STDF Standards and Trade Development Facility

PROJECT: STDF/PG/359 "AFRICAN PESTICIDE RESIDUE DATA GENERATION PROJECT

STRENGTHENING AFRICAN REGIONAL CAPACITY TO MEET PESTICIDE EXPORT REQUIREMENTS BASED ON INTERNATIONAL STANDARDS

FINAL REPORT

(OCTOBER 2017)

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Title African Pesticide Residue Data Generation Project: Strengthening regional capacity to meet pesticide export requirements based on international standards
Implementing Agency African Union Interafrican Bureau for Animal Resources (AU-IBAR).
Partners Ghana Standards Authority, Kenya Plant Health Inspectorate Service, Ministry of Health Senegal, Tropical Pesticides Research Institute Tanzania, Government Analytical Laboratory Uganda, United States Department of Agriculture, Rutgers University (IR-4), FAO, COLEACP, and DOW
Start Date May 2013
End Date April 2017
Beneficiary Ghana, Kenya, Senegal, Uganda and United Republic of Tanzania
Budget Project value: US$1,064,450 Approved STDF contribution: US$446,150

LIST OF ABBREVIATIONS

AU-IBAR:	Interafrican Bureau for Animal Resources
CAC:	Codex Alimentarius Commission
EAC:	East African Community
FAO:	Food and Agriculture Organization of the United Nations
GLP:	Good Laboratory Practice
JMPR:	Joint FAO/WHO Meeting on Pesticide Residues
MRL:	Maximum Residue Limit
SPS:	Sanitary and Phytosanitary
STDF:	Standards and Trade Development Facility
USDA:	United States Department of Agriculture
WTO:	World Trade Organization

1 EXECUTIVE SUMMARY

The project, "African Pesticide Residue Data Generation Project: Strengthening regional capacity to meet pesticides export requirements based on international standards" (STDF/PG/359), supported by the Standards and Trade Development Facility (STDF), involved five countries: Senegal, Ghana, Tanzania, Uganda and Kenya. The objective of this project was to enhance regional capacity in pesticide residues data generation and monitoring for establishing, implementing, and complying with international pesticide residues standards. More specifically, the African Pesticides Residue Data Generation Project was intended to enhance capacity of African countries to meet pesticide-related export requirements based on international (Codex) standards. The Project provided practical experiences for African countries in conducting standard practices in residue field trials and risk analysis based on international procedures as well as on how to coordinate a work-sharing effort amongst many countries.

This project involved three phases, capacity building, field trials, and analytical analysis/data submission. It was linked to a broader global project that aimed to establish a coordination mechanism for countries to identify common pesticide needs and work together to generate the necessary data to support national registration, establish/adopt international standards for trade, and strengthen abilities to comply with international residue standards through improved pesticide monitoring. One of the primary, long-term objectives resulting from the Global Minor Use Summit-2 (FAO Headquarters, February 2012) was the establishment of a central organization body that would facilitate this process between growers, governments, research institutes, and pesticide manufacturers around the world. The realization of this objective required the establishment of a framework for this coordination and collaboration mechanism and also required substantial capacity building in order to ensure meaningful participation by developing countries.

Significant results were achieved by the project in spite of some challenges faced. Firstly, the project strengthened cooperation between government agencies within the five project countries, common work protocols were established and work-sharing and responsibilities coordinated. Through this process, experience on data generation has been gained for consultation on pesticide residue levels for crops of importance to the African region. This process will be replicated in the future for other pesticide / contaminant and crop combinations for data generation in the African region.

Secondly, capacities of technical personnel from participating countries were developed through training on Good Laboratory Practice field and laboratory research to enable them to conduct high quality residue research and studies that would be accepted by international standard setting bodies, notably Codex, or by other national governments for the establishment of MRLs. Through this process, national pesticide monitoring systems have also been strengthened.

The GLP trainings resulted in the implementation of seven residue field trials in the five participating countries for sulfoxaflor on mango. Efficacy trials in three countries will be completed in 2018 to enable the registration of the compound in the three countries. Samples will be shipped to a private laboratory for analysis.

The lack of analytical equipment in some of the project countries was a real limiting factor in conducting GLP-level work. It was noted that for future trials, laboratory capacity within the project countries need to be developed to support the analysis phase of the project. Another lesson learned is that in Africa, unlike other regions such as Asia and Latin America, it was extremely difficult to find real commitment by the multinational pesticide companies to sponsor some chemicals, where the companies do not feel there is a marketing advantage. Changing interest on the part of the private sector partners led to uncertainty and delays at the start of the project and the need to repeat previously completed activities. Combined with some other challenges faced in the transfer of funds to national partners, this affected the project timeframe and contributed to the inability to fully complete output 3 by the project end date.

