**STDF PROJECT PREPARATION GRANT (PPG)**

**APPLICATION FORM**

| | |
|---|---|
| **PPG Title** | **Project to support implementation of COMESA Green Pass Certification Scheme for aflatoxin control in Maize** |
| **Budget requested from STDF** | US$ 30,000 |
| **Full name and contact details of the requesting organization(s)** | Common Market for Eastern and Southern Africa<br>Stephen R. Karangizi,<br>Assistant Secretary General (Programmes)<br>Tel; +260 211 229725/32<br>Direct; +260 211 224973<br>E-mail; skarangizi@comesa.int<br><br>COMESA Secretariat<br>COMESA Centre<br>Ben Bella Road<br>P.O. Box 30051<br>Lusaka, Zambia |
| **Full name and contact details of contact person for follow-up** | Common Market for Eastern and Southern Africa<br>Ms. Martha Byanyima<br>CAADP Regional Process & partnerships Coordinator<br>Tel; +260 211 229725/32<br>Direct; +260 211 225107<br>Cell; + 260 976 237469<br>E-mail; mbyanyima@comesa.int<br>byany38@yahoo.com<br><br>COMESA Secretariat<br>COMESA Centre<br>Ben Bella Road<br>P.O. Box 30051<br>Lusaka, Zambia |

# I. BACKGROUND AND RATIONALE

The current situation with regards to sanitary and phytosanitary (SPS) issues within the Southern African Development Community (SADC) and East Africa has been assessed recently (Cassidy 2010[1], Abegaz[2]) and found to lack general compliance to SPS requirements by many countries within the region. There is a lack of compliance by national plant protection organisations (NPPOs), weak SPS control systems and a need to strengthen countries' capacity to implement and meet the SPS requirements of importing countries and to develop common regional positions. This lack of capacity to implement SPS measures contributes to difficulties in developing trade links that are also hampered by poor logistics. Specific SPS related market access issues affect agricultural commodities and horticultural crops as well as the cut flower trade. This includes the use of pesticides and the presence of pesticide and heavy metal residues, as well as the transmission of plant pests between countries and microbial contamination. In addition there are SPS issues relating to food safety, some relating to hygiene and sanitation, but others relating to contaminated food products leading to intoxication.

There has been limited development of SPS capacity, with export supply chains having well developed SPS systems, leaving domestic supply chains exposed to various food safety and plant health risks. Where public health is the key issue as is the case with aflatoxins, there is a need to promote and manage SPS standards in a planned and strategic way to address domestic food safety issues, whilst exploiting intra regional export market opportunities, thus contributing to food security and public health objectives. It is recognised that regional bodies have a role to play through the development of appropriate technical and legal instruments that will help member countries to address their SPS issues through a coordinated approach (Magalhães 2010[3]). Most important though is to support countries as they carry out the necessary legal and institutional reforms to harmonise SPS measures.

In 2000, COMESA established the FTA, requiring elimination of all duties on imports originating from other member states. And, in June 2009, COMESA established a Customs Union further reinforcing the objective of regional integration and free trade through harmonisation of tariffs. In order to work towards the ultimate goal of attaining continental integration, COMESA, EAC and SADC have cooperated in the harmonisation of these efforts through a tripartite arrangement. Through tripartite cooperation, work has begun towards harmonisation of tariffs, customs protocols and procedures. The Kampala Tripartite Summit of 22nd October 2008 reached agreement on key areas of collaboration, including the agreement on the establishment of a FTA with the ultimate goal of a customs union that involves tripartite member states. A study on intra-tripartite trade established significant value in trade that is poised to grow with elimination or reduction of trade barriers.

