STDF | STANDARDS and TRADE DEVELOPMENT FACILITY

STDF PROJECT GRANT (PG)

APPLICATION FORM

Project Title	Strengthening management of invasive scale insects in East Africa for improved trade of fresh fruits (papaya, mango, avocado, citrus)	
Objective	To increase **production and market access** of quality fruit in East Africa through improved surveillance, management of scale insect pests and compliance to SPS export trade requirements **Outputs:** 1. Improved identification capacity of invasive scale insects by taxonomists, NPPOs and extension officers 2. Improved skills in pest surveillance and monitoring capacity of invasive scale insects pests by NPPOs 3. Effective management of invasive scale insects at farm level 4. Enhanced stakeholder dialogue and sector analysis for effective communication and advocacy among traders, plant health actors and exporters	
Budget requested from STDF	US$ 885,115.55	
Total project budget	US$ 1,009,624.55	
Full name and contact details of the requesting organization(s)	1. Kenya Plant Health Inspectorate Service (KEPHIS) E-mail: director@kephis.org PI: Prof. Theophilus Mutui 2. Centre for Agriculture and Bioscience International (CABI) E-mail: africa@cabi.org Co-PI: Dr. Morris Akiri 3. Ministry of Agriculture Animal Industry and Fisheries Uganda National Plant Protection Organisation E-mail: paul.mwambu@agriculture.go.ug Co-PI: Mr. Paul Mwambu 4. ISABU Burundi National Agricultural Research Email: aniyokwishimira@ymail.com Co-PI: Dr Alfred Niyokwishimira 5. County Government of Mombasa E-mail: paulinemukumbu@yahoo.com Co-PI: Pauline Mukumbu 6. County Government of Kwale E-mail: info@kwalecounty.org Co-PI: Joanne N. Nyamasyo 7. Kenya Forest Research Institute (KEFRI) E-mail: director@kefri.org Co-PI: Dr. Joshua Cheboiwo 8. Kenya Agricultural and Livestock Research Organisation (KALRO) E-mail: kalro.embu@kalro.org Co-PI: Dr. Patrick T. Gicheru 9. National Museums of Kenya (NMK) E-mail: dgnmk@museums.or.ke Co-PI: Dr. Mzalendo Kibunjia	
Full name and contact details of contact person for follow-up	Prof. Theophilus Mwendwa Mutui Managing Director KEPHIS (Coordination of Activities) Email: director@kephis.org	Dr. Morris Akiri Senior Regional Director CABI (Project Management) E-mail: africa@cabi.org

Acronyms

ALPP	Areas of Low Pest Prevalence
CAADP	Comprehensive Africa Agriculture Development Programme
CABI	Centre for Agriculture and Bioscience International
COP:	Centre of Phytosanitary Excellence
EAC	East African Community
EU	European Union
FAO	The Food and Agriculture Organization
IPPC	The International Plant Protection Convention
ISPM	International Standards for Phytosanitary Measures
IT	Information technology
KALRO	Kenya Agricultural and Livestock Research Organization
KEFRI	Kenya Forestry Research Institute
KEPHIS	Kenya Plant Health Inspectorate Service
MTP III	Third Medium Term Plan (MTP III) 2018-2022
NARO	National Agricultural Research Organization, Uganda
NAPO	National Plant Protection Organisation, Uganda
NMK	National Museums of Kenya
NPPOs	National plant protection organizations
PCE	Phytosanitary Capacity Evaluation
PFA	Pest free Area
PIMS	Pest Information Management System
PIT	Project Implementation Team
PMDG	Pest Management Decision Guides
PSC:	Project Steering Committee
SMAP:	Standards and Market Access Programme
SPS	Sanitary and Phytosanitary
SSA	Sub-Saharan Africa
STDF	Standards and Trade Development Facility
TORs	Terms of Reference
TOTs	Training of Trainers
USAID	United States Agency for International Development

I. BACKGROUND & RATIONALE

1. Relevance for the STDF

Scale insects are a group of sap-sucking insects that insert their tiny, straw like mouthparts into the bark, fruit, or leaves, mostly on trees and shrubs and other perennial plants. Their presence can easily be overlooked, in part because they do not resemble most other insects and are easily mistaken for a disease symptom. Several of them (introduced) having escaped biotic constraints from their native ranges have become invasive, impacting a wider range of crops and trees across the world.; leading to devastating food insecurity, like the crisis caused by cassava mealy bug in Africa in the 1970's *(*Wyckhuys *et al* 2018, Zeddies *et al.* 2001) Scale insects including mealybugs (Pseudococcidae) and armoured scale insects (Diaspididae) are common pests of fruit trees; feeding directly, damaging leaves and weakening the plant, and indirectly, through the production of honeydew upon which sooty mould grows, affecting growth, quality and marketability. This honeydew also encourages attending ants, that deter natural enemies exacerbating their impact. They affect a wide host range that includes important horticultural and exportable commodities. Trees are often infested by mealybugs (Pseudococcidae), which produce honeydew and armoured scale insects (Diaspididae) that inject toxic saliva that damage leaves, each of which cause defoliation and dieback, impacting on fruit quality and marketability. These are significant barriers to trade especially for fresh fruits and vegetables from the region. In 2015, Uganda fresh exports of curry tree *Murraya koenigii* were intercepted in EU due to presence of African psyllid, T*rioza erytreae.* At the Jomo Kenyatta International Airport, the main point of exit for fresh produce in Kenya, plant health inspectors have rejected shipment of fresh fruits, herbs and flowers due to presence of scales as summarised in the table below; these rejections are on the increase. The plant inspectors', field agronomists and extension officers' diagnostic capacity are low leading to poor advisory and management at the farm level.

Rejections of commodities at JKIA due to Scale insects

YEAR	Number of rejections	Produce	Scientific Name	Market Destination
2020	3	Roses	*Rosa Sp*	Netherlands
	1	Basil	*Ocimum basilicum*	United Kingdom
2021	2	Roses	*Rosa Sp*	Netherlands
	1	Roses	*Rosa Sp*	Germany
	1	Roses	Rosa *Sp*	United Arab Emirates
	2	Basil	*Ocimum basilicum*	United Kingdom
	1	Eggplants	*Solanum melongena*	United Kingdom
TOTAL	**11**			

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In Eastern Africa, introduced mealybug pests include *Paracoccus marginatus* (papaya mealybug), which impacts cultivation and yields of pawpaw, cassava, vegetables and other alternative hosts; *Pseudococcus cryptus* (Citriculus mealybug) on citrus; *Rastrococcus invadens* (fruit tree mealybug) which can cause crop failure on mango (it is currently in Rwanda and may spread eastwards). Introduced armoured scales in the region include *Pseudaulacaspis cockerelli* (false yellow scale), *Fiorinia proboscidaria* (snout scale) and *Parlatoria ziziphi* (black parlatoria scale), all found mainly or exclusively attacking citrus plants. Invasive pests on produce for export present a plant quarantine and economic risk and lowers produce quality and may cause rejection of shipments (Gillian, 2021). Further, in Kenya, scale insects are threatening efforts to reduce poverty and hunger by damaging not only crops but also native tree species and yield losses can be as high as 91 %, as seen on papaya mealybug on pawpaw. Recent studies estimated papaya yield loss of 57% in Kenya, and associated economic loss of US$ 3,009/ha/year at farm level (Kansiime et al, 2020). The challenge posed by scale insects is evidenced in two trade documents to South Africa and China; where they are mentioned as pest of concern and need to be checked when exporting to this two big avocado markets. Also the challenge posed by scale insects is growing and may not be captured in many current reports.

Management of scale insects can be challenging even with the use of chemical pesticides. This is further impacted by the limited taxonomic capacity for scale insects among farmers, agricultural service providers and foresters in most countries. To bridge these knowledge gaps, under the Darwin Initiative funded project:"Biodiversity and Agriculture: addressing scale insect threats in

Kenya", training of parataxonomists and extension officers on identification, diagnosis and management was undertaken. This created awareness on the threats posed by scale insects, and addressing possible sustainable management practices that could be adopted at farm, country, regional and international levels efforts that could enhance market access resulting in increased production and income. In addition, capacity was enhanced by FAO for government officers of nine countries in SSA in 2021. The FAO has an ongoing project to enhance preparedness and capacity to respond decisively and effectively against invasive pests, especially the mango mealybug *Rastrococcus invadans* in Burundi, Rwanda and Uganda. Building on from the lessons under these works and being cognisant of the wide impact scales could have on rural livelihoods in Eastern Africa and international market access, it is important to strengthen the management of scale insects in the region to improve both regional and international trade. In previous projects, biological control was introduced as a sustainable solution, but it took several years for the parasitoids, *Apoanagyrus lopezi*, to be introduced from South America to manage the cassava mealybug, *Phenacoccus manihoti* due to years of misidentification and lack of effective monitoring. In this case example, once the right parasitoid was identified from South America in 1981, successful management was then achieved, but only after farmers experienced 80% crop losses over 10 years.

Biological pest control offers a sustainable solution because it facilitates a long-term reduction in pesticide use, and as a result, improves farm income, natural enemy diversity and reduces pest problems. However, as past attempts illustrate biological control has largely failed due to misidentification resulting in misdirected pest control efforts. This has resulted in the current ongoing issues of inceptions due to scale insects, and excessive uses of pesticides to control them.

Building from the above lessons learnt, it is crucial for research to identify the correct parasitoids that can effectively control the invasive scale insects in question like papaya mealybug parasitoid *Acerophagus papayae*. Thereby the use of parasitoid introduced from second country where there has been success like Ghana (Offei, M K and Lamourdia, T., 2015) can be replicated in other countries, to address similar challenges such as papaya mealybug and others that has inhibited trade of horticultural crops in East Africa Region and internationally. Field teams and NPPOs need to be trained to identify and monitor incursions to facilitate effective management using biological control as part of an integrated solution; to produce safer produce, reducing pesticide residue issues and safeguard trade.

The project will take into consideration the current crosscutting issues like COVID-19, gender equality, youth issues, HIV & AIDS. The developing countries are more at risk at this time of COVID-19 due to, disproportionately bearing the socioeconomic impact of the pandemic resulting in lack of productivity, lack of income, culminating in more people becoming poorer. Due to the effect of COVID-19 since 2020, efforts have been directed to managing the virus through vaccination, use of masks, social distancing and hygiene with various outputs. In this project, we purpose to include awareness sessions on the topic of prevention and managing of COVID 19 and other emerging issues. Skills and knowledge will be imparted in the relevant countries in contingency planning bearing in mind risk mitigation to the agriculture sector.