This project was critical for Africa in order to provide confidence to the private sector that investments in Africa can be profitable. The lesson learned now is that confirmation with the companies must be made multiple times to guarantee their full commitment. It is however, understood that the private sector may change their business plans regularly and this is a risk which needs to be effectively mitigated in similar work in the future.

But despite these challenges, most significantly, this project initiated a discussion within the East African Community (EAC) member countries (Kenya, Tanzania, and Uganda) about the need to harmonize pesticide registration systems, following difficult coordination discussions on complying with disparate regulatory requirements to gain registrations of the test pesticides in each of the countries, while at the same time attempting to harmonize the labels. As a result, with financial support of the U.S. Agency for International Development (USAID), technical and logistical support of FAO, and guidance from USDA and members of the country project teams, in 2016 the EAC initiated an ambitious effort on regional harmonization of pesticide registration systems and standards setting. By early 2018, the harmonization effort is anticipated to be completed, addressing mutual recognition of efficacy data across countries, mutual recognition of residue data, and common data packages towards a single submission system within the region. This effort will significantly reduce the time required for newer, safer pesticide to be registered and available to farmers, and facilitate the adoption and implementation of Codex MRLs.

Recommendations based on the experiences and lessons of the project:

1. During consultations with pesticide manufacturers, the lack of mutual recognition of efficacy data between countries in the region was highlighted as a major obstacle. Regional discussions on harmonization of data requirements (efficacy requirements, residue requirements, and registration requirements) and development of mutual recognition agreement should be encouraged to enable mutual recognition of efficacy data and labelling requirements.

2. Future projects should assess laboratory capacities at an early stage and laboratory capacities developed to support the analysis phase of the project in project countries.

3. Field efficacy trials were not originally factored into the conception of the project. It is recommended that the application process for registration and experimental use permits to conduct efficacy trials required for registration should be factored into future projects at the conception phase.

4. The delay in identifying the crop pesticide combination also affected the project cycle. For future projects, prior discussion should be held with pesticide manufacturers to determine their preparedness to sponsor the chemical before proceeding on such projects.

5. It was also recommended that African countries should take advantage of the presence of pesticide manufacturers in the sessions of the Codex Committee on Pesticide Residues and have strategic meetings for dialogue on shared interest.

2 BACKGROUND

Project application, approval and implementation

The application for this project, entitled "African Pesticide Data Generation Project: Strengthening regional capacity to meet pesticide export requirements based on international standards" (STDF/PG/359) was submitted to the STDF by the Ghana Standards Board, the Kenya Plant Health Inspectorate Service, the Ministry of Health in Senegal, the Tropical Pesticides Research Institute in Tanzania and the Government Analytical Laboratory in Uganda.

This project application was developed through an STDF PPG (approved in October 2011) implemented by the African Union Interafrican Bureau for Animal Resources (AU-IBAR), in collaboration with a steering committee comprising representatives of selected African countries. The PPG process facilitated collaboration with FAO, the Joint FAO/WHO Meeting on pesticide Residues (JMPR), the United States department of Agriculture (USDA) and other related stakeholders, as well as COLEACP and the private sector, and built on existing meetings (e.g. Global Minor Use Summit, Rome, Feb. 2012) to identify and secure support and co-financing for the project.

The STDF Working Group approved the application in October 2012. The Working Group agreed that this project was of interest to the STDF given its: i) regional, collaborative and inter-disciplinary approach to capacity building; ii) complementarity to other relevant ongoing initiatives

including the opportunity to link African countries into related global initiatives focused on the development and implementation of Codex standards for pesticide residues; and iii) focus on partnerships among diverse government and private sector stakeholders, as well as with international organizations and donors at a national, regional and global level.

The project application requested AU-IBAR to implement the project. The Contract between WTO and AU-IBAR was signed in April 2013. Based on the project document, AU-IBAR entered into a Special Services Agreement with Rutgers University (IR-4 project) to support the implementation of certain parts of the project. Following discussions between the stakeholders, and in response to specific issues faced within the project, AU-IBAR and IR-4 Project subsequently agreed to amend this Special Services Agreement to expand the role of IR-4 in project implementation.

The project was expected to run from 1 May 2013 to 30 April 2016. In October 2015, at the request of AU-IBAR, the STDF Working Group approved a one year, no-cost extension request for the project. This extension postponed the project's end date to 30 April 2017. The extension was requested to: i) respond to delays in implementation linked to challenges to agree on the pesticide / crop combinations for the residue trials with the private sector; and ii) include efficacy studies to enable the registration of the pesticide in three of the beneficiary countries. Efficacy trials had not originally been included as an activity in the project, however, considering that provision of product labels was a prerequisite for data submission to JMPR, it was considered important to expand the scope of the project to conduct efficacy trials.

