about the existing evidence base, extent of problem (known and assumed), risks, mitigation measures along the value chain, and potential solutions and strategies with a view to supporting Government efforts to address issues around aflatoxin)

Health

- Link health/nutrition aspects with agronomic aspects. Aflotoxicosis/>Liver Cancer>Hepatitis B. Blood work with Rural populations (High level strain areas / other rural areas / Urban / peri-urban.

Finance

- Access to solutions: physical/financial

Animal

- Check in animal food chain particularly poultry and increased zero grazing as land units get smaller

Trade and Market Access

To provide education and cost effective solutions for smallholder farmers, using as many "best practice" approaches as practical, and to provide incentives for adoption which may be related to trade and market access for their produce.

- **THE WORLD HEALTH ORGANIZATION (WHO)**

FAO/WHO Project and Fund for Enhanced Participation in Codex (Codex Trust Fund)

Concept Note

Support to developing countries to contribute to the science base of Codex Mycotoxins in sorghum

This concept note is being provided to the STDF working group which will take place in Geneva on 2 July 2010 for consideration by the members for feedback on possible development into a proposal for a Project Preparation Grant (PPG) and/or expressions of interest from other donors to partner with the EC and others in providing a contribution to the Codex Trust Fund to support the activity outlined below.

Rationale and background:

Enhancing the scientific/technical input to Codex from developing countries

WHO and FAO are seeking complementary funding to assist developing countries to enhance their scientific/technical participation in the Codex Alimentarius Commission. The food standards, guidelines and other recommendations of the Codex Alimentarius are based on the principle of sound scientific analysis with the majority of the scientific advice coming from the FAO/WHO expert committees. One of the key principles of developing scientific advice is universality for which a broad base of scientific data is critical for the elaboration of international standard-setting activities. However, the reality is that many, or even the majority of Codex standards are being developed: 1) on issues of particular importance to the trade and consumer protection of developed countries; 2) without the consideration of data from developing countries and countries with economies in transition.

Enhancing the scientific/technical data from developing countries and countries with economies in transition in support of the standard-setting process is the third objective of the FAO/WHO Project and Fund for Enhanced Participation in Codex (Codex Trust Fund). Resources that have been made available to the Codex Trust Fund to date through donor channels have allowed for support to the physical participation of developing countries in Codex meetings and have allowed the Codex Trust Fund to meet its first objective of widening participation in Codex. However, the resource base has not allowed for significant allocation to Objective 2 (Codex training for more effective participation in Codex) and Objective 3 (enhanced scientific/technical participation in Codex).

The mid-term review of the Codex Trust Fund, carried out from November 2009-March 2010 and being tabled at the 33rd Session of the Codex Alimentarius Commission (Geneva, 5-9 July 2010) calls for greater efforts to be made by the Codex Trust Fund to achieve the second and third objectives.

Scientific data on issues of importance to developing countries

One issue of particular importance to developing countries who are major producers, consumers and/or exporters of sorghum is the risk to human health from mycotoxins in sorghum. At the 2nd Session of the Committee on Contaminants in Foods (CCCF, The Hague, The Netherlands, 31 March-4 April 2008), it was agreed to establish an electronic working group led by Tunisia and open to all members and working in English, to prepare a discussion paper on mycotoxins in sorghum (ALINORM 09/31/41, paragraph 186). The discussion paper aimed at including an overview of available data on mycotoxins in sorghum with a view to possible evaluation by JECFA.

At the 3rd Session of the CCCF (Rotterdam, the Netherlands, 23-27 March 2009), the draft discussion paper prepared by Tunisia was considered. The Committee considered whether there was a need to develop a specific annex on prevention and reduction of contamination by aflatoxin in sorghum to the *Code of Practice for the Prevention and Reduction of Mycotoxin Contamination in Cereals*, but concluded that the Delegation of Tunisia would continue to collect all available data and to provide a more complete overview for discussion at the next session.