The project will enhance regional collaboration in managing scale insects by sharing new pest reports of invasive species, improvement of cross-border inspection regulations and practice, sharing of pest interception reports and generally, follow the EAC SPS protocol and WTO-SPS agreement. Consequently, the project recognises the need for collaboration namely; KEPHIS and other NPPOs in East Africa, National Museums of Kenya (NMK), Centre for Agriculture and Bioscience International (CABI), Kenya Forestry Research Institute (KEFRI), Kenya Agricultural and Livestock Research Organisation (KALRO), Kenya; Uganda National Plant Protection Organisation (NAPO), Uganda, and will include research institutions in Burundi. Rwanda and Tanzania will collaborate in surveillance and monitoring; NMK and National History Museum of UK will collaborate to enhance taxonomic identification, diagnostics, reference collection and database of invasive scale insects. The County governments, extension services in the Ministry of Agriculture and National plant protection organizations (NPPOs) in East Africa will train farmers on management of invasive scale insects.

The countries of focus for the project are Kenya, Uganda and Burundi. However, Rwanda and Tanzania will be beneficiaries of specific capacity building initiatives in the project, especially those directed at NPPOs.

2. SPS context and specific issue/problem to be addressed

Several specific SPS problems linked to trade would be addressed by the project in Kenya, Uganda and Burundi as follows:

a) In Kenya, the avocado mealybug affected trade of fresh avocadoes to China and the papaya mealybug has affected internal trade with loss of entire pawpaw orchards.
b) In Rwanda the *Rastrococcus invadens* (Mango tree mealybug) has been identified and may cause crop failure on mango; this may have already spread to other EAC countries of Burundi and Uganda; and poses a significant risk to Kenya and Tanzania's mango export industry's worth USD123m and USD 2.46m, respectively.
c) In Eastern Africa, introduced mealybug pests include *Paracoccus marginatus* (papaya mealybug), which impacts yields of pawpaw and several other host plants.

Trade in Mango, avocado, papaya, citrus within the EAC region, EU and China at import and export level has been on the increase. Rejections due to mealybugs are on custard apple, basil, roses and other horticultural commodities. In the market access negotiation for avocado exports from Kenya to China, scale insects are listed as major quarantine pests and contributed to the China-Kenya trade barrier on export of fresh avocado (see annex on Protocol of Phytosanitary requirement for export of fresh avocado fruits from Kenya to China). Scale insects are causing difficulties in complying with SPS requirements like the inability to supply the Chinese fresh avocado market with a single container of 20-foot tonnes of ripe frozen avocados export~~ed~~ to date, against a big potential for this lucrative market.

Under the EAC SPS Protocol of 2013 ratified by Parliaments of Kenya, Uganda, Burundi and Rwanda; the gaps noted are: on Art 4 (No. 2c) – provide a framework for management of pest, Art 4 (No. 2d) – ensure the safe movement of plants and plant products, Art 4 (No. 2e) – build systems for surveillance, pest listing, pest risk analysis, pest reporting, designation of pest free areas and areas of low pest prevalence; Art 4 (No. 2f) – provide appropriate facilities and strengthening capacity for undertaking phytosanitary measures, Art 4 (No. 2g) – harmonise imports and export documents and procedures, Art 4 (No. 2h) – harmonise and enforce plant quarantine measures. There are gaps in development of implementation instruments of EAC SPS Protocol. The PCE evaluation for Kenya/KEPHIS in 2018 by FAO/IPPC, on legislative systems, diagnostic systems and import regulatory systems showed gaps in areas of identification of emerging and invasive pests. The papers on pest listing and new records of scale insects in Kenya by Gillian *et al*., 2020; Macharia *et al.*, 2021; Macharia *et al.*, 2017; Heya *et al*., 2020 shows gap in pest identification diagnostics, awareness and management of invasive scale insects especially pawpaw mealybug and other mealybugs. Although no PCE evaluation has been done for Burundi, Uganda and Rwanda; in 2021, Uganda initiated an SPS capacity evaluation using COLEACP's R-STAT tool and results are expected in early 2022.

There is a clear need to improve the capacity of scale insect identification and management in order to facilitate international trade of these horticultural commodities that are so important to livelihoods in East and Central Africa.

3. Links with national/regional development plans, policies and strategies

The project will complement SDG 12 on ensuring sustainable consumption and production patterns, through protecting biodiversity from invasive species be translated into sustainable practical actions through training and helping farmers by promoting integrated solutions. SDG 1, No poverty, ensuring sustainable pest management will increase crop yield for local and international markets. SDG 2 on Zero hunger and SDG 3 on good health and wellbeing, ensuring healthy crops will increase yield for food, income and nutritional security for healthy communities. And SDG 17 on building partnerships. The project will support developing countries to strengthen the scientific and technological capacity to move towards a more sustainable pattern of consumption and production.

The project will support IPPC of 1999, art 6 (vi) on regulated pests as contracting parties may require phytosanitary measures for quarantine pests, and regulated non-quarantine pests; further under art. 7 (vii) on requirements in relation to imports that has the aim of preventing the introduction and or spread of regulated pests into their territories, contracting parties will have powers to regulate the entry of plants and plant products and other regulated articles. Further, art 8 (viii) on international cooperation, contracting parties to cooperate in achieving the aims of the convention e.g. cooperate in the exchange of information on plant pest, occurrence, outbreak and

spread of economically important pest; participate in any campaign that may seriously affect crop production. Also, provide technical and biological information necessary for Pest Risk Analysis (PRA).

The project will complement the EAC SPS Protocol of 2013, by bridging gaps in surveillance, pest listing, pest risk analysis, pest reporting, strengthening capacity for undertaking phytosanitary measures, plus harmonise and enforce plant quarantine measures. National efforts will be considered like the MTP III (2018 to 2022) in Kenya, in areas of disease and pest control plans, managing increasing pest and diseases incidences due to global climate change. Pests like mealybugs will be on the increase and researchers will be supported to conduct solution-based research and address pest management challenges.

4. Past, ongoing and planned programmes and projects

Project Name	Donor	Components	Lessons learnt	Clarify how the proposed project will complement these related initiatives	Reference
Scale Insect project	Darwin Initiative	Awareness on Papaya mealybug	Grass root approach to solving invasive species is possible.	The proposed project will build on the lessons learnt like identification capacity throughout the decision chain to reduce improper practices and speed up responses to pest invasions.	https://www.darwininitiative.org.uk/project/DAR25032/ https://www.cabi.org/projects/addressing-scale-insect-threats-in-kenya/
Centre of Phytosanitary Excellence (COPE) – Eastern Africa	STDF	To set up the regulatory framework for COPE; set up a training unit to train on in-service Phytosanitary practices; set up a unit for applied pest risk analysis (PRA) generating PRAs.	Regional projects assist in solving regional challenges like pest listing and management.	Build on regional networks built under COPE to implement the proposed project activities. Facilitate regional phytosanitary training and to develop training programs in line with market requirements; currently COPE has trained over 4,300 from various African countries.	STDF website (https://www.standardsfacility.org/sites/default/files/STDF_PG_171.pdf) https://www.standardsfacility.org/PG-171 https://kephis.org/index.php/corporate-documents/annual-reports

P-IMA Mainstreaming SPS Investments into CAADP and Other Framework	STDF	Use of evidence-based approach to prioritize SPS investments. Address SPS capacity gaps under national investment frameworks for agriculture and trade, as well as from other sources. Kenya's horticulture, tree nuts, honey and fish value chains were prioritized under the PIMA initiative and are considered of great potential in boosting agriculture exports once the key SPS issues associated with their trade flows are addressed.	Availability of quality data important for decision making.	Leverage on the priority investment option for Kenya where they have several capacity building issues that we can synergise with.	www.standardsfacility.org/prioritizing-sps-investments-market-access-p-ima
KEPHIS/EU Horticultural Produce Phytosanitary Certification and Quality Assurance (HORTICAP)	EU	Upgrading the capacity of KEPHIS to facilitate the access of Kenyan horticultural produce to EU markets (new lab, equipment and skills); awareness among stakeholders on market regulations and other requirements; food safety through implementation of monitoring plans; monitoring and pest surveillance services.	New market requirements need new skills, tools and equipment.	Build on pest surveillance capacity.	https://kephis.org/index.php/corporate-documents/annual-reports
KEPHIS/USAID PROJECT: KEPHIS Pest Risk Analysis Program	USAID	Capacity building through training, building of infrastructural and strengthening of systems (building of the lab in Muguga,	Building of lab capacity can assist in improve on diagnostic capacity.	Build on pest lists developed. Build on surveillance and diagnostic capacity.	https://kephis.org/index.php/corporate-documents/annual-reports

		Kenya); Development of comprehensive pest list for Kenya and document food risks.			
Standards and Market Access Programme (SMAP)	EU	Domesticate and gazette food safety standards of Kenyan plant-based products; strengthen the capacity of KEPHIS for testing and certification of plant-based products (Purchase of lab equipment and human capacity building)	Project with many institutions, needs a properly constituted project coordination unit.	Build on surveillance and diagnostic capacity.	https://kephis.org/index.php/corporate-documents/annual-reports
Feed the Future, Kenya Agriculture Regulatory Capacity Building Program (FOODSCAP Project)	USAID	Develop seed production systems services for farmers to assure availability of seeds; mitigate against crop losses through plant health management strategies and diagnostics; monitor food safety through checking for food contaminants and implementing a pilot regional program on the generation of suitable pesticide residue limits. Pest surveillance and enhance laboratory facilities.	Challenges in ~~P~~procurement of project items. Plan and start early and monitor closely for timely ~~to~~ achievement of project milestones	Utilize ~~se~~ capacity built under existing project to improve implementation of the proposed project activities; any procurement needs to start early.	https://kephis.org/index.php/corporate-documents/annual-reports

Other STDF projects in the region and beyond for possible synergies:

- STDF PG 694: Overcoming Barriers to Trade Through Regulatory Harmonization and Related Research on Biopesticides in the SADC Region. Here we can have inclusion of possible Biopesticides in regulating the mealybug with benefits to the environment. This can be done during farmer and extension awareness and training. Hence the project will develop promotion material and guidelines linked to the biopesticides or use the ones developed in the project STDF PG 694. Develop a policy brief on harmonisation on research of biopesticides in East Africa region.

