UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

Project of Malawi

Project number:	TE/MLW/08/001
Project title:	**Capacity building for aflatoxin management and control in groundnuts in Malawi**
Relationship to integrated programme	There is no IP in Malawi
Thematic area code	TCB, CD.15
Starting date:	July 2008
Duration:	36 months
Project site:	Lilongwe and Central Plateau Region, Malawi
Government Co-ordinating agency:	Ministry of Trade and Industry and Ministry of Agriculture in Malawi
Counterpart:	Ministry of Trade and Industry
Executing agency/ cooperating agency:	UNIDO (United Nations Industrial Development Organization)
Project Inputs: First phase	
***Project Budget** (excluding support costs)*	Euro 361, 000
Total support costs	Euro 46,930
Grand Total	Euro 407,930

Brief description:

The purpose of the project is to build the national capacity for aflatoxin control and management in groundnuts. The overall goal is to increase trade in target commodities thereby increasing incomes earned by farmers. The outcome will also reduce public health risks associated with the consumption of commodities contaminated with aflatoxin. Key players along the groundnut value chain, namely the six big buyers, middle-men/vendors and small-holder farmers in selected regions will be trained on appropriate methodologies effective in minimizing aflatoxin contamination in ground nuts. In addition, appropriate technologies that have been found effective in the control of aflatoxins (along the commodity value chain) will be introduced and promoted. Furthermore, in view of a long term need for services relating to the analysis and certification that commodities originating from Malawi are free from contaminants such as aflatoxins, a cost benefit analysis for the establishment of an accredited testing laboratory will be undertaken and business plans developed. The main beneficiaries are the farmers, traders and commodity processors all of whom will have improved access to aflatoxin free products. At the end of the project it is expected that the quantity of groundnuts and paprika contaminated with aflatoxins from target regions will be reduced by 25% at end of phase 1 and 50% by end of phase II. In addition, and in the long term, from a public health point of view consumers, of Malawian ground nuts and paprika will have reduced risks to aflatoxin poisoning and related long term diseases such as cancer. MBS and ARET will benefit from the drawing-up of functional business plans to enable the institutions to determine the need and the approach for expanding their services to aflatoxin testing sustainably.

Approved:

	Signature:	Date:	Name and title:
On behalf of UNIDO:	_____	_____	_____
On behalf of MIC, Malawi:	_____	_____	_____

A. CONTEXT

Project Background:

Aflatoxins and trade in commodities

According to the Food & Agriculture Organization (FAO) 25% of all the foods produced in the world are contaminated. Aflatoxin is a human carcinogen that contaminates a wide range of agro produce and is therefore a global food safety and quality issue and consequently a barrier to trade. Aflatoxins are amongst the most important part of a larger group of toxins referred to as mycotoxins, metabolic wastes of fungi species that grow on agro commodities under suitable conditions of humidity and heat. In the USA, the Food and Drug Administration (FDA) considers aflatoxins poisonous and deleterious substances and regulates them according to the Food, Drug, and Cosmetic Act, Section 402(a) (1), which defines adultered food as food that contains "any poisonous or deleterious substance which may render it injurious to health. To reduce the public health risk from consumption of contaminated foods and feed, constant monitoring of the toxins in food and feed is thus essential along the commodity value chain as infestation with the molds that produce aflatoxins occurs pre-harvest and post harvest. Generally there is a higher risk of exposure to mycotoxins in underdeveloped countries than developed ones. Many developing countries including Malawi lack the capacity to monitor and to regulate mycotoxin levels in foods.

Groundnuts a commodity of economic importance in Malawi, is highly prone to aflatoxin contamination. Groundnuts are produced mainly in the central region of Malawi largely by small-scale farmers. Approximately 20% of all Malawian farmers grow groundnuts. 85% of the groundnut production from these smallholders is produced under low cost conditions with little or no use of fertilizers and pesticides. It is produced intercropped with maize, tobacco and coffee. It is primarily a rain fed crop with less than 1% of total groundnuts produced under irrigation. Most of the production is subsistence in nature but substantial surplus quantities are sold both to the domestic, regional and international market. According to Ministry of Agriculture/Crop Production estimates 273,757 metric tones of groundnuts and 1,917 MT of paprika were produced in 2006/07 season.

Contamination of groundnuts/paprika with aflatoxins occurs under pre harvest, post-harvest and during handling and post harvest storage conditions. Biological and physical effects and farmer practices contribute to the rate and level of contamination. The main factors leading to aflatoxin contamination include

- Use of damaged and loose shelled kernels as seed
- Delayed harvesting after physiological maturity
- Retention of high quantities of moisture in pods
- Inadequate protection from rain pests and diseases.
- Handling and storage practices.

Control of aflatoxins.

Aflatoxins are heat stable and therefore very difficult to detoxify once a commodity is contaminated. Numerous chemical, physical and biological techniques for detoxification of commodities have been investigated with limited success.

Due to the limitations in removing aflatoxins from already contaminated foods testing of commodities intended for food/feed utilization for aflatoxin contamination does reduce the risk to public health. However most contaminated product has to be destroyed resulting in huge losses to farmers and traders. The accepted approach to reduce aflatoxin contamination and one that has been adopted by developed countries is prevention. The best practice has been to control the growth of the mycotoxigenic fungi that produces the toxins in commodities. This preventive strategy must involve the whole food system from the farm to the table.

Aflatoxin management therefore starts in farmer's fields with proper crop production management and handling, post harvest storage followed by marketing and processing conditions. Biological and physical factors such that promote the infestation of commodities with molds along the commodity supply and value chain have to be controlled. In addition, social economic factors that affect farmer behaviors and ability to adopt recommended best practices need to be addressed.