At the 4th Session of the CCCF (Izmir, Turkey, 26-30 April 2010) it was agreed that the Delegation of Sudan with assistance from Algeria, Brazil, Tanzania, Cote d'Ivoire,
Japan, Mali, Senegal, Sweden, Nigeria, Kenya, Saudi Arabia, Tunisia and the United States of America would prepare a discussion paper and that the paper would focus on two main areas as follows:
• the types of mycotoxins and mycotoxin-producing fungi which had been reported and could be found in sorghum;
• the levels of mycotoxins in sorghum.

In light of the discussions in CCCF on an issue of particular importance to developing countries which would be amenable to the development of a Codex standard, and in view of the calls for more emphasis by the Codex Trust Fund to objective 3, recent discussions have taken place with the European Commission regarding a new multi-year contribution to the Codex Trust Fund which would include an amount earmarked for supporting the costs associated with carrying out surveys and analyses on mycotoxins in sorghum in sorghum-producing/exporting countries in the Codex African and Near East regions.

Mycotoxins in sorghum:

Sorghum - Roughly 90 percent of the world's sorghum production is in the developing countries, mainly in Africa and Asia. Sorghum is primarily grown in agroecologies subject to low rainfall and drought. Most such areas are unsuitable for the production of other grains unless irrigation is available. Sorghum is widely grown both for food and as a animal feed. Sorghum is crucial to the world food economy because it contributes to household food security in many of the world's poorest, most food-insecure regions. In the main production areas in Africa and Asia, more than 70 percent of the sorghum crop is consumed as food.

Mycotoxins - Mycotoxins are fungal metabolites that are present in a large part of the world's food supply. Mycotoxins that pose human health risks include aflatoxins, deoxynivalenol (DON), fumonisins, ochratoxins, and ergot alkaloids. Some are produced before harvest (DON, ergot); some during and immediately following harvest (fumonisin, ochratoxin); and a few predominantly during storage (aflatoxin). Generally, tropical conditions such as high temperatures and moisture, monsoons, unseasonal rains harvest, and flash floods lead to fungal proliferation and mycotoxins. Poor harvesting practices, improper storage, and less than optimal conditions during transport and marketing can also contribute to fungal growth and proliferation of mycotoxins.

Health impact - The presence of deteriorative fungi with the ability to produce mycotoxin in grains and food represents a great hazard for human and animal health, and it has been reported for sorghum in many countries with a high frequency of Aspergillus and Fusarium genera. Aflatoxins are bifuranocumarin mycotoxins produced by A. flavus and A. parasiticus, with aflatoxin B1 (AFB1) being the most hepatoxic, showing mutagenic and carcinogenic and, probably, teratogenic properties in animals. According to the International Agency for Research on Cancer, AFB1 is classified as a human carcinogen class 1. Fumonisins are mycotoxins produced mainly by F. verticillioides Sacc Nirenberg (=F. moniliforme Sheldon), and F. proliferatum in several agricultural products worldwide, including maize and sorghum. The toxic effects of fumonisins depend on the animal species and the toxigenity of Fusarium strains. This toxins causes leukoencephalomalacia in equines and rabbits,

pulmonary edema in swine, and it has been reported as a probable cause of esophageal cancer in humans.

The effects on animal health of feeding poultry and livestock aflatoxins-contaminated feed include severe and sudden feed refusal, convulsions, loss of weight, reduced egg production and reduced growth rates. The toxic metabolite aflatoxin M1 can be found in the milk of cows that have consumed feed contaminated with aflatoxin B1 (the most prevalent and the most toxic form of aflatoxins). Aflatoxins can reduce performance and impair health of dairy cattle, but significant toxicity is thought to occur at dietary concentrations much greater than those which can result in illegal milk residues.

Fumonisin-contaminated feed induced diarrhea, reduced weight gain, drastic drop in egg producstion, lameness and mortality in layer hens. Other effects in animals are leucoencephalomalacia in horses, pulmonary edema in pigs, nephro-toxicity and brain haemorrhages in rabbits.