- STDF PG 567: Fruit Fly Free: Pest-Free and Low Prevalence Areas to Support Fruit Production and Exports in South Africa and Mozambique. Here we can learn how to develop a harmonized framework for development, implementation and recognition of a Pest Free Area (PFA) or an Areas of Low Pest Prevalence (ALPP) for the mealybug for one of the crops of interest. The project can domesticate the harmonized framework.
- STDF PG 432: Promoting IT Solutions for Surveillance and Pest Reporting in the Asia-Pacific region. Here the project can gain by using possible IT solutions to enable compilation of credible pest lists, demonstrate pest status and be able to meet reporting obligation of IPPC signatures. The project to domesticate the Information technology (IT) solutions as provided in the Standards and Trade Development Facility (STDF PG 432) and it can be used to strengthen Pest Information Management System (PIMS) which needs data from surveillance and pest reporting.

5. Public-public or public-private cooperation

The project will promote cooperation between government organizations involved in managing SPS issues and/or with the private sector like Fresh Produce Exporters Association of Kenya (FPEAK) who participate in HCAS and NTH.

Cooperation type	**Explain how the project promotes management of SPS issues**
Regional and National SPS Committee (PPP)	Coordinates SPS issues at the regional and national level; it has public and private bodies.
Kenya Standing Technical Committee on Import and Export	Promotes use of biological pesticides in management of pest.
Horticulture Competent Authority Structure (HCAS)	Enables regulatory agencies in Horticulture sub-sector to address issues collectively and efficiently.
National Taskforce on Horticulture (NTH)	Identified SPS issues can be handled inclusively.

6. Ownership and stakeholder commitment

The study of scale insects through the Darwin Initiative project exposed the enormous diversity and complexity of scales and mealybugs pests in farming systems in East Africa. The information dearth and lack of expertise in identification warranted reaching out in search of training in identification and management skills culminating in improved taxonomic skills in Kenya. The trained persons are already utilizing their skill in East Africa.

Stakeholder	**Role in project**	**Stakeholder type**
KEPHIS	Team Leader, Coordination of project and will lead Pest Surveillance.	Government
CABI	Project Manager and initiate biological control agent work.	International, Not for Profit Research Body
National Museums of Kenya (NMK)	Taxonomic identification & capacity building, diagnostics, reference collection and database of invasive scale insects.	Government
County Government (Kwale, Mombasa)	Training farmers on management of scale insects and provide extension services.	Government
KALRO (Kenya) NARO (Uganda)	Lead research perspective in agricultural invasive scale insects.	Government
NARO (Uganda)	Import, rear and release biological control agents	Government
KEFRI	Lead Research perspective in forest invasive scale insects.	Government
Uganda NPPO	Training of farmers and extension workers on identification and management of invasive scale insects; provide advisory services for the management of scale insects.	Government
FPEAK	Mobilise horticulture growers to participate in the project to enhance their knowledge of invasive scale insects.	Private

II. PROJECT GOAL, OBJECTIVE, OUTPUTS & ACTIVITIES

Project Goal / Impact

The project goal is to improve livelihoods of fruit value chain actors in East and Central Africa through improved market access for pawpaw, mango, avocado, citrus and other horticultural products by managing invasive scale insect pests. Improved production and market access would impact positively on poverty level of farmers, and income levels of value chain intermediaries such as fruit aggregators, exporters, and fruit processors.

Target Beneficiaries

Identify the final beneficiaries (e.g., small farmers, producers, workers, consumers, etc.) and explain how they are likely to benefit from the project, quantifying these benefits as far as possible.

Beneficiaries	Likely benefit from the project	Quantify
Farmers (includes smallholder, large scale)	Improved capacity to identify and manage scale insects	• Farmers trained on identification and implementing management practices
	Increased yields and income	• New pawpaw orchards • Increased yields
Extension service providers	Improved capacity to identify and knowledge on management of scale insects	• Field reports with presence of scale insects. • More farmers managing scale insects and practicing skills.
Traders (includes local traders and exporters)	Improved compliance to market requirements	• Plants and plant products are pest free. • Getting certification for cross-border trade.
	Improved market access	• New markets
	Increased trade volumes	• Volumes increased for the focus fruits.
NPPOs in East Africa (KEPHIS, Uganda NPPO and other NPPOs)	Improved pest surveillance and monitoring of invasive species	• Pest distributions maps available for use • Survey, control and Monitoring program in place and implemented
	Improved capacity to diagnose and identify and manage scale insects	• Inspectors able to identify and use the knowledge in regulatory work
	Updating Country pest lists	• Updated country pest lists
	Improved regional sharing of information on invasive pest	• MoU in place for sharing of information on invasive pests at regional level
Research institutions in East Africa (CABI, KALRO, NMK, NARO, KEFRI	Improved diagnostics	• Better diagnostic tools • Improved taxonomic capacity
	Improved reference collections for scale insects	• Increased and updated reference collections on scale insects in the region
	Strengthen data systems on scale insects	• National and regional database on scale insects. • Global Biodiversity Information Facility created and updated.
National and county/local government	Improved surveillance	• Enhanced diagnostic capacity for scale insect pests management
	Enhanced coordination in devolved government	• Enhanced enforcement for official officials

Gender-related issues

The Darwin Initiative study, all gender were adversely affected by the invasive scale insects. Agricultural processes like field preparation, planting, weeding, scouting, plant protection practices such as application of plant protection products, harvesting, and packhouse processing involve more women and youth. In this project, we will develop capacity to identify the scale insects at the different stages of production in the value chains, propose management that are accessible, cost effective and increase production and exportability of fresh fruits and vegetables.

Fit for purpose information materials such as scales insect identification photo guides, factsheets for management of scale insects will be made available to various stakeholders e.g., packhouses, production orchards to support decision on pest management and produce processing and inspections. The materials will be simple to understand to take into consideration literacy gender gaps.

How different genders expected to benefit from the project:

Benefit	**Male**	**Female**	**Youth**
1. Knowledge on scale insect and sustainable management	√	√	√
2. Improved access to resources and market for plant and plant products	√	√√	√√
3. Reduced labour on application of plant production and protection inputs	√	√√	√√
4. Improved inclusive decision-making	√	√√	√√
5. Capacity built institutions	√	√	√

Key
√√ - Means more benefits

Gender differential data will be collected before and after the project to indicate benefits to women, youth and men in the above activities as a measure of benefits accruing from project to each group.

Inclusion of gender-specific indicators:
Documents (participants list, activity reports) will capture gender splits like male-female, youth ratio in training, meetings and project committees.

1. Project objective, outputs and activities (including logical framework and work plan)

Goal:

The project goal is to improve livelihoods of fruit value chain actors in East and Central Africa through improved market access for pawpaw, mango, avocado, citrus and other horticultural products by managing invasive scale insect pests. Improved production and market access should impact positively on poverty level of farmers, and income levels of value chain intermediaries such as fruit aggregators, exporters, and fruit processors.

Immediate **Objective /purpose**: To increase **production and market access** of quality fruit in East Africa through improved surveillance, management of scale insect pests and compliance to SPS export trade requirements

Outputs:
1. Improved identification capacity of invasive scale insects by taxonomists, NPPOs and extension officers

2. Improved skills in pest surveillance and monitoring capacity of invasive scale insect pests by NPPOs
3. Effective management of invasive scale insects at farm level
4. Enhanced stakeholder dialogue and sector analysis for effective communication and advocacy among traders, plant health actors and exporters

The outputs are described in detail in the text below and in the logframe (Appendix 1)

Activities:

Output 1: Improved identification capacity of invasive scale insects by taxonomists, NPPOs and extension officers

Activity 1.1: Develop training curricula on pest diagnostics, identification, management and databasing for taxonomists, NPPO officers and extension officers

In order to prepare for the training for taxonomists, NPPO Inspectors and extension officers, there is a need to have training curricula to be used for the trainings. One workshop of three days with seven experts from the responsible institutions will be called to develop the two training curriculums as follows:

a) Taxonomist and NPPOs training curriculum
b) Agricultural Extension Services training curriculum

Activity 1.2: Training taxonomists and NPPO inspectors on identification, detection, surveillance and monitoring of scale insects

This training will involve 15 inspectors from the NPPOs and taxonomist to be trained on how to carry out surveillance, detection and identification of scale insects. The responsible organizations will have 5 days training by staff from National History Museum (NHM, London). The participants will be from EAC region i.e., Kenya, Rwanda, Burundi and Uganda.

Activity 1.3: Training of agricultural extension officers on pest diagnosis and identification

A total of 24 field extension officers (from the 4 EAC countries i.e., Kenya, Rwanda, Burundi and Uganda) will be trained on pest diagnostics and identification of scale insects by officers trained in activity 1.2. This will be in-country trainings.

Output 2: Improved pest surveillance and monitoring of invasive scales insects skills by NPPOs

Activity 2.1: Development and updating of surveillance and monitoring protocols

Surveillance and monitoring protocols will be developed to be used as tools for planning and conducting the surveillance and monitoring of scale insects. The developed protocols and guidelines will be based on International Standards for Phytosanitary Measures (ISPM) standards, guidelines, and scale insect information. The development of the documents will be done by KEPHIS, Uganda NPPO, Burundi NPPO, NMK, KALRO, KEFRI, Extension Services and CABI. The developed surveillance and monitoring protocols will be updated periodically.

Activity 2.2: Conduct pest status surveys, delimiting surveys and reporting for scale insect occurrence

Scale insect status and delimiting surveys will be conducted in Kenya, Uganda and Burundi using developed surveillance and monitoring protocols. The survey team will be formed comprising of KEPHIS, Uganda NPPO, Burundi NPPO, NMK, KALRO, KEFRI, Extension Services and CABI. Survey data on scale insects collected and analysed to generate reports and pest distribution maps. Inspection kits, tools/equipment will be procured for use in collection and identification of scale insects during the survey and monitoring activity.

Activity 2.3: Produce and update a checklist of scale insects for each country

Collected scale insect pests will be identified curated, and a checklist published. This will involve development of species identity, creating a database, 20 participants will be involved in collecting correct species information and formatting species data for publishing in GBIF portal.

Activity 2.4: Create a database of scale insects and associated organisms at national, regional and global level

The curated scale insect pests and their natural enemies will be databased and uploaded in the project partners' institutional websites, one regional and in one global portal, GBIF. Five-day training by NMK-GBIF ICT officer for 15 officers (5 per the three countries) will be undertaken that will result in a database.