Once the production and handling issues are addressed, it is expected that both the quantity and quality of groundnuts produced in the project target region will reach levels required by export markets. The project, therefore, will also address the capacity of the Malawi Bureau of Standards

(MBS) and the Agricultural Research and Extension Trust (ARET) to provide accredited aflatoxin testing services locally to exporters.

Collaboration with STDF

While aiming to strengthen its collaboration with the STDF, and potentially to become an implementing/supervising agency, UNIDO was originally asked by the STDF secretariat to provide inputs to the STDF PPG proposal for Malawi and Zambia, which foresaw the establishment of HPLC powered aflatoxin testing facilities in both countries. Following discussions with the proposed funding body, ComMark Trust, which has been established by DFID to help commodity markets in Southern Africa to work for the poor, it was agreed that a) the two countries would be treated separately, as UNIDO was already formulating a UNIDO-WTO joint project in Zambia that addresses both TBT and SPS concerns based on the DTIS; b) the sustainability/feasibility of accredited aflatoxin testing facility in Malawi should be established before such a venture is undertaken.

National priorities and the proposed assistance

A Diagnostic Trade Integration Study (DTIS) conducted by the Integrated Framework and published in February 2004 for Malawi had recommended the promotion of sanitary and phytosanitary (SPS) issues in agricultural crops for improved market export performance. In particular, the requirements of importing nations as regards aflatoxin contamination levels in three main products important for export diversification, namely groundnuts, paprika and maize were highlighted. During the joint mission of STDF, UNIDO and ComMark Trust, it was uncovered that although National Smallholder Farmers' Association of Malawi (NASFAM) was taking important steps in improving their aflatoxin management systems, there were outstanding concerns about basic hygiene and Good Agricultural and Good Management Practices across the groundnut value chain, as well as other relevant value chains such as paprika, coffee and maize. Furthermore, it was agreed that neither of the potential testing laboratories, MBS or ARET, were currently in a position to sustainably provide accredited services due to the capacity of the labs and the potential demand for their services given the existing low volumes of exports. UNIDO was thus asked to formulate a project that contribute to building the critical mass of human resource and technology know how necessary for the control and management of aflatoxins in commodities with special focus on groundnuts and paprika. Such an intervention would tackle the inability of farmers to control and manage aflatoxin contamination in commodities and consequently reduce post harvest losses due to mold infestation while increasing potential incomes to farmers who would have improved their ability to supply quality groundnuts and paprika to the various available markets is improved.

B. REASONS FOR UNIDO ASSISTANCE

The ability of Malawi to participate in global groundnut supply chains is hampered by her inability to meet standards and technical regulations set by target importing countries. Critical to these supply chains is compliance with international regulations on maximum permissible levels of aflatoxins in commodities intended for feed or food.

NASFAM, in cooperation with ICRISAT, is one of the critical stakeholders in Malawi who is already involved in aflatoxin monitoring among their members.

NASFAM is made up of ± 100,000 farming families, which belong to some 42 associations. There are estimated to be ± 2,000,000 farming families in Malawi, therefore NASFAM membership is still very limited. NASFAM has been assisted significantly through the years by USAID and currently Norwegian funding, and has recently started receiving assistance from Twin Trade project, which is also funded by Commark Trust. The Twin Trade project has a number of interlocking projects which aim to address on a pilot basis some of the concerns such as establishing a Quality Management System in NASFAM and implementing conveyor based sorting system to address hygiene problems. The main aim of the Twin project is to market fair trade groundnuts from Malawi to European markets such as the UK and the Netherlands.

NASFAM is already performing 2 types of analysis for monitoring purposes, using the ELISA method developed by ICRISAT at the research station in Chitedze, which is conducted for each 50 kg bag procured from member farmers; and using the VICAM method that has been recently procured at the NASFAM warehouse laboratory which is performed by taking a 10 kg sample out of a consignment of 16-20 tonnes. They would like to use the results of the monitoring efforts, to analyse the problem areas (for example making maps of critical growing areas) and improve their extension services since

each bag that they test can be traced back to the member farm. They would also like to increase throughput of the analysis to get a better spread. The ELISA method is cheap (at approximately $3.5 - $5 per sample) and can be used on a large scale, however it is cumbersome, not mobile, and is not approved by AOAC International. The VICAM fluorometric method, in comparison, is an approved method by AOAC and quicker, although it is not approved by EU for exports and it is relatively more expensive at $20 per sample. Because of the cost, they cannot sample every bag but a stack, which requires more complex sampling procedures/protocol. The warehouse facilities rented by NASFAM, where the VICAM equipment is housed and where sorting and grading takes place, requires significant improvements in infrastructure and hygiene practices. Currently, the sorting is done under a roof on the floor by approximately 200 women who are supervised by NASFAM trained supervisors. The environmental conditions are such that there is a potential that food safety is being compromised.

Beyond NASFAM, there are five other major exporters of groundnuts – namely Rab Processors, Transglobe, Moody Brothers, Farmers World, and Tambala. Overall, big buyers do not see the value of making investments to increase quality themselves. As the local market demand has been traditionally high, and the risk associated with rejections increasing, they do not bother with the high-value export markets. They are not prepared to give any guarantees about the aflatoxin levels to their South African buyers. Furthermore, the entrance of Tanzanian buyers have also created negative incentives. These buyers procure informally, give good prices and do not control quality at all. It is said that they sell to the Kenyan market, but it is very likely that these nuts are then re-exported from Kenya, as Kenya has a Competent Authority recognized by EU. As for the domestic market, considering there is a great demand from food relief projects, there is a great cause for concern. For example, Rab Processors, which also sell to World Food Programme, has started establishing a HACCP system in their HQ, but the warehouse in Lilongwe where 90% of procurement happens and some storage is located, there is no system in place. Transglobe's quality control systems and basic hygiene practices seem to be even more rudimentary. In conclusion, the exporters consider aflatoxin contamination as a significant hamper to trade – especially with Europe – and would like to see better and wider farmer extension services to improve awareness and agricultural practices to produce better quality nuts.