Relevance of the project to the STDF

This project was aligned with the STDF's mandate of providing support for implementation of regional projects that promote compliance with international SPS requirements with the aim to improve market access. Not only did the project build capacity for SPS compliance, but it also enhanced African nation's participation in the actual process of establishing and implementing these international requirements through regional and international collaboration. Additionally, this project will address several of the Millennium Development Goals (MDGs) to which the STDF is committed to achieving, namely SDG 1 (No poverty), SDG 7 (Responsible consumption and production), and SDG 17 (Partnership for Goals).

Government ministries, academia, research institutions, laboratories and the private sector are critical to any nation's conformity to World Trade Organization (WTO) obligations. Africa's underdeveloped capacity to address trade constraints related to pesticide maximum residue limits (MRLs) poses difficulties in the production of safe food and high-value crops (such as tropical fruits and vegetables) for both domestic and international markets .

Many of the pesticides that are required for the production of different tropical fruits and vegetables in the African region do not have established national or Codex Alimentarius MRLs. Consequently, importing countries often set residue tolerances at "limits of determination", e.g. the lowest concentration of residue in a sample that can be detected by a given analytical procedure. Given advances in analytical methods of detection, this scenario can restrict the use of certain critical pesticides all together. This becomes particularly problematic when newer, safer (less toxic) pesticides become available on the global market, but cannot be used because international MRLs have not yet been established. Often, the absence of an MRL results from a lack of necessary residue data for the particular crop/pesticide combination. Most African countries do not have the capacity to generate this high quality data to establish international trade standards.

Due to this drawback, farmers are forced to continue using more toxic chemicals resulting in economic loss because of restricted market access, lower crop productivity (due to increased rate of pest resistance), and negative impacts on environmental, worker, and consumer safety. As Africa's trading partners begin to ban or restrict the use of older crop protection chemistries, significant economic losses have resulted from shipments rejected due to pesticide residue violations, because farmers are unable to comply with established (or non-existent) international standards.

Pesticide residue data that are needed to establish Codex MRLs and support product registrations are almost exclusively generated in developed countries/regions such as the United States, Canada, Australia, Japan, and the European Community. Very rarely are data generated in developing countries, and therefore, few Codex MRLs are established for crops grown primarily in these specific regions of the world. Even where Codex MRLs do exist for crops grown in developing

countries, the data are usually generated in industrialized countries, where climate and pest pressures may be vastly different. Hence, the Codex MRLs may not necessarily reflect the developing countries' use patterns for those pesticides, which can result in residues that exceed Codex limits. Codex MRLs that incorporate data from more countries and regions would be more relevant and important to developing countries, and would enhance their ability to comply with international trade standards.

When the project was formulated, the underlying issues related to the lack of Codex MRLs for pesticides used in the African region included the following:

- *Technical expertise*: Field trial data must be of exceptional quality in order to be considered by Codex. The expertise to develop, review and interpret residue data in the context of Codex MRL adoption was still not fully available in Africa. Additionally, African countries often lacked the ability to monitor horticultural commodities to ensure that domestically consumed, and exported products, comply with national and international residue standards.

- *Codex engagement*: In order to better align with Codex MRL standards, relevant data needs to be generated, submitted to the JMPR, and importantly, championed by the African delegates at the Codex Committee on Pesticide Residues.

This project aimed to improve technical expertise of selected African countries in data generation, review and interpretation for MRLs for minor-use crops, which was expected to strengthen African countries engagement and participation in the Codex MRL-setting and adoption process, as well as their own national pesticide residue monitoring programs. In addition to building regional capacity to implement and comply with Codex standards, and promoting harmonization with international standards, the project was expected to support market access given the current importance (and strong potential to expand) tropical fruit exports from Africa, and difficulties posed by the lack of MRLs. It was also considered likely to contribute to enhanced public/environmental health and worker safety through the phasing out of older, more toxic chemicals.

This proposed project was aligned with the Codex Alimentarius Commission (CAC) Strategic Plan. Specifically, the project addressed CAC goal 4: Promoting cooperation between Codex and relevant international intergovernmental organizations by encouraging contributions from other international bodies in Codex work, and CAC goal 5: Promoting maximum and effective participation of members from developing countries.

The SPS problem addressed by this project related to the hindered access to export markets due to a lack of acceptable pest control products, a lack of corresponding MRL for crops of importance to the African region, which results in non-compliance with international MRL standards. The primary purpose of the project was to enhance capacity of African nations to meet pesticide-related export requirements based on international (Codex) standards to enhance market access for African agricultural commodities. The primary objective of the project was to implement a process for joint data submissions to Codex by African nations, by building regional technical capacity and developing a regional process for the coordination of work/data sharing. By building regional knowledge and skills within African nations to generate reliable data focused on MRLs for pesticides, the project promoted harmonization with international (Codex) standards and enhanced the capacity of African nations to contribute to, implement and benefit from, Codex standards.