Activity 2.5: Sharing of information on invasive scale insect pests at regional level and update PIMS (Pest Information Management System)

This will involve organizing a forum to develop a data sharing protocol through a one-week regional workshop (EAC) on PIMS (to update the PIMS, agree on priority crops for regional Pest Risk Analysis) for 20 officers (Kenya, Uganda, Tanzania, Burundi, Rwanda and South Sudan); pilot test the system and implement as well as practice information sharing on invasive scale insect pests at regional level with regular updates during the project. This will ensure fool proof systems.

Output 3: Effective management of invasive scale insects at farm level

Activity 3.1: Development of materials on management of scale insects (booklets, brochures, factsheets, posters)

A range of scale insects management guides will be tailor-made for different stakeholders viz: Farmers, Agricultural extension service providers, NPPOs. These are:

- 1,000 Factsheets and photo-guides for EAC countries covering at least 30 priority scale insects – native, alien and invasive;
- 3,000 awareness brochures and posters for the priority scales common in the EAC countries;
- 1,000 Pest Management Decision Guides (PMDG) for the top 10 invasive scale insects common in the EAC countries.

Activity 3.2: Development of training materials for training farmers and nursery operators

a) Constitute a team to develop the training material
b) A workshop for brainstorming and drafting the training materials (Regional 2 days' workshop for 2 agriculture extension officers per County, CABI, KEPHI & NMK)
c) Printing and binding of the training materials

Activity 3.3: Training of farmers to identify and manage scale insects

A total of 1,200 farmers in three countries of Kenya, Uganda and Burundi (400 per country) will participate in awareness meetings and training on scale insect management. These activities will involve with 20 farmers and three agricultural extension and one NPPO officer (trained by the project under 1.2 & 1.3)per country. This will involve diagnosis, pest scouting, monitoring and effective management. The activity will include creating awareness through key events in electronic and ass Media, adverts and documentaries about mealybugs; to reach more farmers. The materials developed in activity 2.3 will be used.

Activity 3.4: Training of nursery operators

a) Identification of the nursery operators (10 nursery operators per County by Agriculture staff and KEPHIS)
b) Hold 3 days non-residential workshop at ATCs with meals and fare refund
c) Printing and Issuance of certificate of participation

Activity 3.5: Certification of nurseries

a) Identification of nurseries with pawpaw, mango, avocado and citrus seedlings
b) Certification process by KEPHIS and KEFRI

Activity 3.6: Introduction of management technologies

a) Use best practices document developed under Darwin Project.
b) The 105 officers trained will form a team of Training of Trainers (TOTs) (5 per County) to train all the other technical officers including market enumerators

c) Practicing and implementation of management technologies by farmers and staff
d) Periodic field visits and follow ups by staff to assess the status and presence of scale insects
e) Collection of specimen of invasive insects for further analysis in the labs by KEPHIS and NMK
f) Quarterly reports by Agriculture Extension staff on status of scale insects

Activity 3.7: Piloting release of Biocontrol agents for Papaya Mealybug in Kenya and sourcing and rearing of biological control agents in Uganda

a) Training of extension officers (2 officers per region for three countries)
b) Mass awareness in target counties on biocontrol agents and papaya mealybug parasitoid
c) Setting up model farms or sites
d) Field monitoring and data collection
e) Post-release monitoring and evaluation
f) Initiate in Uganda the sourcing and rearing of biological control agents

Output 4: Enhanced stakeholder dialogue and sector analysis for effective communication and advocacy with traders, plant health actors and exporters

Activity 4.1: Facilitate local links with traders and wholesalers to sensitize on improved fruit quality or biosecurity

Activity 4.2: Stakeholder workshop to link production with local trade and export

The planned Workshops will communicate project tangible outputs to buyers and traders, in order to stimulate demand and trust in produce? A one-day awareness creation seminar will be held for 30 participants.

Activity 4.3: Creation of communication products for broader awareness creation of project's findings and recommendations

Publish papers/proceedings, short videos and radio clips highlighting the impact of the project

Output 5: Surveys, Learning, Monitoring and Evaluation

Activity 5.1: Baseline and end line survey

a) Development of the survey tool questionnaire for capturing data (5 officers per County for 1 day). The tool will have basic information of interviewee, production levels per acre, management practices of mealybugs and market access situations.
b) Training of the agriculture extension staff on the questionnaire content (I half day training of 15 officers per County).
c) Administration of the questionnaire to randomly selected farmers (targeted farmers are 225 per County. Each officer to reach 5 farmers per day); Data analysis and report compilation. (5 officer per County for one day).

Activity 5.2 Project Evaluations

This will involve a project Internal Mid-term Evaluation and an independent end of project assessment.
Regular project monitoring will be conducted by the Project Implementation Team on a half yearly basis to track progress of activities implementation and performance of the projects toward achievement of results. In addition, project monitoring will help in learning lessons for decisions on implementation adaptation to steer the project towards achieving the objectives.

An end of project evaluation will be conducted to assess the overall relevance, coherence, efficiency, effectiveness, sustainability and impact of the project for learning and accountability to donor, implementer and project manager. This is budgeted separately from activity 5.2.

Activity 5.3: Final Project seminar

A final workshop will be conducted at the end of the project to share lessons and findings from the project and to get stakeholder consensus on the next steps in sustaining project achievements. Discussions and consultations will be held prior to the workshop.

Activity 5.4: Publish proceedings from the final seminar and project results

Results from the project will be published and findings shared with relevant stakeholders

2. Environmental-related issues

- The project proposes to introduce biological pesticides which will be less toxic to the environment and other environmentally friendly management practices to the farmers.
- The project will focus on pest management practices that use reduced minimal pesticides.

3. Risks

Risks	Impact	Probability	Prevention/Mitigation
Inadequate support from implementing project partners and/or consulting agencies	high	low	• Engage partners early to enhance buy-in by all partners
COVID-19 lockdown may affect implementation of activities	high	medium	• Strictly adhere to COVID-19 regulations • Have practical sessions in open space
Political instability	High (Election year in Kenya in 2022)	low	• In case of conflict, work in areas of low or no risk
Late disbursement of funds	Medium	low	• Start with low cost activities to save time • Timely planning, execution and reporting • Reduce bureaucratic transfer of resources
New major changes in Government policies	high	medium	• Keep government updated on any project developments • Have a contingency in the budget to address any shocks linked to government policies
Negative environmental effects due to injudicious use of pesticides	high	low	• Training farmers on safe use of pesticides that are less toxic • Training farmers on safe use of pesticides

4. Sustainability

- A number of the activities will become institutional day to day work like pest surveys and awareness creation.
- Fruit production is mainly by smallholder farmers who have limited knowledge on scale insects and their management. They rely on the Agriculture Extension service providers for advice on pest identification and management. The agriculture extension services consult NPPO and research staff on pest identification and management. With capacity building on scale insect pests, the farmers will be able to identify and manage scale insects effectively and thus increase productivity and quality of their produce. They will also use approved pest control products in a safe manner. With increased production, there are employment opportunities at the farm, transport and marketing of the produce. Also, the processing industry for juice, oil and fruit pulp, which requires a steady supply of fruits will benefit.
- Establishment of orchards, increased production, increased market access and decreased cost of pest management leading to increased income.
- Capacity building of agriculture extension staff will enhance detection, timely management and reporting of invasive scale insect pests.
- The collaboration between NPPO research extension and farmers will enhance pest reporting and access to proper management advice. NPPO will report pest presence promptly.
- Pest surveys will result in information on the extent of the spread of scale insects and the host range enabling the formulation of management strategies to reduce the impact and spread of the pests.
- Capacity building of border control staff of NPPOs will enhance detection of scale insects and prevent introduction of invasive scale insects through traded plant materials and produce.

- There will be enhanced collaboration between countries in the EAC on reporting of new pests and upsurge of native species to ensure border control is prepared while inspecting affected commodities.
- Replication – The trained para-taxonomists will train others in identification skills within the training programs of the institution.
- Financial and institutional sustainability after STDF support – if need arises there can be commercialization of the bio-pesticide; train the farmers on biological control agent rearing to sustain the pest management; the skills on taxonomic identification gained can be charged for any client who wants positive identification of pests and the trained staff can train others in order to keep growing the number of experts on pest identification; awareness and training activities can go into institutional annual budgets.
- The NPPOs participating to have a surveillance program which can go into institutional annual budgets.
- The countries participating are signatories to the IPPC, they will implement pest surveillance, pest reporting and prevent introduction of new pest into importing countries. Under the EAC SPS protocol, we countries are obligated to comply.
- The various curricula will be shared with institutions that conduct such training in the participating countries.
- Reference materials will be widely shared by uploading them on the websites of participating institutions and COPE.
- Surveillance protocol will be shared with other countries for domestication.
- Have an agreement with participating countries to share country surveillance reports on invasive plant pests.
- Raise awareness that PIMS and the database of scale insects and associated organisms is available and link shared.
- Sharing the biological control pilot program documentation with other interested countries.

III. BUDGET

13. Estimated budget

This is attached as an excel sheet.

14. Cost-effectiveness

The project outputs will certainly be cost-effective and be introduced to farmers for a less costly form of pest management and sustainability in management of the scale insect pests.

Scenario	What is expected
No management action	• 90% loss of papaya orchards • The estimated total loss to the farmer is USD 3,000 per hectares in Kenya (Kansiime et al, 2020)
Introduction of biocontrol agents including bio-pesticides against papaya mealy bug	• Harmonized management strategies of scale insect pests leading to effective management across the country • Though the initial capital investment is high in the long term it is cost effective and sustainable. E.g., Biological control for cassava mealybug using *Apoanagyrus lopezi* in sub Saharan Africa was found to have a cost benefit ratio USD 1:200 (De Clercq et al, 2011) • As experienced in Pakistan and West Africa there was reduced loss to the farmer
Conventional management	• Though crop loss will be reduced, there will be negative environmental effect and high costs to the farmer as a result of constant spraying • Experiences from Rwanda show that use of chemical pesticides does not totally manage scale insects

IV. PROJECT IMPLEMENTATION & MANAGEMENT

15. Implementing organization

KEPHIS and CABI will implement the project; KEPHIS will coordinate the technical aspects of the project while CABI will be responsible for project management, disbursement of funds and reporting to STDF.

Appendix 6 presents a table showing the portfolio of projects managed by KEPHIS.