One of the barriers to intra-regional trade is that of SPS measures. While there is no suggestion that countries are using SPS measures as an unjustified restriction to trade, SPS issues can restrict intra-regional trade for three reasons. First, the lack of a harmonized approach to SPS issues hinders trade and differing regulations in various member countries continues to increase

[1] Cassidy D (2010) Case Study: SPS Issues and Regional Trade in Horticultural Projects in the SADC Region. USAID.
[2] Abegaz M. Mobilizing Aid for Trade for SPS-Related Technical Cooperation in East Africa, SPS Balance Sheet for Tanzania; SPS Balance Sheet for Uganda; SPS Balance Sheet for Kenya.
[3] Magalhães J (2010) Regional Sanitary and Phytosanitary Frameworks and Strategies in Africa. STDF

transaction and trading costs, reducing the benefits and so acting as a disincentive to trade. Second, a lack of information can lead countries to adopt justifiable measures, which greater access to information would remove the need for. As an example, the absence of well documented pest lists in COMESA countries means that importing countries may need to adopt measures that are not actually necessary because a pest is actually absent or present in both exporting and importing countries. Third, SPS capacity is uneven amongst COMESA countries. Countries with weaker SPS capacity will find it more difficult to trade with countries where SPS capacity is stronger, again hindering intra-regional trade. Thus countries with stronger economies and greater SPS capacity generally enjoy a larger share of the trade.

Therefore, alongside initiatives to establish FTAs, uneven trade relationships will tend to widen if SPS barriers are not addressed. It is important to note that while tariff barriers are quantifiable targets, and therefore easily addressed, SPS measures are in many cases more qualitative and difficult to address. Harmonisation of SPS measures is thus necessary to take full advantage of the gains made by COMESA on tariff reduction and/or harmonisation. It should be noted that the lack of SPS capacity that restricts intra-regional trade similarly affects international trade. Thus the development of SPS capacity in COMESA will benefit both intra-regional and external trade. Using trade data as the basis for measuring success it is evident that cross border trade in SPS sensitive goods, i.e. food and agricultural products has underperformed most other trade sub-sectors.

Through the Comprehensive Africa Agriculture Development Program (CAADP) unit, COMESA supports member countries to review sector policies, programmes and prioritise investments in line with CAADP principles and targets. 'Improving rural infrastructure and trade related capacities for market access' incorporates areas where SPS related interventions are required. These are detailed in the more operationally minded Framework for the Improvement of Rural Infrastructure and Trade-Related Capacities for Market Access (FIMA) which focuses on how CAADP Pillar II is to be implemented. The strategic approaches of FIMA are targeted at expanding the supply base to respond to future demand opportunities and develop value chains to raise the competitiveness in domestic, regional, and foreign export markets.

Under the market access pillar 2 of the CAADP framework several COMESA member countries that are signatory to CAADP Compacts have identified plant pests/diseases and animal diseases as a major hindrance to regional food security and trade. At regional level, the COMESA Regional CAADP Compact (draft) identifies SPS as a priority investment program. Since the establishment of the COMESA FTA in 2000, the secretariat has undertaken several initiatives to support implementation of SPS measures amongst its member states.

The drawing up of COMESA SPS regulations and designation of reference laboratories, together with the development of a Green Pass certification scheme are some of the Secretariat's efforts to harmonize SPS measures in the region. Strengthening countries capacities to implement the COMESA SPS regulations and benefit from the reference laboratories remains very crucial. Indeed the COMESA Council of Ministers directed the Secretariat to expand capacity development efforts.

The Green Pass is a commodity specific SPS certification scheme that will allow the movement of agricultural and food products through the COMESA region. It is a system of certification designed to support trade in agricultural commodities by resolving outstanding SPS issues and opening the way to high value markets by guaranteeing the safety and quality of the commodity. In terms of domestication it requires the following:

a) Understanding commodities and the SPS issues that need to be addressed, i.e., is it a food safety, plant health or animal health barrier that is constraining trade
b) Understanding SPS systems of countries that are trading in the commodity and are affected by the SPS constraint
c) Understanding what needs to be addressed so as to establish a level of confidence between trade partners that indeed the issue has been dealt with, i.e. is it the legislation, regulation, standard, post harvest management protocols, surveillance, traceability and laboratory systems that need to be fixed / addressed
d) Understanding that whatever needs to be fixed to address the specific SPS issue is in fact the basis for Green Pass criteria and is an integral part of the Green Pass Certification System

The objectives of the Green Pass are to facilitate the movement and trade of agricultural and food products and to protect human, animal and plant health from risks arising from pests and diseases (for plants and animals) as well as risks from additives and toxins (animals and humans). A final objective is to protect member states from risks resulting from new pests and diseases entering or spreading through the region. Member States will agree modalities for processing applications for Green Passes in close consultations with the private sector, maintaining a register of those enterprises that have obtained Green Passes, and assisting other enterprises in obtaining Green Passes. The Green Pass will be piloted in Kenya, Rwanda, Uganda and Zambia.