The main challenge therefore remains to integrate other non-NASFAM growers to adopt similar QMSs and good-hygiene and aflatoxin management practices. Therefore the main target beneficiaries of the project would be the main exporters of groundnuts from Malawi, the middle vendors and small-holder farmers who will be systematically trained along the value chain.

UNIDO, in the recent years, have accumulated significant expertise in providing technical assistance in overcoming trade barriers for commodities affected by mycotoxin contamination. For example, in Cote d'Ivorie, the UNIDO project "Support to the Prevention National Programme for Ochratoxin A (OTA) contamination in Coffee and Cocoa**"** project, which started in 2007, aims at diminishing contamination levels of the Ochratoxin (OTA) in cocoa and coffee as well as improving the quality of these products to overcome the imminent threat of an export ban from the European Union (EU). The project broadly involves, sensitization of all stakeholders involved in coffee / cocoa value chain on Ochratoxin A, training of trainers, and the upgrade of Ochratoxin A analysis laboratories for accreditation.

C. THE PROJECT

C.1. Objective of the project

Improve the management of groundnut supply and value chain in the central plateau of Malawi in view of reducing aflatoxin contamination and safety of the commodity.

C.2. The UNIDO Approach

The project proposes to build the national capacity and especially the critical mass of human resource competence necessary for aflatoxin control and management in the central region of Malawi, where most of the groundnuts are produced. Specifically, the project will;

- Analyse the target supply chains to determine areas where interventions should be targeted for best results in the short term.

- Identify key partners and stakeholders at the start of project to ensure that stakeholders own and identify with the project. A steering committee consisting of the donor, UNIDO and counterpart and key stakeholders will be formed to guide the project activities.

- Promote coordination between the various players especially service providers and the beneficiaries and build the capacity through training of extension and monitoring staff to better disseminate knowledge. Tools necessary to facilitate knowledge and technology transfer will be provided.

- To improve public awareness on aflatoxins and their impact on trade and public health, the project will develop suitable materials for use in extensive nationwide media campaigns. As the project target groups include farmers some of who may not speak English, manuals are also to be developed and translated to local languages. This is expected to increase the interest in adoption of technologies that reduce aflatoxin contamination.

- In addition, the project will help to assess the capacity of the Malawi Bureau of Standards (MBS) and the Agricultural Research and Extension Trust (ARET) to provide accredited aflatoxin testing services locally to exporters. MBS and ARET will benefit from the drawing-up of functional business plans to enable the institutions to decide if they can expand their services sustainably to aflatoxin testing.

As much as possible, national expertise and national institutions will be involved in project implementation in view of retaining knowledge and skills acquired during project implementation in the country.

Further more, the experiences in technology transfer and skills upgrading gained in previous and ongoing UNIDO-trade capacity building programs targeting food products in the region will be fully utilized in the implementation of this project.

C.3. RBM code and thematic area code

TCB, CD.15

C.4. Expected Outcome

The targeted farmers, traders and processors are able to effectively control and manage aflatoxin contamination in groundnuts and reduce the loss of commodities due to aflatoxin contamination by 25 per cent.

C.5. Project outputs and activities

Outputs and activities.

Output 1: The counterpart organizations (ICRISAT, Ministry of Agriculture) and NASFAM are able to carry out regular monitoring to identify problem areas/regions based on a mapping methodology and baseline study	UNIDO/MIC/ICRISAT
Activities	
1.1. Organize a project inception workshop for the main stakeholders in the groundnut sector.	
1.2. Assess the capacity of the selected counterparts to deliver training and to disseminate information. Identify essential tools required and provide specifications. Determine training needs in the subject matter	
1.3. Procure and provide essential equipment and tools	