16. Project management

The project will have a Project Implementation Team (PIT) that will run the daily affairs of the project from the KEPHIS Project Coordination Office and CABI projects office. The PIT will be responsible to ensure that project activities are undertaken efficiently and effectively within the agreed timeframe. It shall meet at least once every two-months and invite technical teams from participating institutions to attend either in person or virtually as may be required.

In addition, a Project Steering Committee (PSC) will provide policy direction of the project. The Project Steering Committee will consist of members comprised of individuals from each of the listed organizations:

a. KEPHIS (Kenya NPPO)
b. International body (CABI)
c. Uganda NPPO representative
d. Burundi NPPO representative
e. Government representatives (KARLO, NMK, KEFRI)
f. FPEAK
g. Regional FAO representative

The PSC shall meet in Nairobi once a year. A hybrid meeting comprising of face to face and virtual attendance will be adopted to meet budget constraints and comply with COVID-19 safety measures. It will aim to have its decisions agreed by consensus. The FAO will meet its participation costs. The PSC's Terms of Reference (TORs) will be agreed upon virtually prior to the initial meeting with specific attention to cultivation of sustainability measures to ensure project achievements are long lasting.

V. REPORTING, MONITORING & EVALUATION

17. Project reporting

Project progress will be reported as follows:

Type of report	Stage
Progress report to STDF plus steering committee	Twice a year
Final project report to STDF	After end of project
Independent end of project assessment report to STDF	After end of project
PMT reports (internal use)	Monthly report

18. Monitoring and evaluation, including performance indicators

The project will be monitored and evaluated at various stages of implementation. A clear monitoring, evaluation and reporting framework shall be established at the onset of the project in line with STDF project requirements i.e., detailing clear timelines and responsibilities for data collection, analysis and reporting. Data collection and monitoring of implementation of activities shall be conducted on a continuous basis. This framework will be a sub-set attachment to the work plan and implementation plan, which will be drawn by the PIT and shared with the PSC for review and approval.

There shall be two evaluations during life time of the project at mid-term and end-term. The project places a great emphasis on the learning aspect of M & E. As such all lessons learnt during monitoring and the mid-term evaluation will be assimilated into the project Work Plans and Implementation Plans. The mid-term evaluation will be internally conducted by participating institutions with the facilitation of their M&E experts. Particular attention will be paid to institutionalization of sustainability measures to ensure project outcomes are maintained after the project comes to an end. An independent end-term assessment will be conducted in the last six months of project implementation to concretize lessons learned and draw recommendations for future enhancement of project achievements. This will advise the development of policy briefs and key messages to be delivered during the final project seminar held at the end of the project.

There shall be bi-monthly meetings to discuss project progress by the Project Implementation Team (PIT). Reports shall be collated and submitted to the Project Steering Committee (PSC) twice per year during the implementation period and used to write the bi-annual reports to STDF. The PIT will be responsible for reporting to the PSC during the annual PSC meetings. Minutes of the PSC yearly meetings will be forwarded to the STDF as part of documents shared with the bi-annual reports.

Project indicators have been developed and are presented in the Logical Framework (Appendix 1).

19. Dissemination of the projects results and replication in other areas and countries

The information linked to the project during and after the project will be disseminated as follows:

a) Branded power point and other materials like fliers, brochures, bulletins;
b) Webpage within the KEPHIS and interested participating institutions websites will be created to upload project information plus STDF website;
c) All events will be properly branded;
d) Use of media such as local radios and TV stations will be utilized to reach a wider audience;
e) Photos;
f) Videos;
g) Project stories and case studies;
h) Presentations in the KEPHIS phytosanitary conference;
i) Farmers Field School (FFS) model of reaching out to the farmers will be deployed.

The outputs and outcomes obtained from this project and various methodologies employed will be replicated in other areas/countries to help solve and investigate quasi-related problems. The methods will have been tested and proven to deliver the expected outputs. The dissemination techniques identified will also be adopted to deliver similar outputs and as outreach methods

particularly to the farmers and partners that would provide key component such as biological control agents. Scientific publications and other dissemination methods such as guidelines, technical bulletins, factsheets, video and bench training will be employed in the replication of such a project.

ATTACHMENTS

APPENDIX 1: Logical Framework[1]

Objective	**Project description**	**Measurable indicators / targets**	**Sources of verification**	**Assumptions and risks**
Goal	To improve livelihoods of fruit value chain actors in East and Central Africa through improved market access for pawpaw, mango, avocado, citrus and other horticultural products by managing invasive scale insect pests	• Compliance to market requirements by traders and exporters • Income from fruit production and marketing by actors	• National data on trade and export • Governmental data on household income for rural communities • Project evaluation	• Responsible organizations willing to share reports and data
Immediate objective (purpose)	To increase **production and market access** of quality fruit in East Africa through improved surveillance, management of scale insect pests and compliance to SPS export trade requirements	• Yields of saleable fruits in each country (increased by at least 20% over baseline in project areas) • Fruit quality /% rejects due to scale insect damage for participating farmers) • Export volumes of target commodity • Number of notifications /alert of point of exits non-compliance • Number of new markets accessed	• Baseline and end line survey reports on production, sales, and market destinations • Trade organisation reports on quality of produce • EUROPHYTs notification reports • Export data /reports	• (A) There is intrinsically potential demand for the fruits by international markets • (A) Prices for the fruits are competitive/attractive/worthwhile • (A) New major change in government policies can be influenced? • (R) COVID-19 containment measures may affect implementation of activities (mitigate through flexible timing of events, contingency plans to switch target participants/districts) • Actors in the fruit trade are willing to adhere to SPS measures • No new pest species emerges to erode gains of managing identified scale pests
Expected results (outputs)	1. Improved identification capacity of invasive scale insects by taxonomists, NPPOs and extension officers	• Skill level of taxonomists, inspectors, NPPOs, extension officers, nursery managers in identification of scale	• Pre- and post-training assessments • PIMS data recording incidences of pest presence/problems	• (R) COVID-19 occurrence may hamper ability to deliver sessions in person • (R) Stakeholders might be unwilling to share information on pest presence during and after

[1] See the CIDT Handbook on Project Identification, Formulation and Design, available on the STDF website, for guidance on the preparation of logical frameworks.

		insect pests educated successfully, respectively with gender balance in mind • Incidences of identification of scale pests on fruit in project countries (expect increase in detection due to diagnosis and identification skills, then reduction due to management)		project (mitigate through engagement/advocacy)
	2. Improved pest surveillance and monitoring capacity of invasive scale insect pests skills by NPPOs	• Capacity of NPPOs to survey and monitor invasive scale insects (institutional improvement leading to better pest detection) • Data management capabilities of NPPOs, regional researchers and international research bodies (improved considerably) • Increased information for effective decision making on management and policy formulation • Amount of data sharing on pests at regional level (improved considerably for invasive scale insects)	• PIMS database online and functional • Timely updating of country's pest list	NPPOs implement pest surveillance and monitoring of scale insects using the new knowledge and skills
	3. Effective management of invasive scale insects at farm level	• Extension officers give appropriate advisory services to farmers on timely basis • Skill level of farmers in identification and management of scale insect pests (200 trained successfully, respectively with gender balance	• Farmer and extension training reports, pre- and post-training testing of knowledge • Records of deployment of management technologies	Farmer adopt the knowledge and skills and practices gained from extension officers
	4. Enhanced stakeholder dialogue and	• Number of interactions	• Baseline and end line	

	sector analysis for effective communication and advocacy among traders, plant health actors and exporters	with local and national traders/trade bodies through workshops, events • Trade agreement or policies influenced	survey reports • Project and workshop Reports	
Activities	Activity 1.1: Develop training curricula on pest diagnostics, identification, management and databasing for taxonomists, NPPO officers and extension officers	• 2 Curricula for training taxonomist, inspectors and agricultural extension staff on scale insect diagnostics, identification, management and databasing	• Training content • Project Reports	• COVID-19 containment measures may not affect implementation of activities
	Activity 1.2: Training taxonomists and NPPO inspectors on identification, detection, surveillance and monitoring of scale insects	• 15 inspectors from the NPPOs and taxonomist, per country	Training records	
	Activity 1.3: Training of Agricultural extension officers on pest diagnosis and identification	• 24 agricultural extension officers trained	Training /participant records	
	Activity 2.1: Development and updating of surveillance and monitoring protocols	Surveillance and monitoring protocols of scale insects	Record/log of protocols developed	
	Activity 2.2: Conduct pest status surveys, delimiting surveys and reporting for scale insect occurrence	Scale insect status and delimiting surveys conducted in Kenya, Uganda and Rwanda	Pests status and delimiting survey reports	
	Activity 2.3: Produce and update a checklist of scale insects for each country	Checklist of scale insect published	Reports on updated checklists for scale insects	
	Activity 2.4: Create a database of scale insects and associated organisms at national, regional and global level	Database of scale insects and associated organisms at (national, regional and global) created	Scale insects database	
	Activity 2.5: Sharing of information on invasive scale insect pests at regional level and update PIMS (Pest Information Management Systems)	• Sharing of information on invasive scale insect pests at regional level and updated PIMS • Report on the one-week regional workshop (EAC) on PIMS	Meeting minutes and information sharing	

	Activity 3.1: Development of materials on management of scale insects (booklets, brochures, factsheets, posters)	• 1,000 Factsheets and photo guides for East Africa countries covering at least 30 priority scales- native and alien and invasive • 3,000 scale insect pests awareness brochures and posters for the priority scales common in East Africa countries • 1,000 Pest management decision guides (PMDG) for the top 10 invasive scales common in the East Africa countries	Reports of materials developed	
	Activity 3.2: Adaptation of materials for training of farmers and nursery operators	• Development and publishing of training materials for farmers and nursery operators	List of published training materials	
	Activity 3.3: Training of farmers to identify and manage scale insects	• 1,200 farmers in three countries of Kenya, Uganda and Burundi (400 per country) made aware of scale insect management	Training and participant list and reports	
	Activity 3.4: Training of nursery operators	• 70 nursery operators trained	Training and participant list and reports	
	Activity 3.5: Certification of nurseries	• 100 nurseries with pawpaw, mango, avocado and citrus seedlings certified	List of certified nurseries	
	Activity 3.6: Introduction of management technologies	• ToTs at agricultural extension level trained in Kenya on management options / technologies available for scale insect control • Review pest control products for scale insects	Reports on management technologies introduced	
	Activity 3.7: Piloting release of Biocontrol agents for Papaya Mealybug in Kenya and initiating in Uganda sourcing and rearing of biological control agents in Uganda	• Piloting release of Biocontrol agents for Papaya Mealybug in Kenya and initiating in Uganda	Report on biocontrol agents releases	