## 2. THE KEY SPS PROBLEM TO BE ADDRESSED BY THE THIS PROJECT PREPARATION GRANT

One of the barriers to intra-regional trade in maize, a key staple crop in the region, is the lack of effective aflatoxin control strategies and regulatory frameworks. The USAID COMPETE project has been working on the development of regionally harmonized standards for maize, however, only a few COMESA countries currently have regulatory limits for aflatoxins for human consumption. The Gates Foundation has found that aflatoxin contamination limits partners' ability to purchase from small farmers, as contaminated crops do not meet the food safety standards partners are required to follow, undermining local purchase programs and other investments in seeds, tools and fertilizers intended to boost agricultural development and trade.

Even in countries with regulations, food that does not move through formal market channels e.g., almost all food sold in local markets, is effectively unregulated. And, often where it is regulated, aflatoxin contamination is generally not appropriately controlled in developing countries unless the product is exported. As a result, millions of people living in sub-Saharan Africa are chronically exposed to high levels of aflatoxins.

USDA, IITA, AATF, and KARI, with funding from USDA and others, are currently adapting a new biological control technology to combat aflatoxin contamination in Kenya. Recognizing that widespread adoption of AFLASAFE by smallholders will require innovative financing and a commercially viable approach for manufacturing and distribution, select donors and the Milken lab are exploring how best to design so-called pull mechanisms, and the World Bank's Innovative Finance Team and the Government of Canada will further discuss the development of an innovative finance mechanism for aflatoxin control.

A 'Diagnostics for All' programme will be developing less expensive, simple diagnostic test kits, using a new technology developed at Harvard University, as currently diagnostics options to test

for the presence and levels of aflatoxin contamination are expensive and generally involve off-site laboratories. At a recent workshop in Addis Ababa Ethiopia, convened by the United States Department of Agriculture, it emerged that all the 13 African countries that attended did not have regulatory laboratories and systems for aflatoxin control. And while Kenya and Nigeria have adopted bio-control technologies for aflatoxin control, both countries do not have appropriate registration systems for the relatively new technology.

COMESA, IITA and USDA are discussing with BMGF a regional project that will strengthen aflatoxin bio-control research and analytical capabilities. Given that several COMESA countries are adopting the technology, including Zambia and Malawi the lack of regionally harmonised registration procedures may become an additional trade barrier.

**The key problem to be addressed by this PPG is harmonised regulatory frameworks for aflatoxin control across the COMESA region.**

It is necessary (a) to establish a clear regional SPS implementation plan, with focus on the Green Pass Certification Scheme for aflatoxin control (b) to establish a long term fund for implementation of the Green Pass Certification Scheme which is also in agreement with the findings of a scoping study where the findings showed that while Regional Economic Communities (REC's) have made efforts to develop regional SPS legal frameworks, they still need to take this work to the next level of implementation. The regional SPS implementation plan will have two objectives: (a) to harmonise SPS measures by meeting criteria of the Green Pass Certification Scheme and thus effectively implement the COMESA SPS regulations (b) to Facilitate free movement of maize across the region through implementation of the Green Pass; a mutually agreed common certification scheme.