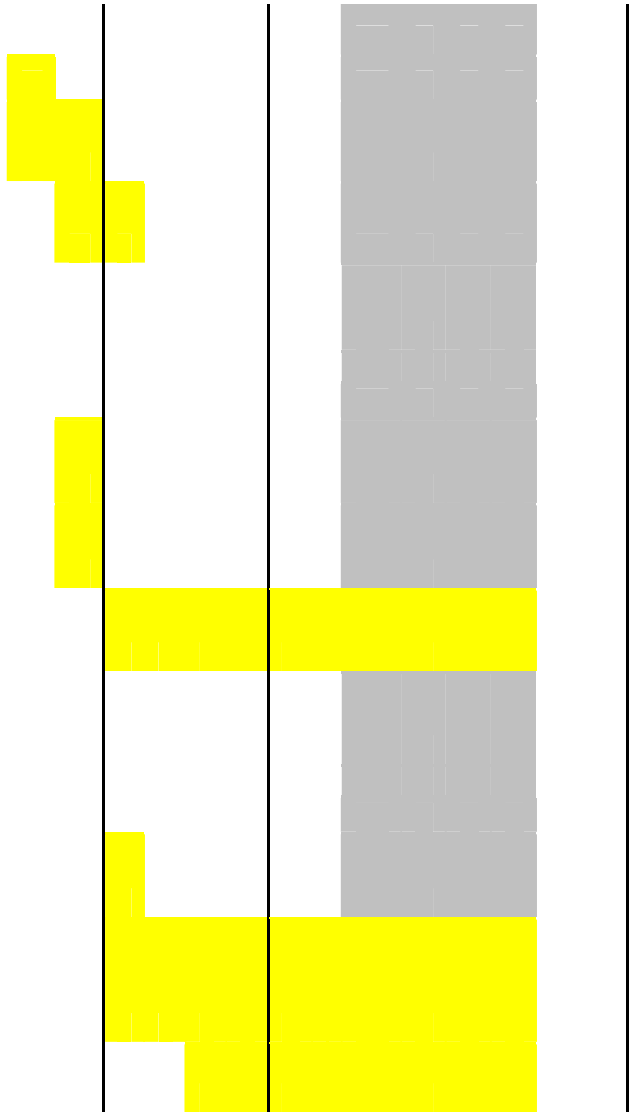
1.4. In collaboration with staff from selected counterparts, conduct a baseline survey to determine the level of aflatoxin contamination in ground nuts in the selected region	
1.5. In collaboration with staff from selected counterparts, identify critical points along the groundnut supply chain that are susceptible to contamination by aflatoxin producing molds.	
1.6. For each critical point propose appropriate tested and proven interventions and recommendations. Where equipment or storage structures are necessary for demonstration purposes provide specifications and design.	
1.7. Prepare training manuals on aflatoxin control and management in English for training; i. farmers and ii. Traders and processors	
Output 2: 40 Extension staff is trained and disseminating skills in management and control of aflatoxins in groundnuts.	UNIDO/MIC/ICRISAT
Activities	
2.1. Identify potential trainers/ extension staff nation wide	
2.2. Prepare and implement training program for extension staff and relevant staff of counterpart institutions on technology transfer, and information dissemination to farmers and traders	
2.3. Procure and provide necessary tools for information dissemination (transport, training manuals, demonstration tools)	
Output 3: Farmers in selected area are able to carry out recommended best practices for aflatoxin control in pre and post harvest activities.	UNIDO/MIC/ICRISAT
Activities	
3.1. In cooperation with Ministry of Agriculture and ICRISAT design and organize appropriate farmer training programmes to be implemented using manuals developed in 1.7.	
3.2. Assess constraints that may limit adoption of new technologies and recommend appropriate interventions necessary	
3.3. Implement a training program for trainers	
3.4. Conduct region wide training of farmers focusing on how to reduce contamination of commodities with aflatoxin causing molds (pre and post harvest)	
Output 4: Traders and all actors along the groundnut/ supply chain (including selected enterprises processing groundnuts) are using best practices in handling and storage and utilization of the commodity to minimize aflatoxin contamination	UNIDO/MIC/ICRISAT
Activities	
4.1. In cooperation with ministry of Commerce and Industry and ICRISAT organize appropriate trader/processor training programmes to be implemented using manuals developed in 1.7 above	
4.2. Implement a training program for trainers.	
4.3. Conduct region wide training for traders and processors focusing on how to reduce contamination of commodities with aflatoxin causing molds during storage, re-processing and marketing	
4.4. Evaluate impact of training programmes and revise training modules accordingly	
Output 5: Awareness is created on a national scale on aflatoxin contamination and its management	UNIDO/MIC/ICRISAT

Activities	
5.1. In collaboration with responsible government institutions and NGO's develop materials (radio, TV, Posters, aflatoxin awareness leaflets etc) for a campaign to minimize and control aflatoxin in commodities. (Where necessary campaign should be promoted in local languages)	
5.2. Using materials designed above, organize a nation wide campaign to reduce the contamination of commodities with aflatoxin molds	
Output 6: Field manuals are developed and translated in the various local languages on aflatoxin management and control and are being used effectively by the stakeholders.	UNIDO/MIC/ICRISAT
Activities	
6.1. Determine the key languages used by Malawian ground nut and paprika farmers and traders	
6.2. Translate the manuals in selected languages	
6.3. Provide manuals to extension staff	
Output 7: MBS and ARET are able to assess the feasibility and sustainability of providing local accredited testing and certification services for exporters	UNIDO/MS/ARET
Activities	
7.1 Prepare TOR for laboratory business plan including capacity evaluation and market needs assesment	
7.2 In cooperation with the management of ARET and MBS, carry out the analysis and finalize the business plan	
7.3 Provide recommendations for the potential next phase of the project regarding laboratory upgrading based on the findings of assessment and business plan	

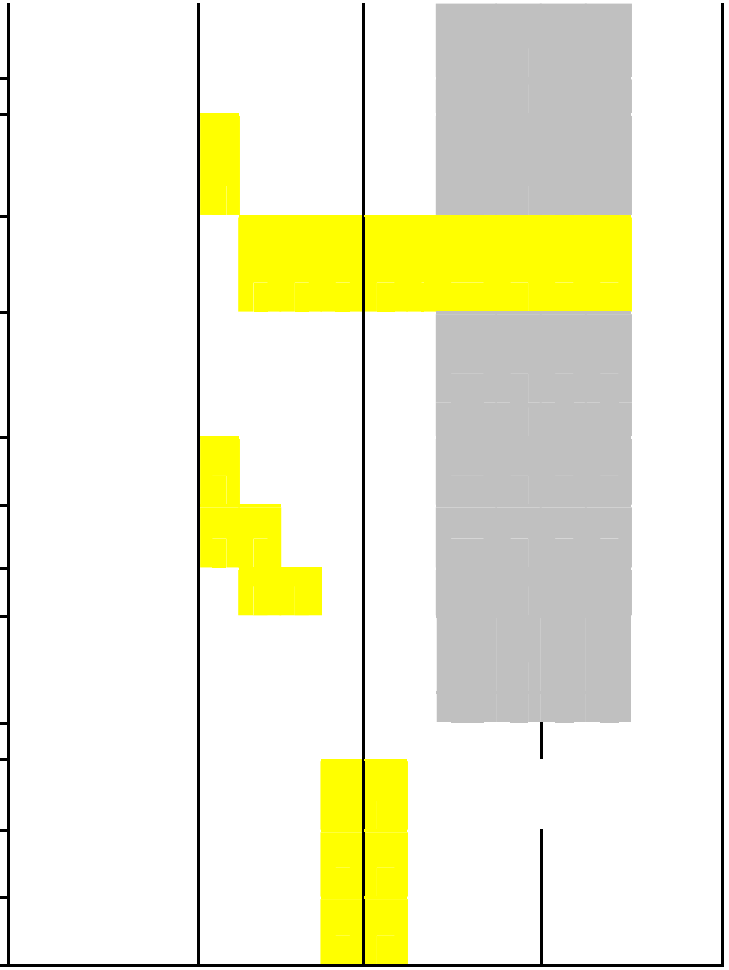
C.6. Timeline of the activities:

	YEAR 1 Quarters				YEAR 2 Quarters				YEAR 3 Quarters				YEAR 4 Quarters			
	PHASE I								PHASE II							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Output 1: The counterpart organizations (ICRISAT, Ministry of Agriculture) and NASFAM are able to carry out regular monitoring to identify problem areas/regions based on a mapping methodology and baseline study																
Activities																
1.1. Organize a project inception workshop for the main stakeholders in the groundnut sub sector.																
1.2. Assess the capacity of the selected counterparts to deliver training and to disseminate information. Identify essential tools required and provide specifications. Determine training needs in the subject matter																
1.3. Procure and provide essential equipment and tools																
1.4. In collaboration with staff from selected counterparts, conduct a baseline survey to determine the level of aflatoxin contamination in ground nuts, in selected region																
1.5. In collaboration with staff from selected counterparts, identify critical points along the groundnut supply chain that are susceptible to contamination by aflatoxin producing molds.																
1.6. For each critical point propose appropriate tested and proven interventions and recommendations. Where equipment or storage structures are necessary for demonstration purposes provide specifications and design.																
1.7. Prepare training manuals on aflatoxin control and management in English for training; i. farmers and ii. Traders and processors																
Output 2: 40 Extension staff nationwide are trained and disseminating skills in management and control of aflatoxins in groundnuts.																

Activities
2.1. Identify potential trainers/ extension staff nation wide
2.2. Prepare and implement training program for extension staff and relevant staff of counterpart institutions on technology transfer, and information dissemination to farmers and traders)
2.3. Procure and provide necessary tools for information dissemination (transport, training manuals, demonstration tools)
Output 3: Farmers in selected areas are able to carry out recommended best practices for aflatoxin control in pre and post harvest activities.
Activities
3.1. In cooperation with Ministry of Agriculture and ICRISAT design and organize appropriate farmer training programmes to be implemented using manuals developed in 1.7.
3.2. Assess constraints that may limit adoption of new technologies and recommend appropriate interventions necessary
3.3. Conduct region wide training of farmers focusing on how to reduce contamination of commodities with aflatoxin causing molds (pre and post harvest)
Output 4: Traders and all actors along the groundnut supply chain (including selected enterprises processing groundnuts and or paprika) are using best practices in handling and storage and utilization of the commodity to minimize aflatoxin contamination
Activities
4.1. In cooperation with ministry of Commerce and Industry and ICRISAT organize appropriate trader/processor training programmes to be implemented using manuals developed in 1.7 above
4.2. Conduct region wide training for traders and processors focusing on how to reduce contamination of commodities with aflatoxin causing molds during storage (pre-processing and marketing
4.3. Evaluate impact of training programmes and revise training modules accordingly



Output 5: Awareness is created on a national scale on aflatoxin contamination and its management	
Activities	
5.1. In collaboration with responsible government institutions and NGO's develop materials (radio, TV, Posters, aflatoxin awareness leaflets, etc.) for a campaign to minimize and control aflatoxin in commodities. (Where necessary campaign should be promoted in local languages)	
5.1. Using materials designed above, organize a nation wide campaign to reduce the contamination of commodities with aflatoxin molds	
Output 6: Field manuals are developed and translated in the various local languages on aflatoxin management and control and are being used effectively by the stakeholders.	
Activities	
6.1. Determine the key languages used by Malawian ground nut farmers and traders	
6.2. Translate the manuals in selected languages	
6.3. Provide manuals to extension staff	
Output 7: MBS and ARET are able to assess the feasibility and sustainability of providing local accredited testing and certification services for exporters	
Activities	
7.1 Prepare TOR for laboratory business plan including capacity evaluation and market needs assessment	
7.2 In cooperation with the management of ARET and MBS, carry out the analysis and finalize the business plan	
7.3 Provide recommendations for the potential next phase of the project regarding laboratory upgrading based on the findings of assessment and business plan	



C.7. Risks

Groundnuts are produced in low-cost, rain-fed conditions in Malawi and sufficient quantity of production; hence depend on a number of factors such as changes in weather. In addition, other cost factors such as transport affect the competitiveness of the product in regional and international markets. One of the key risks is the low level of awareness and unwillingness to change agricultural and handling practices among farmers, vendors and buyers, which will be mitigated to the extent possible with wide awareness campaigns during the project.

D. INPUTS

D.1. Counterpart inputs

The total cost of the project is Euro 407,930 with the Commark Trust as main donor contributing Euro 250,000 for the first phase (and Euro 157,930 for the second phase).