	Activity 4.1: Facilitate local links with traders and wholesalers to sensitize on improved fruit quality or biosecurity	• Number of traders and wholesaler sensitized on improved fruit quality and biosecurity	Meeting minutes and notes	
	Activity 4.2: Stakeholder workshop to link production with trade/export	• Number and type of workshops held per year • Number of participants in workshops both online and physical workshops, disaggregated by gender and country	Workshop reports and participants lists	
	Activity 4.3: Creation of communication products for broader awareness creation of project's findings and recommendations	• Number of communication products developed	Reports of communication products developed	

APPENDIX 2: Work Plan[2]

Activity	Responsibility	Year 1				Year 2				Year 3			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Output 1: Improved identification capacity of invasive scale insects by taxonomists, NPPOs and extension officers.													
Activity 1.1: Scale insects Training curriculums on pest diagnostics, identification, management and databasing for taxonomist, NPPO officers and extension officers	NMK, NHM (UK), CABI, KEPHIS, KEFRI, Uganda Agencies, Rwanda Agencies & KALRO												
Activity 1.2: Training on identification, detection, surveillance & monitoring of scale insect for Taxonomist and NPPOs	NMK, NHM (UK), CABI, KEPHIS, KEFRI, Uganda Agencies, Burundi Agencies & KALRO												
Activity 1.3: Training of Agricultural extension officers on pest diagnostics, identification	NMK, CABI, KEPHIS, Uganda Agencies, KALRO, Burundi Agencies & Rwanda Agencies												
Output 2: Improved pest surveillance and monitoring capacity of invasive scale insects skills by NPPOs.													
Activity 2.1: Development and updating of surveillance and monitoring protocols	KEPHIS, KALRO, NMK, CABI, Extension Services, KEFRI, Uganda Agencies, Rwanda Agencies, Burundi Agencies												
Activity 2.2: Conduct pest status surveys, delimiting surveys and reporting for scale insect occurrence; and purchase of inspection kits, tools, equipment and consumables	KEPHIS, KALRO, NMK, CABI, Extension Services, KEFRI, Uganda Agencies, Burundi Agencies												

[2] Shaded areas indicate when the activity will take place.

Activity 2.3: Produce and update a checklist of scale insects for each country	KEPHIS, NMK, CABI, Extension Services, KEFRI, Uganda Agencies, Burundi Agencies												
Activity 2.4: Create a database of scale insects and associated organisms at national, regional and global level	KEPHIS, NMK, CABI, Extension Services, KEFRI, Uganda Agencies, Rwanda Agencies, Burundi Agencies												
Activity 2.5: Sharing of information on invasive scale insect pests at regional level and update PIMS (Pest Information Management Systems)													
Output 3: Effective management of invasive scale insects at farm level													
Activity 3.1: Development of materials on management of scale insects (booklets, brochures, factsheets, posters)	KEPHIS, Researchers and CABI												
Activity 3.2: Adaptation of materials for training of farmers and nursery operators													
Activity 3.3: Training of farmers to identify and manage scale insects	NPPO, TOT												
Activity 3.4: Training of nursery operators	NPPOs staff, TOTs												
Activity 3.5: Certification of nurseries	NPPOs												
Activity 3.6: Introduction of management technologies	CABI, NPPOs, Agricultural Extension Services												
Activity 3.7: Piloting release of Biocontrol agents for Papaya Mealybug in Kenya and initiating in Uganda sourcing and rearing of biological control agents in Uganda	CABI, KEPHIS and Agricultural Extension Service												
Output 4: .Enhanced stakeholder dialogue and sector analysis for effective communication and advocacy among with traders, plant health actors and exporters													
Activity 4.1: Facilitate local links with traders and wholesalers to sensitize on improved fruit quality or biosecurity													

Activity 4.2: Stakeholder workshop to link production with trade/export													
Activity 4.3: Creation of communication products for broader awareness creation of project's findings and recommendations													
Output 5: Surveys, learning, monitoring and evaluation													
Activity 5.1: Baseline and end-line surveys													
Activity 5.2: Project internal mid-term evaluation													
Activity 5.3: Final seminar and awareness creation													
Activity 5.4: Publish final seminar proceedings and important project results													
5. Project coordination													
5.1 Project Launch	KEPHIS with partners												
5.2 Project steering committees	KEPHIS with partners												
5.3 Project implementation team meetings	KEPHIS and CABI project coordination office												
5.7 End of project external evaluation	External Consultant												

APPENDIX 3: Budget (US$)[3]

This is attached as an excel sheet.

[3] Use the headings in the budget table above as a basis to prepare a budget table in Excel.

Appendix 4: Letters of support from organizations that support the project request

In any correspondence on this subject
please quote FAD118/125/01

THE REPUBLIC OF UGANDA

**MINISTRY OF AGRICULTURE,
ANIMAL INDUSTRY AND FISHERIES
P.O BOX 102,
ENTEBBE, UGANDA**
WEBSITE: www.agriculture.go.ug
TELEPHONE: 0414 320004 /0414320094
FAX: 256-041-321047

Date: 22nd July 2021

The STDF Secretariat
World Trade Organization
CH-1211 Geneva, Switzerland
Tel: +41 (0)22 739 5295
Fax: +41 (0)22 739 5760
Email: STDFSecretariat@wto.org

RE: Letter of support for the funding opportunity on "Strengthening management of invasive scale insects in East Africa for improved trade of plants and plant products" under the Standards and Trade Development Facility (STDF) project grant.

The Department of Crop Inspection and Certification which is also the National Plant Protection Organisation (NPPO) Uganda, in the Ministry of Agriculture Animal Industry and Fisheries together with Kenya Plant Inspection Service (NPPO) Kenya and various local, EAC regional and international partners, have developed a proposal for funding under the STDF project grant application on "Strengthening management of invasive scale insects in East Africa for improved trade of plants and plant products".

The project is expected to address the challenges posed by invasive scale insects especially the papaya mealybug, that has already caused serious losses to pawpaw orchards in Kenya, Uganda and Rwanda; thereby threating the livelihood of many small scale farmers growing this commodity for food security and sale/trade.

The purpose of this letter is to express full support by the NPPO Uganda and commitment to the full implementation of the activities of the project where we shall be required.

Yours,

For Paul Mwambu,
COMMISSIONER CROP INSPECTION AND CERTIFICATION

Our Ref: 606./2021/..1396 **Date:** November 8th, 2021

STDF Secretariat
World Trade Organization
CH-1211 Geneva, Switzerland
Tel: +41 (0)22 739 5295
Fax: +41 (0)22 739 5760
Email: STDFSecretariat@wto.org

Dear Sir/Madam

RE: Letter of support for the funding opportunity on "Strengthening management of invasive scale insects in East Africa for improved trade of plants and plant products" under the Standards and Trade Development Facility (STDF) project grant.

ISABU (Burundi National Agricultural Research) and Burundi Plant Protection Directorate (known as DPV) are public institutions under the Ministry of the Environment, Agriculture and Livestock (MINEAGRIE) of Burundi and are responsible for mandates linked to the plant health in the country.

KEPHIS (NPPO in Kenya) and various local, EAC regional and international partners, (including ISABU and DPV) have developed a proposal for funding under the STDF project grant application on "Strengthening management of invasive scale insects in East Africa for improved trade of plants and plant products".

The project is expected to address the challenges posed by invasive scale insects especially the papaya mealybug, that has already caused serious losses to pawpaw orchards in Kenya, Uganda, Rwanda and Burundi; thereby threating the livelihood of many small scale farmers growing this commodity for food security and sale/trade.

The purpose of this letter is to express full support by (Burundi Directorate of plant protection and ISABU) and total commitment to the full implementation of the activities of the project where we shall be required.

Yours,

Dr Alfred NIYOKWISHIMIRA, PhD
Director General of ISABU

Avenue de la Cathédrale- B.P.795 BUJUMBURA-Tél.257 22 7349-50-51 Fax 257 22 5798 Télex 5147 BDI
E-mail: direction@isabu.bi; Site Web: http://www.isabu.bi

KENYA FORESTRY RESEARCH INSTITUTE

Tel: +254 20 2010651/2
+254 722 157 414
+254 724 259 781/2
+254 734 251 888
Email: director@kefri.org
Website:www.kefri.org

P. O. Box 20412
00200, Nairobi
KENYA

Ref: KEFRI/52/03/42/VOL.I/(2)

Date: 12th July 2021

STDF Secretariat
World Trade Organization
CH-1211 Geneva, Switzerland
Tel: +41 (0)22 739 5295
Fax: +41 (0)22 739 5760
Email: STDFSecretariat@wto.org

RE: LETTER OF SUPPORT FOR THE FUNDING OPPORTUNITY ON "STRENGTHENING MANAGEMENT OF INVASIVE SCALE INSECTS IN EAST AFRICA FOR IMPROVED TRADE OF PLANTS AND PLANT PRODUCTS" UNDER THE STANDARDS AND TRADE DEVELOPMENT FACILITY (STDF) PROJECT GRANT.

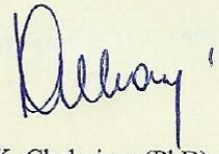
Kenya Forestry Research Institute (KEFRI) is a state corporation undertaking research in forestry and allied natural resources. The research focuses on Forest Productivity and Improvement, Biodiversity and Environment Management; Forest Products Development; and Social-economics, Policy and Governance. KEFRI has six regional forestry research programmes in ecologically strategic locations, and will implement this project forestry mandate using these Regional centres.

KEFRI will play a great role in enhancing NPPO's surveillance monitoring protocols on invasive scale insect particularly in forestry systems. KEFRI's mandate and experiences in working on invasive species in forestry systems will compliment the collaborating institutions in achieving the impact of this project.

KEPHIS (NPPO in Kenya) and various local, EAC regional and international partners, including KEFRI have developed a proposal for funding under the STDF project grant application on "Strengthening management of invasive scale insects in East Africa for improved trade of plants and plant products".

The project is expected to address the challenges posed by invasive scale insects especially the papaya mealybug, that has already caused serious losses to pawpaw orchards in Kenya, Uganda and Rwanda; thereby threating the livelihood of many small scale farmers growing this commodity for food security and sale/trade.