To enable the Green Pass Certification Scheme to be put into practice it is necessary to start with discrete SPS issues that can be approached with some degree of isolation from the many other SPS issues that exist. It is proposed in this PPG to focus on the issue of aflatoxin contamination of maize. Aflatoxins are a particular issue for several reasons:

a) Aflatoxins are by products of the fungi *Aspergillus flavus* that is responsible for an estimated 40% post harvest losses in maize, peanuts and other grains.
b) Aflatoxins can be produced in both the standing and harvested maize crop depending on prevailing environmental conditions.
c) They have serious negative effects on human health, including stunted growth and malnutrition in children, liver cancer and depression of the human immune system.
d) Animals (cattle, small ruminants, poultry) fed on maize contaminated with aflatoxins experience serious health problems and reduced production levels.
e) Aflatoxin contamination can occur in milk and milk products if the lactating animals are fed contaminated feed.
f) They are a major SPS concern that cuts across food safety and plant health disciplines.

The *A. flavus* fungus can infect maize at any stage of the crop cycle from pre to post harvest. If the plant experiences any mechanical injury or damage from pests, or has growth cracks then infestation can take place. Toxins can then be produced when the crop experiences high temperatures, drought or terminal water stress before harvest. After harvest the fungi are still present and can continue to grow and produce toxins if the stored grain experiences warm temperatures and high moisture conditions. If drying of the grain is delayed then the process can

be enhanced, and further invasions and toxin production can occur if the stored grain is damaged by rats or insect pests.

This aflatoxin contamination can be an issue for millions of small-scale farmers across the region, and is a particular issue in Kenya, where the strain of *A. flavus* produces high levels of aflatoxin. In 2004, 323 cases of aflatoxin poisoning were recorded in Kenya (Abegaz) with peaks occurring in times of food shortage. Between 2004 and 2010, over 200 people died from consuming maize contaminated with aflatoxins. In 2010, the Kenya Government withdrew 2.3 million bags of maize from households as unfit for human consumption due to high levels of aflatoxin residues. Although the maize was bought at a reduced price by the government it meant that many small-scale farmers received a lower price than expected, which was especially difficult for the farmers involved as they had anticipated achieving a higher income after a bumper harvest. In the same year (2010), maize from the Eastern part of Kenya was shut out from formal markets within the country and the region.

In addressing the problem, Kenya (through the Kenya Agricultural Research Institute (KARI) and the Kenya Bureau of Standards (KBS) conducted research on the maize supply chain to assess levels of human exposure to aflatoxin residues. Subsequently, the Kenya national standard on aflatoxin residues was reviewed to 10 ppb, which is much stricter that the East African Community regional standard of 20 ppb, creating an additional barrier to intra regional trade.

The effects of aflatoxin contamination are felt by a wider community than just maize farmers, as livestock farmers and maize, dairy and meat consumers can also be affected by contaminated food products if the aflatoxin enters the food chain. Therefore work towards ensuring that maize products that are to be used either for human or animal consumption are aflatoxin free will protect millions of consumers from potential debilitating diseases and farmers from loss of income from contaminated products. Certification of maize products through implementing the Green Pass system will contribute towards that aim.

The project formulated under this PPG will lay out criteria and modalities for implementing the Green Pass and identify key implementing entities in the public and private sector with their individual roles/responsibilities.

A Green Pass scheme could complement the work already done on regional aflatoxin standards to ultimately improve market access by;

- Aligning domestic policies, legislation and standards with the regional standards and regulations
- Supporting country-level implementation of the regulations and standards
- Addressing afltoxin barriers to trade and market access
- Aligning domestic policy with regional registration protocols for bio-control technologies

This PPG is closely linked with the other accompanying applications which focus on implementation of the Green Pass Certification System through work on fruit flies.

## 3. SUPPORT THE PPG REQUEST

The PPG is supported by the following organizations and the PPG is being prepared in close consultation with the East African Grain Council, IITA, CABI, USDA who are implementing related aflatoxin control and management programs in Africa.

- United States Department of Agriculture (USDA)
- CABI
- International Institute of Tropical Agriculture (IITA)
- East African Grain Council (EAGC)

## 4. ACTIVITIES UNDER THIS PPG IN RELATION TO PAST, PRESENT OR PLANNED BILATERAL OR MULTILATERAL DONOR PROJECTS AND PROGRAMMES.

This proposed project is important in order to consolidate the gains made through the various SPS capacity initiatives under the Agricultural Marketing Promotion and Regional Integration Project (AMPRIP).