3 PROJECT GOAL

The overall goal of the project was to establish a sustainable program to provide minor crop growers around the world with safe pest control tools, and to ensure that their high-value commodities comply with international residue standards for trade. The goal is to allow African countries to proactively seek and develop pest control tools that are targeted to their needs and conditions, to allow Africa to actively participate in the international standard setting process and strengthen the African commitment to Codex. By providing data to support the development of pesticide MRLs, African countries will be able to comply with international standards hence leading to greater market access of agricultural produce from Africa and a catalytic improvement in the livelihoods of farmers in the region.

4 PROJECT IMPLEMENTATION AND MANAGEMENT

Government agencies and institutions from five countries, namely Ghana, Kenya, Senegal, Tanzania, and Uganda, actively participated in this project. The project was implemented and coordinated by AU-IBAR, in close collaboration with the United States Department of Agriculture (USDA), Rutgers University (IR-4). As foreseen in the project application, AU-IBAR entered into a Special Services Agreement with Rutgers University (IR-4 project) to support the implementation of project.

Implementation of the project was to be based on a public private partnership approach. The interest and engagement of the private sector evolved during the course of the project. Despite strong private sector interest at the project design stage, the ability of some multinational companies to contribute to and engage in the project stalled after project implementation started. This created a critical challenge for the project and also resulted in delays in the time-frame to implement key activities, and created the need for an extension to the project.

In the end, DOW agreed to contribute to the project. DOW supported the use of a new pesticide product, called sulfoxaflur (a reduced risk insecticide), to be applied on mango crop as part of the project. All five countries shared work on this pesticide/crop combination: Senegal (1 trial), Ghana (2 trials), Tanzania (1 trial), Uganda (1 trial), and Kenya (2 trials).

Participating countries in the project established national study teams to monitor the implementation of project activities in their countries. AU-IBAR was responsible for the overall management and implementation of the project, whilst the USDA Foreign Agricultural Service (USDA/FAS) coordinated the technical aspects of the project with the PSC and other stakeholders, and also ensured linkages to the other two regional MRL projects in ASEAN and Latin America, also supported by the STDF. The Technical Coordinator, based in USDA/FAS, served as the liaison between the PSC, participating member States, AU-IBAR, industry, FAO, and the Study Director (IR-4), as well as other stakeholders to facilitate communication. A Study Director was hired on a contract basis from Rutgers University (IR-4) to support project countries with GLP field trial work.

Administrative support and technical expertise were drawn upon from within the participating AU Member States and provided in-kind by the United States, other governments or institutions, and the private sector. Five project progress reports were submitted to the STDF during the project cycle.

Oversight of the project implementation was through a Project Steering Committee (PSC), which involved representatives from the project countries and AU-IBAR as members, and USDA and FAO/JMPR as observers. The PSC met three times during the project cycle and held several electronic meetings between PSC meetings to facilitate identification of corrective actions to challenges and also follow-up on project activities.

5 PROJECT OBJECTIVE, OUTPUTS & ACTIVITIES

5.1 Project Objective

The objective of this project was to enhance regional capacity in pesticide residues data generation and monitoring for establishing, implementing, and complying with international pesticide residues standards. More specifically, the African Pesticides Residue Data Generation Project was intended to enhance capacity of African countries to meet pesticide-related export requirements based on international (Codex) standards. The Project provided practical experiences for African countries in conducting standard practices in residue field trials and risk analysis based on international procedures, as well as on how to coordinate a work-sharing effort amongst many countries.

This project involved three phases, capacity building, field trials, and analytical analysis/data submission.

5.1.1 Output 1: Capacity developed

Technical capacity building was carried out through the training of technical personnel (laboratory, field trial experts, others) for all participating countries. The goal was to train personnel to conduct high quality residue research and studies that would be accepted by international standard setting

bodies (notably Codex), as well as national governments, for the establishment of MRLs. Through this process, national pesticide monitoring systems were strengthened.

Relevant activities and results under this project output included the following:

1. Project preparation meetings (**Completed**, March 2012): A project planning meeting was held in Kenya in March 2012 where the crop/pesticide assignments were discussed, the Steering Committee was formed, and make-up of the national Study Teams were considered.

2. Project preparations: (**Completed**, September 2016): This task was originally completed in December 2015, but due to the cancellation of support from some private sector partners, and the need to change the crop/pesticide combinations again, the preparatory activities had to be re-started and done over again. Finalization of field data notebooks, test substance delivery to country teams, completion of efficacy trial requirements, and crop timing was completed for the second time in September 2016.