The effects on animal health of feeding animals ergot alkaloids-contaminated sorghum include severe feed refusal in cows and pigs, reduced milk production in dairy cows and sows, reduced weight gain in cattle, and death of piglets (data from Australia).

Decreased egg production has been observed in the US in commercial laying hens fed zearalenone- and deoxynivalenol-contaminated grain sorghum.

In general, for milk, major concerns refer to the contamination by aflatoxin (M1) and ochratoxin A. It should be noted that meat from ruminant animals is not considered as an important route of exposure for humans due to the degrading/converting action of rumen microflora that drastically reduces the carry-over of mycotoxins and related metabolites to tissues. Ochratoxin A contamination of pork is of concern.

Aflatoxin B1 biotransformation in the liver of hens generates toxic metabolites that can be transferred to eggs. Due to poor absorption and rapid excretion in animals, fumonisins have not been found significantly transferred into pork, chicken meat, eggs, and milk.

Economic and trade impact - Table 1 in the Annex shows sorghum production in the different regions of the world in 2008. Graph 1 in the Annex shows the major sorghum exporting countries and the value of sorghum exports in 2007. Graph 2 shows the major sorghum importing countries and the value of sorghum imports in 2007.

In the least developed and low income countries (mainly Africa) sorghum has traditionally been a major staple food. In other countries sorghum is an important animal feed and this purpose constitutes the bulk of trade. The economic losses due to mycotoxin contamination in sorghum are multifaceted involving direct crop and livestock losses. The incidence of mycotoxins varies greatly among climatic conditions and regions and for these reasons the economic impact of mycotoxins contamination on sorghum is difficult to be quantified at the global level.

Data from the EU Rapid Alert System for Food and Feed (RASFF) showed that in 2008 as in previous years, mycotoxins are the hazard category with the highest number of notifications with a significant increase of notifications (46 notifications) on noncompliant levels of aflatoxins in cereals and cereal products in comparison with previous years (in 2007: 17; in 2006: 5 and in 2005: 3 notifications).

The global picture of sorghum trade is further complicated by the existence of different standards and limits for mycotoxins in exporting and in importing countries, with the EU limits being the most stringent.

Objective:

To assist developing countries and/or countries with economies in transition to gather scientific data of interest to Codex.

Activity:

Provide seed funding for a pilot activity in 4 major sorghum producing/exporting countries to assess types and levels of mycotoxins (aflatoxins, ochratoxins, fumonisins, zearalenon, patulin) in different varieties of sorghum.

Expected output:

Survey data on types and levels of mycotoxins in different varieties of sorghum from 4 developing countries among those most concerned by human and animal health and trade impacts resulting from mycotoxin-contaminated sorghum with a view to: 1) possible evaluation by JECFA; 2) possible development of Codex standard in this area.

Cost estimate:

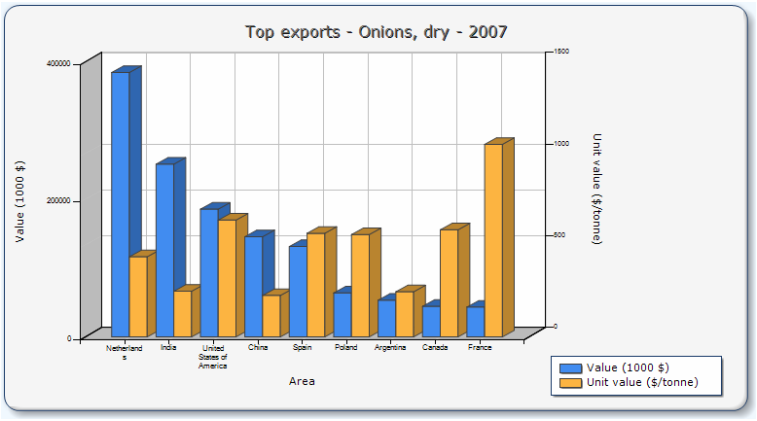
Four countries will be involved in the "pilot project".
Estimated cost per country is $325,000 for the surveys which will take approx 24 months in each country.
Total estimated cost: $1.3 million

Annexes:

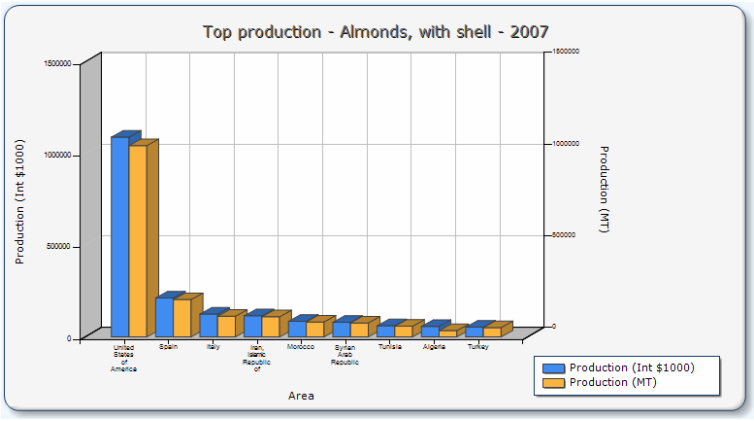
Table 1
Sorghum Production
Source FAO

Region	item	Year	Production (tonnes)
Asia	Sorghum	2008	11359372
Africa	Sorghum	2008	25192913
North America	Sorghum	2008	11997910
Central America	Sorghum	2008	7023507
South America	Sorghum	2008	5952483
Europe	Sorghum	2008	831378

Graph 1
Sorghum Exports
Source FAO
Sorghum exports -2007 (sort by Value)



Graph 2
Sorghum Imports
Source FAO
Sorghum imports -2007 (sort by Value)



Other WHO Technical Assistance Activities

Detailed information on technical assistance activities of the Department of Food Safety and Zoonoses (FOS) is available at the following link http://www.who.int/foodsafety/about/en/index.html.

In addition, the 63rd World Health Assembly (WHA) Resolution on food Safety can be found at: http://apps.who.int/gb/ebwha/pdf_files/WHA63/A63_R3-en.pdf

- **INFORMATION SUBMITTED TO THE WTO SPS COMMITTEE**

Communication from Australia

- Technical Assistance to Developing Countries provided by Austalia, January 2008 – June 2009, Addedum **(**G/SPS/GEN/717/Add.2)

Communication from Canada

- Technical Assistance to Developing Countries (G/SPS/GEN/1027)

Communication by the Codex Alimentarius Commission (Codex)

- Capacity Development in Food Safety and Quality (G/SPS/GEN/1030)
- Information on Activities (G/SPS/GEN/1022)

Communication from Dominican Republic

- Declaración de la República Dominicana en la reunión del 29 y 30 de junio de 2010 (G/SPS/GEN/1034)

Communication by the Inter American Institute for Cooperation on Agriculture (IICA)

- Actions for Implementing the WTO Agreement on Sanitary and Phytosanitary Measures (G/SPS/GEN/1026)

Communication by the International Plant Protection Convention (IPPC)

- Report of the International Plant Protection Convention Secretariat (IPPC) (G/SPS/GEN/1028)

Communication from the International Trade Center (ITC)

- Information on SPS-related recent and forthcoming assistance and other activities (G/SPS/GEN/1032)

Communication from the Agency for International Trade Information and Cooperation (AITIC)

- AITIC SPS technical assistance activities (G/SPS/GEN/1009)

Communication from Kenya

- Technical Assistance (G/SPS/GEN/1020)
- Activities of Members (G/SPS/GEN/1019)

Submission by the World Organization for Animal Health (OIE)

- Relevant Activities (G/SPS/GEN/1024)

Communication by the Organismo Internacional Regional de Sanidad Agropecuaria (OIRSA)

- Activities undertaken by the International Regional Organization for Plant and Animal Health (OIRSA) relating to the WTO Agreement on the Application of Sanitary and Phytosanitary Measures (G/SPS/GEN/1033)

These documents are available online at the WTO SPS Information Management System (SPS IMS): http://spsims.wto.org/