The purpose of this letter is to express full support by KEFRI and total commitment to the full implementation of the activities of the project where we shall be required.



Joshua K. Cheboiwo (PhD)
DIRECTOR - KEFRI

COUNTY GOVERNMENT OF MOMBASA
DEPARTMENT OF AGRICULTURE, LIVESTOCK & FISHERIES

Our Ref: CDA/ COM/CROPS/2B/VOL.V/110 **Date**: 13th July, 2021

STDF Secretariat
World Trade Organization
CH-1211 Geneva, Switzerland
Tel: +41 (0)22 739 5295
Fax: +41 (0)22 739 5760
Email: STDFSecretariat@wto.org

Dear Sir/Madam

RE: **LETTER OF SUPPORT FOR THE FUNDING OPPORTUNITY ON "STRENGTHENING MANAGEMENT OF INVASIVE SCALE INSECTS IN EAST AFRICA FOR IMPROVED TRADE OF PLANTS AND PLANT PRODUCTS" UNDER THE STANDARDS AND TRADE DEVELOPMENT FACILITY (STDF) PROJECT GRANT.**

The County government of Mombasa is one of the six counties of Coast regional block in Kenya. The Department of Agriculture, Livestock, Fisheries & Cooperatives in the County is responsible for the management of pests and diseases in plant and plant products for Food and Nutrition security, local and international trade.

KEPHIS (NPPO in Kenya) and various local, EAC regional and international partners, including the Department of Agriculture Mombasa County have developed a proposal for funding under the STDF project grant application on "Strengthening management of invasive scale insects in East Africa for improved trade of plants and plant products".

The project is expected to address the challenges posed by invasive scale insects especially the papaya mealy bug, that has already caused serious losses to pawpaw orchards in Kenya, Uganda and Rwanda; thereby threating the livelihood of many small scale farmers growing this commodity for food security and sale/trade.

The purpose of this letter is to express full support by the Department and total commitment to the full implementation of the activities of the project where we shall be required.

Yours,

COUNTY DIRECTOR OF AGRICULTURE
MOMBASA COUNTY
P. O. Box 90290
MOMBASA

Pauline Mukumbu
County Director of Agriculture
MOMBASA COUNTY

COUNTY GOVERNMENT OF KWALE

DEPARTMENT OF AGRICULTURE, LIVESTOCK AND FISHERIES

P.O. Box 4 – 80403
Kwale, Kenya

Email: info@kwalecounty.org
Website: www.kwale.go.ke

Ref: CG/KWL/ADM.6/16 (75)

Date: 13th July, 2021

STDF Secretariat

World Trade Organization

CH-1211 Geneva, Switzerland

Tel: +41 (0)22 739 5295

Fax: +41 (0)22 739 5760

Email: STDFSecretariat@wto.org

Dear Sir/Madam,

RE: Letter of support for the funding opportunity on "Strengthening management of invasive scale insects in East Africa for improved trade of plants and plant products" under the Standards and Trade Development Facility (STDF) project grant.

Agriculture is one of the main economic activities carried out in Kwale County with 85% of farmers being subsistent farmers. The agricultural sector plays a crucial role in guaranteeing food and nutrition security, reducing poverty, and creating employment in the County. In spite of the importance of agriculture, food insecurity is a critical issue. One of the major challenges is high prevalence of pests and diseases due to the conducive environment for their multiplication. One of the major threats is from the invasive scale insects, which have lead to the loss of 85% of the county's pawpaw population.

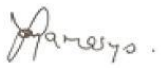
KEPHIS (NPPO in Kenya) and various local, EAC regional and international partners, (including Kwale County Government) have developed a proposal for funding under the STDF project grant application on "Strengthening management of invasive scale insects in East Africa for improved trade of plants and plant products".

The project is expected to address the challenges posed by invasive scale insects especially the papaya mealybug, that has already caused serious losses to pawpaw orchards in Kenya, Uganda and

Rwanda; thereby threating the livelihood of many small scale farmers growing this commodity for food security and sale/trade.

The purpose of this letter is to express full support by Kwale County Government and total commitment to the full implementation of the activities of the project where we shall be required.

Thank you.



Joanne N. Nyamasyo
County Executive Committee Member- Agriculture, Livestock and Fisheries
KWALE COUNTY

KENYA AGRICULTURAL & LIVESTOCK RESEARCH ORGANIZATION
Food Crops Research Institute, Embu
P. O. Box 27-60100 Embu; Tel. 0727444608 or 0727444638
E-mail: kalro.embu@kalro.org Web: http://www.kalro.org

21st July 2021

Our Ref: STDF/Scale Insects/2021/001

Standards and Trade Development Facility (STDF)
World Trade Organization
Centre William Rappard
Rue de Lausanne 154
CH-1211 Geneva
Switzerland

Dear Sir/Madam,

Re: Institutional Support for Project Proposal in Response to STDF Call for Proposals

The Kenya Agricultural and Livestock Research Organization (KALRO) is the premier national agricultural research organization with the legal mandate to carry out research in agricultural and livestock sciences in Kenya according to KALRO Act 2013. The organization has a pool of trained and experienced scientists as well as physical infrastructure relevant in the agricultural and social sciences and well placed to conduct basic and applied research. The scientists are encouraged to conduct multidisciplinary research including partnering with relevant research and academic institutions both in the country and outside.

Dr. Johnson Nyasani, a KALRO scientist based at the Food Crops Research Institute-Embu, in collaboration with staff from the Kenya Plant Health Inspectorate Service (KEPHIS) have developed a proposal titled "*Strengthening Management of Invasive Scale Insects in East Africa for Improved Trade of Plants and Plant Products*". This is in accordance with the STDF call for proposals.

KALRO will be responsible for developing and implementing IPM technologies for managing scale insects. KALRO will also train farmers and extension officers on sustainable management of scale insects. KALRO commits to offer all the necessary support needed for successful implementation of the proposed project.

I would like to inform you that there has been consultation in the development of the proposal. KEPHIS will be the lead institution in implementation of the proposed project. I fully endorse its submission for further consideration.

Yours sincerely,

CENTRE DIRECTOR
KALRO - EMBU
P . O . Box 27-60100 , Embu.
Tel: 068-31116/31873, Fax 30343
email:kalro.embu@kalro.org

Patrick T. Gicheru, PhD
Centre Director, KALRO Embu

NATIONAL MUSEUMS OF KENYA

WHERE HERITAGE LIVES ON

Our Ref: - INV/NMK/SCL/11-1 **Date:** 04 Nov 2021

STDF Secretariat
World Trade Organization
CH-1211 Geneva, Switzerland
Tel: +41 (0)22 739 5295
Fax: +41 (0)22 739 5760
Email: STDFSecretariat@wto.org

Dear STDF Secretariat,

RE: NMK Letter of support for proposal to Standards and Trade Development Facility (STDF) grant on "Strengthening management of invasive scale insects in East Africa for improved trade of plants and plant products"

The National Museums of Kenya (NMK) is a state corporation established by an Act of Parliament, the Museums and Heritage Act of 2006. NMK is a multi-disciplinary institution whose role is to collect, preserve, study, document and disseminate information of Kenya's past and present natural and cultural heritage. The NMK mandate significantly revolves around research and will therefore effectively execute the above project and as well as store and database respective specimen for posterity.

The Kenya Plant Health Inspectorate Services (KEPHIS) which is the National Plant Protection Organisation (NPPO) in Kenya and various local, EAC regional and international partners, including National Museums of Kenya, have developed a proposal for funding under the Standard and Trade Development Facility (STDF) grant application on "Strengthening management of invasive scale insects in East Africa for improved trade of plants and plant products".

The project is expected to address some of the the challenges posed by invasive scale insects especially fruit crops and trees as the case of pawpaw mealybug, which has caused serious losses to trade in Kenya, Uganda and Rwanda; thereby threating the livelihood of many small-scale farmers.

The purpose of this letter is to express full support by the National Museums of Kenya and total commitment to the full implementation of the project activities in full confidence of the collaborating team.

Yours sincerely,

Mr. Laban Njoroge
Head: Invertebrate Zoology

FRESH PRODUCE EXPORTERS ASSOCIATION OF KENYA

New Rehema Hse., 4th Flr.,
Rhapta Road, Westlands,
P.O. Box 40312 - 00100
NAIROBI, KENYA
Tel:254-20-4451488 / 4450442
Fax:254-20-4451489
E-mail: info@fpeak.org
Website: www.fpeak.org

15th November 2021

STDF Secretariat
World Trade Organization
CH-1211 Geneva, Switzerland
Tel: +41 (0)22 739 5295
Fax: +41 (0)22 739 5760
Email: STDFSecretariat@wto.org

Dear Sir/Madam,

RE: Letter of support for the funding opportunity on "Strengthening management of invasive scale insects in East Africa for improved trade of plants and plant products" under the Standards and Trade Development Facility (STDF) project grant.

Fresh Produce Exporters Association of Kenya (FPEAK) is a Business Membership Organization that represents growers, exporters and service produces for the Horticulture Industry in Kenya.

KEPHIS (NPPO in Kenya) and various local, EAC regional and international partners, including FPEAK have developed a proposal for funding under the STDF project grant application on "Strengthening management of invasive scale insects in East Africa for improved trade of plants and plant products".

The project is expected to address the challenges posed by invasive scale insects especially the papaya mealybug, that has already caused serious losses to pawpaw orchards in Kenya, Uganda and Rwanda; thereby threating the livelihood of many small scale farmers growing this commodity for food security and sale/trade.

The purpose of this letter is to express full support by FPEAK and total commitment to the full implementation of the activities of the project where we shall be required.

Yours Sincerely,

Hosea Machuki
CHIEF EXECUTIVE OFFICER

Supporting Kenya's Fresh Horticultural Exports

Appendix 5: Written consent from CABI and KEPHIS that they have technical and professional capacity to implement the project.

Project Management: CABI

15th February 2022

Secretary
Standards and Trade Development Facility (STDF)
World Trade Organization
Centre William Rappard
Rue de Lausanne 154
CH 1211 Geneva 21
Switzerland

Dear Sir/Madam

Re: STDF/PG/807 - EAC Scale Insects Project Application

I wish to confirm that CABI has been consulted and has participated in the development of this project proposal. I also confirm that CABI agrees to play the role as described, if the project is funded.

We support this project because the four target countries, Burundi, Kenya, Rwanda and Uganda, all of which are CABI's Member Countries, have prioritized work that promotes market access and implementation of standards. The project is thus in line with CABI's mid-term strategy, based on our Member Countries' needs.