3. Good Laboratory Practice (GLP) training of field teams & PSC meetings (**Completed** in February**,** 2014 and a second one in 2017): Two trainings on the basics of GLP field and laboratory research were provided at a group workshop in Ghana. In addition to lectures, practical training was provided in the field to understand how to design and set up field test plots. A PSC meeting was concurrently held whereby the Terms of Reference was drafted and members' roles and responsibilities were discussed. The FAO provided a JMPR consultant to provide guidance on developing the study protocols and GLP compliance. The JMPR consultant stayed active through the completion of the project, answering questions on protocols, sampling procedures, transport and storage of samples, and preparation of samples. The 2017 PSC meeting was held on the margins of the Codex Committee on Pesticide Residues (CCPR) in Beijing, China.

4. Protocol finalization (**Completed** in July 2016): This item had to be done twice due to the changing crop/pesticide assignments. The final protocol for work on sulfoxaflor and mango was completed and shared with the national Study Teams and Dow.

5. Facility Inspections (**Completed** in June 2016): From February to June 2016, the IR-4 and USDA technical team visited both field and laboratory sites in Senegal, Ghana, Tanzania, Kenya, and Uganda in order to understand current capabilities, list equipment and training needed to carry out work, and coordinate project logistics with the Study Team members. A group laboratory and quality assurance training was also held in June 2016 in order to prepare Study Teams for analytical work.

5.1.2 Output 2: Field Trials conducted

A residue study was planned that consisted of seven field trials in five countries (Senegal (1), Ghana (2), Tanzania (1), Kenya (2), and Uganda (1)) utilizing a common use pattern (GAP) with the insecticide Sulfoxaflor in or on mango. The field trials were planned to meet the requirements of developing the data necessary to support a Codex Maximum Residue Level (MRL). The start of this phase of the research was delayed because of the changing interest of the private sector partners (pesticide manufacturers) to provide one of their products for use under the project and delays in transferring funds to the national study teams, in part due to the time required to follow internal AUC procedures on tendering. This phase included the following tasks:

1. **Registration preparations**: After having difficulties in finding an acceptable crop protection product to utilize in the capacity-building project, the project settled on using the Dow Chemical insecticide technology containing the active ingredient sulfoxaflur. This active ingredient is currently not registered for use in mango in the five participating African countries. This material is a very new pesticide on the global market. Field efficacy trials are ongoing and will be completed in 2018 in order to get this product registered in three of the project countries.

2. **Study Protocol Review (Completed in July 2016)**: The final study protocol was developed by the IR-4 Project Study Director and signed by the project Study Teams.

3. **Live Field Trials:** In August 2016, Senegal conducted its field residue trial successfully, and currently has its mango samples stored in deep freezers until the samples can be shipped to the analytical laboratory. In October 2016, Ghana completed their first field residue trial and completed their second residue trial in early January 2017. Ghana's samples will be stored in deep freezers until they can be shipped to the analytical laboratory. In December 2016, Tanzania conducted their residue field trial, and Kenya initiated their first residue trial. Kenya completed its second residue trial in January 2017. Uganda conducted their one field residue trial in February 2017. All samples have been frozen in deep freezer until shipment to the analytical laboratory.

4. **QA and Notebook Reviews:** Upon completion of the field trial work, IR-4 assisted the Study Teams in conducting quality assurance reviews of the field notebooks and draft field data reports.

5. **Shipment to the analytical laboratory:** Due to an unexpected and excessive increase (three times over the proposed budget) in the cost of shipping samples to the testing laboratory for residue analysis, in consultation with the key project stakeholders and STDF Secretariat, there was agreement that this activity had to be delayed. IR-4 continues to work with the Study Team to explore options to reduce shipping costs in line with the budgeted funds.

5.1.3 Output 3: Analytical Analysis and Data Submission

It was expected that data generated under this project would be submitted to the JMPR for Codex MRL establishment. In order to accomplish this goal, the field trial samples have to be analyzed utilizing modern analytical analysis. Then the resulting data must be formatted into an appropriate submission document. Concurrently with this analysis of samples, the Project Study Team members, with Dow, IR-4 and USDA guidance, will nominate sulfoxaflor to be reviewed by JMPR at the next available review time slot, which will be determined at the next Codex Committee on Pesticide Residues (CCPR) meeting in April, 2018.

As indicated above, most of the companies that had initially committed to participate in this project subsequently withdrew their support from the potential pesticides to be used in the capacity-building studies. This required some of the core preparatory activities to be carried out twice, and caused a major delay in implementation of the project.