The International Crops Research Institute for Semi-Arid Tropics (ICRISAT) is a non-profit organization for developing agricultural technologies, with a strong scientific arm as well as extension services. ICRISAT would be one of the main complimentary partners in demonstrating best practices and training trainers in the groundnut sector. ICRISAT would make in-kind contributions in terms of extension staff.

The Government inputs will consist of a contribution in kind. The government will avail extension staff for training and to participate in the training of beneficiaries.

D.2. UNIDO inputs

UNIDO will provide in-kind contribution as follows; *1. Local transport use of existing vehicle; 2. Administrative support i.e. the use of existing office and 3. 4 months technical assistance from HQ*

1. **International staff: see Annex 2**

2. **National staff: See Annex 2**

3. **Sub-contracts**

Subcontracts are foreseen for the following activities: Renovations of storage demonstration sites, for development of campaign material, for dissemination of campaign materials, and for development of training manuals

4. **Training**

Training will be provided first for trainers and then for farmers, traders and processors. In addition a stakeholders workshop is foreseen to validate the findings of the assessments and the recommendations made by the consultants

5. **Equipment and supplies**

Equipment to ease communication between Headquarters and the counterpart is foreseen as is equipment to facilitate dissemination of information and to carry out training programmes (motorcycles). In addition are essential facilities and tools to be used to demonstrate improved commodity drying and storage methodologies.

****The equipment details and specifications will be determined at start of project activity 1.6**

E. BUDGET

Activity	BULI	Explanation	Duration	Cost in Euro	Phase I	Phase II
1. Organize a project inception workshop for the main stakeholders in the groundnut sub sector.						
2. Assess the capacity of the selected counterparts to deliver training and to disseminate information. Identify essential tools required and provide specifications. Determine training needs in the subject matter	1150	IC Post Harvest Tech	1 week	3,500	3,500	
3. Procure and provide essential equipment and tools to counterpart instituions	16 00	HQ mission		7,000	7,000	
	17 50	National Expert	3 months	9,000	9,000	
	33 00	Workshop		6,000	6,000	
	45 00	Equipment		15,000	15,000	
4. In collaboration with staff from selected counterparts, conduct a baseline survey to determine the level of aflatoxin contamination in ground nuts, Paprika and Maize in selected regions	11 50		3 weeks	10,500	10,500	
5. In collaboration with staff from selected counterparts, identify critical points along the groundnut/paprika supply chain that are susceptible to contamination by aflatoxin producing molds.	17 50		4	12,000	12,000	
6. For each critical point propose appropriate tested and proven interventions and recommendations. Where equipment or storage structures are necessary for demonstration purposes provide specifications and design.	21 00			35,000	25,000	10,000
	45 00			85,000	40,000	45,000
	11 50		3 weeks	10,500	10,500	
7. Prepare training manuals on aflatoxin control and management in English for training; i. farmers and ii. Traders and processors						
	21 00			20,000	10,000	10,000

	17 50		6	18,000	9,000	9,000
8. Identify potential trainers/ extension staff nation wide Prepare and implement training program for extension staff and relevant staff of counterpart institutions on technology transfer, and information dissemination to farmers and traders)	21 00			10,000	5,000	5,000
9. In cooperation with Ministry of Agriculture and ICRISAT design and organize appropriate farmer training programmes to be implemented using manuals developed in 1.7.	33 00			31,000	19,239	11,761
10. Assess constraints that may limit adoption of new technologies and recommend appropriate interventions necessary						
11. Conduct region wide training of farmers focusing on how to reduce contamination of commodities with aflatoxin causing molds (pre and post harvest)	16 00			7,000		7,000
12. In cooperation with ministry of Commerce and Industry and ICRISAT organize appropriate trader/processor training programmes to be implemented using manuals developed in 1.7 above						
13. Evaluate impact of training programmes and revise training modules accordingly						
	11 50		2 week	7,500	7,500	
	17 50		6	18,000	6,000	12,000
14. In collaboration with responsible government institutions and NGO's assist to develop materials (radio, TV, Posters, aflatoxin awareness leaflets etc) for a campaign to minimize and control aflatoxin in commodities. (Where necessary campaign should be promoted in local languages)	17 50		4	12,000		12,000
	21 00			15,000		15,000
15. Using materials designed above, organize a nation wide campaign to reduce the contamination of commodities with aflatoxin molds						
	11 50			10,000	10,000	
16. Prepare TOR for laboratory business plan including capacity	16 00			3,000	3,000	

evaluation and market needs assessment 7.2 In cooperation with the management of ARET and MBS, carry out the analysis and finalize the business plan 7.3 Provide recommendations for the potential next phase of the project regarding laboratory upgrading based on the findings **of** assessment and business plan	17 50 33 00	3,000 3,000	3,000 3,000	
Local transport for all activities **Administrative support** **Contingency** **Technical assistance**		5,000 5,000	4,000 3,000	1,000 2,000
Subtotal		**361,000**	**221,239**	**139761**
13% support costs		**46,930**	**28,761**	**18,169**
Grand Total		**407,930**	**250,000**	**157,930**

F. MONITORING, REPORTING AND EVALUATION

Reporting: Project progress will be reported every six months, UNIDO progress reports will be shared with key implementing partners. In addition, Unido will supply the ComMark Trust with a short quarterly report documenting project achievements as well as implementing challenges/constraints.

Monitoring: UNIDO will establish a National Project Steering Committees with representatives from the various stakeholders and collaborating institutions/agencies of the project. During the project inception meeting, TOR and other monitoring details will be specified. (Indicators, see attached logframe).