Through AMPRIP, the African Development Bank supported establishment of the plant health and food safety reference laboratories. Analytical work and scientific data bases for aflatoxin control will be anchored on the reference laboratories that have been adequately equipped for this purpose.

In addition there are numerous programmes that are addressing different aspects of the aflatoxin issue, some of which are outlined below.

**Table 1 Support Program for Addressing the Aflatoxin Issues in East and Southern Africa**

| Level | Activity | Partners | Funding |
|---|---|---|---|
| Economic review | Setting SPS priorities into a formal economic context | COMESA | STDF |
| Policy support | Setting policy and regulatory biocontrol technologies registration | COMESA, IITA, USDA | BMGF, USAID |
| Legal/Regulatory | Implementing harmonized plant health regulatory systems | Rwanda, Kenya, Burundi, Zambia, Uganda Several COMESA countries | STDF through the Center of Phytosanitary Excellence at KEPHIS, Kenya |
| Farm level programs | Awareness raising in combination with extension of existing technology | Numerous NGO's, farmers cooperatives, and buyers | Various - many are underway |
| Testing and certification | Setting up two centers of excellence for testing and attaining ISO 17025 status | COMESA, USDA, IITA, AATF and KARI | BMGF, AFDB |
| AFLASAFE R&D | Research and development of AFLASAFE | COMESA, USDA, IITA, AATF and KARI | USDA, BMGF and others |

The activities outlined above are focused on strengthening plant health regulatory frameworks and pest/disease diagnostics, all of which offer a good foundation for piloting the Green Pass. The

PPG will build on these initiatives to identify the gaps in scientific information and data necessary to inform the criteria/modalities for the Green Pass.

**5. DISCUSSIONS OF THE PPG REQUEST – OR FUNDING FOR THE PROJECT PROPOSAL WHICH WOULD RESULT FROM IT – WITH ANY POTENTIAL DONORS.**

Project concepts were shared with the CABI, the World Trade Organization (WTO) Standards and Trade Development Facility (STDF). Subsequent discussions led to the convening of a SPS proposal development workshop in Lusaka on the 26th and 28th October 2010 with key stakeholders, who included Development Partners and Member States hosting the COMESA designated SPS reference laboratories. Attendees included CABI, the WTO STDF and the United States Agency for International Development (USAID) / United States Department of Agriculture (USDA), the United Kingdom Department for International Development (DFID) funded TradeMark Southern Africa (TMSA), the African Development Bank (AfDB), European Union (EU), the International Institute for Tropical Agriculture (IITA), the Kenya Plant Health Inspection Service (KEPHIS), African Union – InterAfrican Bureau for Animal Resources (AU/IBAR) and USAID in East Africa.

The proposed STDF program at COMESA would be complementary to the various complementary programs outlined in Table 1.and would complement local purchase programs designed to link small farmers to markets, where aflatoxin control is mandatory. More than thirty partners, led by a core group from COMESA, USDA, USAID and the BMGF, have committed to developing and coordinating a comprehensive strategy to address issues related to aflatoxin contamination, focusing on the entire value chain to ensure sustainability.

COMESA has actively promoted the Partnership for Aflatoxin Control in Africa (PACA) within the CAADP framework. PACA was formally endorsed at the recently concluded 7th CAADP Partnership Platform (PP) in Yaounde, Cameroun. The proposed Green Pass work will further position COMESA uniquely in the partnership and enhance its regional leadership role.

These strategies promoted by the partnership include, but are not necessarily limited to:

a) Developing, commercializing, deploying, and scaling up control technology interventions including:

   - Biocontrol
   - Chemical control
   - Pre-harvest agronomic practices
   - Harvest practices
   - Post-harvest drying, storage, and processing
   - Alternative uses for contaminated foodstuffs

b) Developing more accurate and lower cost diagnostics
c) Building and enhancing laboratory capacity
d) Strengthening awareness, education, and extension
e) Monitoring and evaluation
f) Aligning policies, legislation and standards
g) Supporting country-level implementation
h) Addressing barriers to trade and market access
i) Linking agricultural interventions to human and animal health and nutrition
j) Achieving full commercialization

Increasingly, there is recognition by several partners of the need for a regional dimension, particularly with respect to regulatory aspects. Therefore, there is strong support for this work that has been discussed with the partners mentioned in Table 1 above.