Additionally, there were some difficulties in transfer of funds to country Study Teams to initiate the in-country work, due to the need to follow internal AUC rules on transfer of funds. These rules required that, for transfers over USD10,000, the countries participating in the project would have to submit bids, which was a challenge since in most cases there was only one public sector agency with the expertise to carry out the planned work. In the end, this issue was addressed by modifying the Special Services Agreement between AU-IBAR and Rutgers University (IR-4) to enable IR-4 to transfer the funds to the relevant government agencies in the participating countries.

As a result of these issues, the project pesticides and crops have changed multiple times, and the workload and assignment of residue trials among the participating countries has shifted, which generated delays in implementation. Most obstacles were addressed to the best of all members' abilities in order for most of the expected outputs of the project to be achieved by the end date of April 30, 2017. While it was not possible (given the unexpected and excessive increase in shipping costs indicated above) to complete output 3 by the project end date, the samples are in appropriate storage so that they can be analysed once the shipping issue is resolved. The IR-4 Project, USDA, Dow and the project countries are committed to completing output 3 (even after the official end date).

6 FINANCIAL OVERVIEW

The total project budget (in the project document) was US$1,064,450. The approved STDF contribution to the project was up to US$446,150. The participating countries were expected to make an in-kind contribution, identified in the project document, of US$60,000. The other partners involved in the project made additional contributions worth US$558,300. The STDF transferred a

total of US$423,843 to AU-IBAR in four instalments for project implementation (subtracting bank charges, AU-IBAR actually received US$423,721).

Given the challenges affecting project implementation, actual spending on the project was less than originally planned. AU-IBAR spent a total of US$391,073 on project implementation. This left an unspent balance of US$32,647 on the project account at AU-IBAR on completion of the project. In addition, some funds (US$22,307) remained on the project account at STDF at the end of the project (corresponding to the last planned payment to AU-IBAR of up to 5% of the total STDF contribution, based on actual spending). A detailed financial report is annexed to the report in section 9.2.

7 OVERALL PROJECT RESULTS AND LESSONS LEARNED

This project involved three phases: capacity building, field trials, and analytical analysis/data submission. In spite of the challenges and delays faced, significant results were achieved by the project. Firstly, the project promoted cooperation between governments within the five project countries, common work protocols were established and work-sharing and responsibilities coordinated. Through this process, experience on data generation has been gained for consultation on pesticide residue levels for crops of importance to the African region. This process will be replicated for other pesticide or contaminant and crop combination for data generation in the African region.

Secondly, capacities of technical personnel from participating countries were developed through training on Good Laboratory Practice field and laboratory research to enable them to conduct high quality residue research and studies that would be accepted by international standard setting bodies (Codex) and by other national governments for the establishment of MRLs. Through this process, national pesticide monitoring systems in beneficiary countries have also been strengthened.

The GLP trainings resulted in the implementation of seven residue field trials in the five participating countries for sulfoxaflor on mango. Efficacy trials are ongoing in all five countries and will be completed in 2018 to enable the registration of the compound. Samples will be shipped to a private laboratory for analysis. The lack of analytical equipment in some of the project countries was a real limiting factor in conducting GLP-level work. It was noted that for future trials, laboratory capacity within the project countries need to be developed to support the analysis phase of the project.

Another lesson learned is that, unlike in other regions such as Asia and Latin America, it was extremely difficult to find real commitment by the multinational pesticide companies to sponsor some chemicals in Africa, where the companies do not feel there is a marketing advantage. In this context, this project was even more critical in order to provide confidence to the private sector that investments in Africa can be profitable. The lesson learned now is that confirmation with interested companies must be made multiple times to guarantee their full commitment. It is, however, understood that the private sector may change their business plans regularly and that this is a risk which should be very clearly identified and managed in any public-private collaboration of this nature. The Project Steering Committee held a very direct one-on-one meeting with representatives from Dow, Bayer, BASF, and CropLife International at the Chicago Pesticide Priority meeting in 2016 in order to figure out what the major obstacles are for registration support of new chemicals in Africa. The companies cited the lack of mutual recognition of efficacy data between countries in the region as the biggest obstacle, and also the challenge for their local representatives in truly understanding the needs of the countries and how these needs fit into a global perspective for the countries.

In an effort to address the issue of registration, USDA and CropLife International offered to hold a regional meeting on prioritization, inviting the national regulatory authorities, researchers, growers, and local representatives in order gain a better understanding of the regional needs. Additionally, USDA offered to take on the challenge of convening a series of technical meetings via the East African Community (EAC) to develop agreement on mutual recognition of efficacy data and labelling requirements. In September 2016, the EAC and FAO initiated an effort to harmonize the data requirements (efficacy requirements, residue requirements, and registration requirements). USDA assisted by providing technical guidance on efficacy and residue requirements. During the efficacy and residue workshop, member countries acknowledged this

STDF-funded project as providing a solid foundation for their discussions around efficacy and residue harmonization.