The project will be subject to annual tripartite reviews (joint review by Governments executing agency (UNIDO) and the donor(s)), and a terminal review at the end of the project. The draft terminal report shall be prepared sufficiently

G. PRIOR OBLIGATIONS AND PREREQUISITES

UNIDO will enter into a project implementation agreement with Commark Trust as per UNIDO and Commark trust procedures.

H. LEGAL CONTEXT

The present project will be governed by the provisions of the Standard Basic Assistance Agreements the Government of the beneficiary country has concluded with the United Nations Development Programme (UNDP).

Annex 1. Logical Framework

	Intervention logic	Objectively verifiable indicators	Sources of verification	Assumptions
Development goal/impact	*What the target group achieves (benefit)*			
	Improve the management of groundnut/paprika supply and value chains in selected areas of Malawi in view of reducing aflatoxin contamination of the commodities			
Outcome(s)/immediate objective(s)/	*What the target group does differently (change in behaviour)*			
	The targeted groundnut and paprika farmers and processing enterprises are able to carry out effective aflatoxin management programmes and reduce wastage caused by mould contamination by 50 per cent.	50% (25% in phase 1 and 25 in phase 2) decrease in aflatoxin contamination for products from project target regions at end of project	Survey of products from target regions	
	Output 1: The counterpart organizations (ICRISAT, Ministry of Agriculture) and NASFAM are able to carry out regular monitoring to identify problem areas/regions based on a mapping methodology and baseline study	% increase in number of staff effectively monitoring aflatoxin contamination and management in rural areas.	Company records. Training attendance records	
	Output 2: Extension staff nation wide are trained and disseminating skills in management and control of aflatoxins in groundnuts and paprika.	%increase in number of extension staff are effectively carrying out extension work relating to aflatoxin management	Government and counterpart records	
	Output 3: Farmers in selected areas are able to carry out recommended best practices for aflatoxin control in pre and post harvest activities	%increase in number of farmers in target communities that are applying new methodologies in the production and storage of ground nuts	Survey report	

	Output 4: Traders and all actors along the groundnut/paprika supply/value chain (including selected enterprises processing groundnuts and or paprika) are using best practices in handling and storage and utilization of the commodity to minimize aflatoxin contamination	% increase in number of traders and processors in selected target communities applying appropriate methods in the storage, transportation and storage of selected commodities.	Survey report	
	Output 5: Awareness is created on a national scale on aflatoxin contamination and its management	Number of programs designed for aflatoxin campaigns. Number of campaigns conducted Types of media used for campaign Number of people in selected communities aware of the trade and public health risks associated with consumption of aflatoxins.	Survey report	
	Output 6: Field manuals are developed and translated in the various local languages on aflatoxin management and control and are being used effectively by the stakeholders.	Number of field manuals that are printed. Manuals are available in other languages Manuals are being used by trainers for training farmers/traders and processors	Survey report	
	Output 7: MBS and ARET are able to assess the feasibility and sustainability of providing local accredited testing and certification services for exporters	Business plans are available.		

Annex 2 Job Descriptions

17-00 National Food Processing Specialist and project coordinator
Duration: 36 months, entire project duration
Location: Lilongwe Malawi

The national expert will be recruited for a period of 36 months. His main responsibilities are to;

Activity	Duration	Location	Results
1.Coordinate activities between the various actors mainly UNIDO, counterparts and national implementing agencies	50%	Lilongwe	Close coordination of project planning and implementation on the field level
2. Prepare for the missions of the international and UNIDO HQ missions. (provide logistical support)	10%	Lilongwe	Missions organized successfully
3. Support the international expert to carry out his assignments (in advance make all data necessary available or accessible).	15%	Lilongwe	Surveys are conducted successfully and access to national data is simplified.
4. Organize for the training manuals to be translated into local languages	10%	Lilongwe	Manuals are translated into main local languages manuals prepared for replication
5. Support international expert in the identification of key media outlets for the aflatoxin management campaign.	10%	Lilongwe	Media outlets are identified and national campaigns for the control of aflatoxins are carried out.
6. Prepare an end of assignment report	5%	Lilongwe	Report is prepared and accepted.

11-00 International Expert in Post Harvest Technologies.

Duration: 3 Months 2 split missions,

Location: Lilongwe with travel in the country

Activity	Duration	Results
1. Organize a project inception workshop for the main stakeholders in the groundnut sub sector.	0.25	Stakeholders take ownership of project
2. Assess the capacity of the selected counterparts to deliver training and to disseminate information. Identify essential tools required and provide specifications. Determine training needs in the subject matter		Needs assessment report
3. In collaboration with staff from selected counterparts, conduct a baseline survey to determine the level of aflatoxin contamination in ground nuts, Paprika and Maize in selected regions	0.5	Report of baseline survey
4. In collaboration with staff from selected counterparts, identify critical points along the groundnut/paprika supply chain that are susceptible to contamination by aflatoxin producing molds. For each critical point propose appropriate tested and proven interventions and recommendations. Where equipment or storage structures are necessary for demonstration purposes provide specifications and design.	0.20	Critical points along commodity supply chains identified Recommendations on appropriate recommendations provided
5. Prepare training manuals on aflatoxin control and management in English for training; i. farmers and ii. Traders and processors	0.5	Training manuals provided
6. Identify potential trainers/ extension staff nation wide Prepare and implement training program for extension staff and relevant staff of counterpart institutions on technology transfer, and information dissemination to farmers and traders)	0.1	Trainers identified and trained
8. In cooperation with Ministry of Agriculture and ICRISAT design and organize appropriate farmer training programmes to be implemented using manuals developed in 1.7.	0.25	Farmers training initiated
9. Assess constraints that may limit adoption of new technologies and recommend appropriate interventions necessary	0.1	Adoption constraints identified and interventions provided
10. Conduct region wide training of farmers focussing on how to reduce contamination of commodities with aflatoxin causing molds (pre and post harvest)	0.5	Farmers are using recommended methods
11. In cooperation with ministry of Commerce and Industry and ICRISAT organize appropriate trader/processor training programmes to be implemented using manuals developed in 1.7 above	0.25	Processors are using recommended methods
12. Evaluate impact of training programmes and revise training modules accordingly		Training manuals are refined