We are willing and able to take on the role as assigned to us in the proposal. We have a good working relationship with the National Plant Protection Organizations (NPPOs) and other stakeholders in all the four target countries. In addition, we have managed similar projects in the African region and elsewhere in the past. We agree to the responsibilities proposed and the associated budget, including:

- ensuring that project outputs are achieved against agreed timelines
- disbursing and monitoring the use of STDF funds as per agreed budgets
- supporting the development of good working relations & partnerships
- reporting to STDF Secretariat
- assisting in dissemination of project results

CABI therefore gives its full support to this proposal, and commends it for financial support.

Yours sincerely,

Dr. Morris Akiri
Senior Regional Director, Africa

CABI
Canary Bird, 673 Limuru Road, Muthaiga
PO Box 633-00621, Nairobi, Kenya
T: +254 (0) 20 2271000/20
F: +254 (0) 20 4042250
E: africa@cabi.org

Coordination of technical issues: KEPHIS

KENYA PLANT HEALTH INSPECTORATE SERVICE (KEPHIS)
HEADQUARTERS - Oloolua Ridge, Karen
P. O. Box 49592 00100 GPO Nairobi, Kenya, Tel: 0206618000 / 0709891000 E-mails:director@kephis.org
Website: www.kephis.org

Ref: KEPHIS/HQ/3/136/ Vol. 28 (65) **Date:** 22nd July, 2021

STDF Secretariat
World Trade Organization
CH-1211 Geneva, Switzerland
Tel: +41 (0)22 739 5295
Fax: +41 (0)22 739 5760
Email: STDFSecretariat@wto.org

Dear STDF Secretariat,

RE: KEPHIS support on the Proposal to Standards and Trade Development Facility (STDF) project grant on "Strengthening management of invasive scale insects in East Africa for improved trade of plants and plant products".

Kenya Plant Health Inspectorate Service (KEPHIS) is a government of Kenya Parastatal under the Ministry of Agriculture, Livestock, Fisheries and Cooperatives (MoALFCo). KEPHIS is a mandatory regulatory body that operates under the KEPHIS Act No.54 of 2012. The role of KEPHIS (www.kephis.org) is to assure quality agricultural inputs and produce to prevent adverse impact on the economy, the environment and human health. KEPHIS is also the National Plant Protection Organization (NPPO) of Kenya.

KEPHIS together with a number of public and private partners from Kenya and Uganda namely Uganda NPPO, County Governments, CABI, KEFRI, KALRO and National Museums has put a proposal titled "**Strengthening management of invasive scale insects in East Africa for improved trade of plants and plant products**" to the Standards and Trade Development Facility (STDF). The Goal of the project is to improve the livelihoods and market access for pawpaw and other plant products by managing papaya mealybug in East Africa.

The purpose of this letter to confirm that KEPHIS will coordinate the project as it has a fully functional projects coordinating office since 2008 that has managed over 20 projects totaling over US$ 13.8 million from diverse donors.

Yours Sincerely,

PROF. THEOPHILUS M. MUTUI (PHD)
MANAGING DIRECTOR

Appendix 6: Portfolio of projects managed by KEPHIS projects coordination office

No.	PROJECT	OBJECTIVE (S)	Period	Fund for the project
1.	Horticulture Research Fund (HRF) – Funded by HCDA	Pesticide Residue Analysis in domestic and export produce	2007 to 2010	KES 1,930,500
2.	STDF Centre of Phytosanitary Excellence (COPE) – Eastern Africa (scale up activities from July 2011 to date through support of donors such as USAID – over 4000 persons trained through support of development partners of over 50 million KES)	To build Phytosanitary capacity in East Africa and to increase market access of African nations through the establishment of a Phytosanitary Centre of Excellence for Eastern Africa in Kenya **Specific objectives:** 1. To set up the legal and institutional framework for a Phytosanitary Centre of Excellence 2. To set up a training unit to develop training opportunities in Phytosanitary policy and practice, appropriate to the needs of the region, including the establishment of an exemplary plant inspection facility and information management system for use as demonstration and training tools 3. To set up a unit for applied pest risk analysis (PRA) generating PRAs according to relevant international standards and to establish a network of African pest risk analysts 4. To promote the Centre, and the services it will offer, within the region	Started 26 May 2008 – Feb 2011	$ 982,540
3.	KEPHIS/EU Horticultural Produce Phytosanitary Certification and Quality Assurance (HORTICAP) Construction of the Lab Complex in Karen, KEPHIS Hq; purchase of equipment	The Project's purpose is to upgrade the capacity of KEPHIS will facilitate the access of Kenyan horticultural produce to EU markets through: 1. Improved quality of service delivery in Phytosanitary inspection and certification, which will bring about improved quality of farms inputs and produce; 2. Improved quality of service delivery in other analysis and certification processes; 3. Increased awareness among stakeholders on market quality regulations and other requirements; 4. Improved food safety; and 5. Improved monitoring and pest surveillance services	Nov. 2007 to June 2011	Euros 3,200,000
4.	KEPHIS / Netherlands Project on Capacity Building for Effective Phytosanitary Checks and Systems to Enhance Market Access of Kenya's Horticultural Produce (CABHORT)	1. To develop an early warning system and effectively put in operation for the various quarantine organisms in the horticultural production regions 2. Reduced percentage of non-compliant Phytosanitary export certificates issued by KEPHIS for horticultural produce exported to the EU 3. Timely information dissemination on Phytosanitary developments and changes in Phytosanitary regulations and standards	March 2008 to Nov 2009	Euros 395,780
5.	KEPHIS/USAID PROJECT: KEPHIS Pest Risk Analysis Program	To enhance capacity of KEPHIS to ensure compliance with international market requirements. Specifically these will be: 1. Capacity building through training, building of infrastructural and the strengthening of	Mar 2008 to Feb 2011	US $ 430,000

	Construction of Muguga Lab	systems (building of the lab in Muguga) 2. To develop a comprehensive pest list for Kenya and document food risks		
6.	Netherlands CLIENT Kenya Project Developed electronic Certification System (ECS) and launched	1. To reduce the cost of doing business in the Horticulture sub-sector by reducing time taken and simplifying the Export Certification process to clear horticultural consignments through Exit points in Kenya and entry points into The Netherlands; 2. To improve the quality and reliability of Export Certification by reducing interceptions and incidences of fraud.	August 2009 To March 2011	KES 46,815,514.80
7.	Netherlands ASSIP Automated Support System for the Import of Phytosanitary consignments in Kenya (ASSIP-K) Project Developed Plant Import & Quarantine Regulatory System (PIQRS)	To create the Plant Import & Quarantine Regulatory System (PIQRS) whose objective is to facilitate safe, secure and efficient importation of plants, plant products and regulated articles; and launch.	Jan 2013 to March 2015	KES 96,411,664.00
8.	EU Standards and Market Access Programme (SMAP)	The project had two specific objectives: 1. To domesticate and gazette food safety standards of Kenyan plant-based products; 2. To strengthen the capacity of KEPHIS for testing and certification of plant-based products (Purchase of lab equipment and human capacity building)	June 2014 to July 2017	KES 310 million
9.	COMESA Regional Integration Implementation Program (RIIP)	The focus is national trade policy reforms and trade facilitation in order to transposition regional commitments in the EAC, COMESA-arrangements e.g. resolve Non-Tariff Barriers to Trade (NTBs)	Feb 2015 to June 2021	KES 96 million
10.	USAID Feed the Future Kenya Agriculture Regulatory Capacity Building Program (FOODSCAP Project) New varieties released Lab equipment bought Vehicles bought	The goal of the project is to improve food security through provision of clean planting material, pest management solutions and safe food. The objectives are: 1. To provide supportive seed production systems services to farmers growing orphan crops to assure availability of seeds 2. To mitigate against crop losses through plant health management strategies and diagnostics 3. To monitor food safety through checking for food contaminants and implementing a pilot regional program on the generation of suitable pesticide residue limits	September 2017 to September 2019	$4,056,144.74
11.	TMEA ICT4Trade	1. The development of a Seed Certification - Plant Variety Protection SC-PVP System 2. Development of an integrated import and export certification system 3. Institutional framework to develop and implement SPS policies and protocols to facilitate trade in agriculture and livestock sectors in Kenya	July 2016 to July 2024	US $ 2.2 million
12.	Danish-Kenya Strategic Sector	1. Capacity building activities – training in lab techniques in Kenya and Denmark;	Jan 2019 to August 2021	No monetary value attached

	Cooperation Programme on Food Safety – Dairy and Horticulture (Phase II)	development of residue/contaminant plan		
13.	EU-UNIDO-EAC MARKUP (Market access Upgrade programme	1. Reviewing and updating policy and legal frameworks for quality and SPS controls (phytosanitary and food safety) at national level and harmonizing at regional and international levels 2. Quality infrastructure enhanced in relation to priority horticultural sectors	February 2019 to December 2022	No monetary value attached
14.	EU-MESPT-AgriFi	1. Support for installation of Laboratory Information Management System [LIMS] (12 Million KES) 2. To conduct food safety baseline work in 12 Counties (10 Million KES)	September 2020 to July 2021	KES 22 million
15.	COPE Training (16 Donors: USAID-KHCP, IPPC, CABI-STDF; USAID-Nathan Associates; USAID-COMPETE; Africa Union and aBI Trust UNIDO, Bill and Melinda gates foundation, FANRPAN, Farm Africa, RIIP-COMESA, SMAP, FAO, USDA, Syngenta foundation, FOODSCAP, University of Missouri)	1. Training on various SPS issues 2. Over 150 courses developed and over 4,300 trained	July 2011 to date	KES 100 million

Appendix 7: Terms of Reference for key staff involved in project implementation

Staff	ToR
Project steering committee (led by KEPHIS MD or CABI designated person)	• Approve six-month project reports • Approve six-month project work plans and budgets
Project office coordination staff (Led by KEPHIS Head of Projects)	• Management of day to day project activities; • Organise and report to KEPHIS project implementation team (PIT); • Organise and report to project steering committee; • Develop project reports as per set reporting timelines; • Organise for project evaluations with STDF secretariat.
CABI Project Management team (Led by designated staff)	• Ensuring that project outputs are achieved against agreed timelines • Disbursing and monitoring the use of STDF funds as per agreed budgets • Supporting the development of good working relations & partnerships • Reporting to STDF secretariat • Assisting in dissemination of project results

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