The project also enhanced information exchange on data generation work and greatly improved collaboration amongst the five countries through the joint field and laboratory trainings, steering committee meetings and live field trials.

The successes of this project in Africa and the other regions were not limited to the immediate objectives of generating residue data and establishing Codex MRLs. The mechanisms created under this project – coordination between country research teams (including the U.S. IR4 program team), pesticide manufacturers, FAO and others – have been a model for collaborative efforts to resolve very large and complex trade and development issues. The project has been praised at CCPR meetings by providing case examples to work through joint data submission issues; project team members were invited to share experiences at the WTO thematic workshop on pesticide MRLs to help solve contentious trade issues (2016)[1]; the joint efforts were highlighted at the Global Minor-Use Summit in 2017 as models for collaborative problem solving; and team members from this project have been invited to participate as special reviewers for the JMPR and participated in intense training (2017). The impacts of this project have been wide reaching.

8 RECOMMENDATIONS

8.1 Specific recommendations to the project

Based on the experiences in the implementation of this project, a number of specific recommendations are formulated for the beneficiary countries, as well as other government agencies, regional economic communities (RECs) and other partners that may be involved in similar projects or activities in the future.

1. During consultations with pesticide manufacturers, the lack of mutual recognition of efficacy data between countries in the region was highlighted as a major obstacle. Regional discussions on harmonization of data requirements (efficacy requirements, residue requirements, and registration requirements) and development of mutual recognition agreement should be encouraged to enable mutual recognition of efficacy data and labelling requirements. RECs can play a role in facilitating these regional discussions.

2. In any future projects of this nature, laboratory capacities should be assessed at an early stage. Based on identified needs, additional attention and resources should be given to develop laboratory capacities to support the analysis phase of the project in beneficiary countries.

3. Field efficacy trials were not originally factored into the conception of the project. It is recommended that the application process for registration and experimental use permits to conduct efficacy trials required for registration should be factored into future such projects at the conception phase.

4. The delay in identifying the crop pesticide combination also affected the project cycle. For future projects, prior discussion should be held with pesticide manufacturers to determine their readiness and real commitment to sponsor particular chemicals before proceeding on such projects.

5. African countries should take advantage of the presence of pesticide manufacturers in the sessions of the Codex Committee on Pesticide Residues in order to have strategic meetings and dialogue on shared interests.

6. This project strengthened capacity and built practical knowledge and skills among government staff and agencies in the five participating countries. The African experts and agencies that benefitted from this project can play an important role in supporting and guiding new work in Africa on data generation. Any future projects should seek to utilize the capacities built in the five beneficiary countries to mentor other African countries in data generation work.

[1] See: www.wto.org/english/tratop_e/sps_e/wkshop_oct16_e/wkshop_oct16_e.htm

9 ANNEXES

9.1 Logical Framework

	Project description	Measurable indicators	Sources of verification	Assumptions and risks
Overall objective (goal)	To enhance capacity of African nations to meet pesticide-related export requirements based on international (Codex) standards to enhance market access for African agricultural exports.	10% increase in project tropical fruit exports from the African region within five years of project completion. 20% increase in intra-African trade of tropical fruits as a result of regional harmonization of MRLs.	The AU trade secretariat and FAOSTAT data will enable us to determine if the export of specific commodities has increased or if market access has improved as a result of these efforts.	Target markets accept Codex standards.
Immediate objective (purpose)	Regional mechanism (or process) focused on pesticide residue levels for crops of importance to the African region exists and is actively engaged in data generation, coordination and work-sharing	At least one set of residue data generated and submitted to the JMPR to support at least one Codex MRL. Potentially six different residue studies would result in six new registered uses and six new Codex MRLs but significantly more new Codex MRLs established through crop grouping.	Upon completion of data generation, industry and other stakeholders will nominate the chemical for JMPR review. Once the chemical is on the JMPR review schedule, countries will submit the data package for review. This and adoption of crop grouping schemes will be reflected in the CCPR report. Countries will communicate new chemical registrations to other WTO members through their respective SPS notification authorities.	The JMPR must accept the data generated and packaged by the project implementors. Establishment of additional MRLs is contingent upon the proposed tropical crop grouping scheme being adopted by the Codex Alimentarius Commission. And chemical companies must agree to and follow through on seeking registration in AUC member states.
Expected results	1.) The training of skilled scientists and regulators in the process of study design, field trial implementation, sample collection, preparation and analysis to produce high	An estimated 20 scientists from participating AU Member States will be trained at six technical capacity building workshops. Additional scientists will be trained in future	Following each workshop, the Technical Coordinator will submit a summary report based on questionnaires completed by each participant. Furthermore, the	Support received from partners to provide in kind contributions in the form of technical guidance/training/study direction. Other sources of funding secured.