13. In collaboration with responsible government institutions and NGO's develop materials (radio, TV, Posters, aflatoxin awareness leaflets etc) for a campaign to minimize and control aflatoxin in commodities. (Where necessary campaign should be promoted in local languages)	0.25	Appropriate material is developed
14. Using materials designed above, organize a nation wide campaign to reduce the contamination of commodities with aflatoxin molds		Awareness campaigns are conducted nationwide
15. prepare an end of mission report	0.1	Report submitted and accepted

JOB DESCRIPTION

Post title: Laboratory Expert

Duration: 1 w/m

Date required: tba

Duty station: Lilongwe and Blantyre, Malawi and home-based

Counterpart(s): ARET and Malawi Bureau of Standards

Duties: The expert, under the supervision of the project manager, is expected to perform the following duties:

Main duties	Expected duration (w/m)	Location Field or home-based	Expected results
1. Carry out an evaluation of the existing lab capacity visa a vie current functions and services provided, including physical infrastructure, environmental conditioning, human resources, equipment, management system and financial flows	0.4	Lilongwe and Blantyre	Capacity Evaluation component of the business plan completed
2. Develop a business plan for the laboratory in line with the outline provided in attachment 1.	0.1	Lilongwe and Blantyre	1st draft business plan
3. Undertake user surveys with at least 5 companies sending samples to the laboratory in line with the outline provided in attachment 2.	0.4	Lilongwe and Blantyre	2nd draft of business plan including market survey
4. Review recommendations, finalize the draft business plan for validation of the counterpart(s)	0.1	Home-based	Final draft ready for validation

Qualifications: Advanced University Degree in Food Science or related field with at least 10 years work experience in the food quality testing, with ability to develop business plans for laboratories.

Language: English

Attachment I

Laboratory Business Plan outline

- Mission or Role
  - What are the critical functions of the lab? How do market requirements, laws and regulations and emerging standards/conformity assessment procedures affect the role of the lab? Are there any foreseen changes to the surrounding environment that would impact the mandate of the lab?
- Operations
  - Facilities and environmental conditions:
  - Human resources including ongoing training
  - Hardware/equipment
  - Management Systems
  - Test methods
  - Standard Operating Procedures
  - Quality Assurance
  - Service and supplies
- Services provided
  - What percent of revenues are based on contracts versus on-demand testing?
  - Analytical services offered

- How many samples are tested per analysis?
- Fees charged for each analysis?
- Other services offered
- What are the prices for these services?
- What are the estimated changes in service or analyses volume expected over the next 3-5 years and why?
- What new services will your organization be offering in the next 5 years?

- Budget
  - Salaries, including fringe benefits such as housing allowance, telephone, auto allowance,
  - Operating funds (utilities, office supplies, telecommunications, transportation, internet access),
  - Equipment purchases and support,
  - Facility maintenance and test equipment maintenance,
  - Consumables
  - Education and training, including books, journals, databases access, and travel
  - Contracted services
- Funding
  - The revenues for the laboratory for the last 3 years including this year?
  - Sources of funding - Government funding, internal operations funding, grants, donor funds, fee for samples, consulting services, other
  - What changes in revenue sources are envisioned over the next 3-5 years and why?
- Gap Analysis
  - Financial
  - Human resources
  - Equipment
  - Physical infrastructure and environmental conditioning
  - Management system (a verifiable quality management system, the laboratories use validated methods, standard operating procedures participation in proficiency testing schemes, if outsourced laboratories are used (public or private) that these laboratories are accredited by the appropriate body)
- Market Plan
  - Market demand- based on user surveys and publicly available information
  - Competitive analysis visa a vie services provided by private laboratories
  - Public Outreach

- Evaluation of Options/Scenarios

  - Based on different scenarios of change in demand and supply for services (a business as usual scenario, a scenario with modest increase in demand, a scenario with high increase in demand, a scenario of change in government policy) assess the operating and maintenance costs for the laboratory to be sustainable (including re-investment costs) A special mention must be taken at this point to discuss fees.

Attachment II

Market Demand survey with users

- Currently how many samples by type are sent for testing on a monthly or annual basis?
- What data or information are you looking to obtain from these samples?
- What testing do you request for the samples?
- Where are the samples sent?
  - Government laboratory – which one(s)
  - Private laboratory – which one(s)
  - University - which one (s)
  - Research institute- which one(s)
  - Other --- outside of the country

- If samples are sent out of the country can you explain how many and the reasons they are sent?

e.g. Lack of capability in country, customer demands samples be tested at specific laboratory, the client will only accept results from an accredited independent laboratory

- Do you perform testing in-house as a part of your operations?

- Why are these performed in-house?
- As a part of your in-house testing do you test samples for a fee for others?
- What types of tests do you perform for others and how many samples per year?
- What would it take to outsource your in-house sample testing?
- What changes in sample type, volume, and testing requirements do you see over the next 5 years?
- Are there new emerging requirements that must be met?
    - Government regulations
    - Importing requirements
    - Exporting requirements
    - Standards
    - Changes in buyer requirements
    - New products

- What prices are you paying for specific tests?