	quality residue data to be considered by the JMPR for chemical evaluation and MRL establishment.	years via the "train the trainer" model . Quality of training will be reflected in the quality of the data produced in these field trials. This can be ascertained periodically by the JMPR expert reviewers and ultimately upon review of final data package.	Mentor Study Director and Project Steering Committee will evaluate the performance of the Project Staff and report their findings to the STDF, through the AU-IBAR.	
	2.) Project chemical is registered for use in three countries	This indicator is easily quantified and will ideally be achieved upon the completion of residue trials and analyses.	Countries will communicate new chemical registrations to other WTO members through their respective SPS notification authorities.	Chemical company must agree to and follow through on seeking registration in participating AU member states. Additionally, the local regulatory authority must approve the registration requests.
	3.) Important residue data is generated for low toxicity chemical on three (possibly four) tropical fruit varieties	Data resulting from residue field trials will be analyzed after harvest in year two of the project. Ample training and oversight will ensure the high quality of this data.	Analysis of residue data will be interpreted and reported to relevant stakeholders at the conclusion of the study.	Normal growing season devoid of significant inclement weather or any other confounding factors that would render the field trial data unacceptable
Activities	**Capacity building** for field trials will involve a series of trainings, workshops, consultations on the conduct of field trials, sample preparation and analysis, SOP reviews and identification of core management team, facility inspections, SOP refinement, and protocol development	To prepare member countries to initiate field trial studies. The mentor study director will determine country's preparedness to initiate field trials.	Following each workshop, the Technical Coordinator will submit a summary report based on questionnaires completed by each participant. Furthermore, the core management team will evaluate the performance of the trained scientists and report their findings to the STDF, through AU-IBAR.	Support received from partners to provide in kind contributions in the form of technical guidance/training/study direction. Other sources of funding secured.

	Data Generation from field trials will involve the practical implementation of training to include: field trial applications and harvest, analytical validation and analysis, data packaging and submission, analytical summary report preparation, and final report development	The targets for activities will include the key events of the field trials (application, harvest, sample preparation and sample analysis), and packaging of data for submission.	Progress can be measured by following interim reports to be submitted by the Project Steering Committee.	Normal growing season devoid of significant inclement weather or any other confounding factors that would render the field trial data unacceptable.

9.2 Financial Report

		Amount (USD)
Total STDF Approved Budget		**446,150**
Funds Received from STDF[2]		
Date		
1.01.2014		133,814.50
15.07.2015		89,199.50
14.07.2016		133,814.50
27.02.2017		66,892.50
Total Received		**423,721.00**
Less Expenditures		
Consultancy fees (JMPR Consultant)	1,500.00	
Travel Ticket for 2014 GLP group training and PSC meeting in Ghana	20,620.00	
DSA for 2014 GLP group training and PSC meeting in Ghana	27,831.00	
Conference for PSC	4,135.00	
Interpretation equipment for PSC 2014	600.00	
Interpretation service for PSC 2014	1,600.00	
Transport hire for PSC 2014	430.00	
Printing for PSC 2014	100.00	
Printing , binding and other secretarial and logistical expenses for PSC 2014	918.30	
Flash disk for PSC 2014	434.78	
Bank charges	172.71	
DSA -African expert on Pesticide residue-mtg-2016	9,984.00	
Tickets-African expert meeting on pesticide residues-meeting-2016	13,131.60	
Training KEPHIS DSA -Good lab practices training	13,568.00	
Training KEPHIS Transport -Good lab practices training	498.50	
Training KEPHIS Meals-Good lab practices training	1,618.83	
Training KEPHIS printing-Good lab practices training	128.71	
Transfer to New Jersey University-17.7.2015	41,000	
Bank charges	44.00	
2ND Transfer to New Jersey University-6.09.2016	200,000.00	
3RD Transfer to New Jersey University-12.02.2018	19,990.81	
DSA for GLP Training in Ghana 2017	12,965.00	
Tickets for GLP Training in Ghana 2017	4,878.00	
Other GLP Training expenses (Ground transport, cost of conference facility)	2,060.00	
Bank charges-march 2017	44.00	
DSA for participation in 49th CCPR- Beijing	3,692.00	

[2] Given the delays faced in project implementation, and the balance remaining on the project account, the STDF and AU-IBAR agreed to deviate from the payment schedule identified in the Contract (i.e. funds were not transferred as quickly as planned).

Tickets, Steering Committee meeting expenses, visa during 49th CCPR 2017	9,128.00	
Total Expenses	**391,073.24**	**391,073.24**
Balance of funds against actual funds received by AU-IBAR		**32,647.76**
Funds remaining in project account at WTO/STDF		**22,307.00**

9.3 Contact List

Below is the list of contacts of beneficiaries and implementing agencies.

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