## 11. IMPLEMENTATION

The anticipated start date is July 2011 with the PPG running for approximately 6 months until January 2012, when a full scale project application will be submitted to STDF.

### 6. WHAT ARE THE EXPECTED START AND END DATES FOR THIS PPG?

The proposed activities and dates for this PPG are shown in the table below.

**Table 2: Indicative work plan for project preparation by consultant to COMESA**

| Activity | Responsible | Completion date | Expected output |
|---|---|---|---|
| Selection and engaging of a suitable consultant | COMESA/STDF | July 2011 | Arrival of consultant and commencement of work by first week of July 2011 |
| Field trip to East Africa (COPE), East Africa Grain Council (EAGC), ICIPE, IITA/Uganda and national NPPO's and food safety authorities of Kenya, Tanzania, Uganda and Rwanda | Consultant | By end Oct 2011 | Agreement by visited countries to set up 'Green Pass' working groups constituted by private sector actors (led by EAGC) and Government regulators under leadership of COMESA<br><br>Agreement on modalities/criteria for the Green Pass |
| Meetings with the EAGC | Consultant | By end October | Agreement on modalities to pilot the Green Pass |
| Drawing up of final report and STDF Grant Application | Consultant | By Jan 2012 | STDF Grant Application approved by COMESA and submitted to STDF |

The PPG request focuses on the development of a framework for the harmonization of national regulatory frameworks in respect of aflatoxin contamination of maize.

**Part 1** will be to pilot a "Green Pass Certification Scheme" pilot for regional trade in safe maize in Kenya, Uganda, Rwanda and Zambia. Regional standards for maize were agreed by the EAC and published; this could be basis for harmonized regional standards. The successful implementation of the "Green Pass Certification Scheme" for aflatoxin free maize in the selected countries would encourage wider SPS harmonization efforts across the three REC's - as called upon by Member States in Annex 14 of the Tripartite Agreement (TA), and may serve as an SPS model, where valuable lessons learned may be applied to other SPS commodities and disciplines, across the three REC's.

Specific activities include:

a) Establishing modalities/criteria to implement the COMESA "Green Pass Certification Scheme" for aflatoxin free maize in the following pilot countries; Kenya, Rwanda, Zambia and Uganda. Such modalities could include:

b) Providing guidelines and procedures for national surveillance of aflatoxin contamination, early detection and rapid response systems.
c) Looking at the feasibility of setting up a network of agreed and harmonized COMESA and national standards for maize and maize products
d) Linking the standards to national and regional certification bodies
e) Establishing the Green Pass as a mechanism for mutual recognition of certification standards (ISO and National Accreditation Standards)
f) Developing a traceability system to link a consignment to a particular certificate

**Part 2** will be to Develop a harmonized protocol for regional certification of bioremedies[4]&[5] and linking the Green Pass to the programme on bio-control technology development programmes in Zambia and Kenya. As the technology is rolled out in both countries, it will be necessary to include regulatory aspects of bio-controls in the Green Pass criteria to avoid this becoming an additional trade barrier of SPS nature. This will further demonstrate REC leadership in addressing SPS bottlenecks innovatively and pro actively.

The PPG will be used to develop concrete actions/interventions for piloting the Green Pass on aflatoxin free maize. The PPG work will be coordinated from Lusaka for convenience as this is where the COMESA Secretariat SPS Unit is based. In terms of additional research and information gathering, the consultant may be required to visit at least the country groupings (termed trade group 'shades') identified as priorities for piloting the COMESA 'Green Pass' for maize; Kenya, Uganda, Rwanda and Zambia.

The finalized project as drawn up by the consultant will focus on mobilizing policy, legislative and regulatory support in parallel to scientific and technical information required to inform the Green Pass Certification Scheme.

[4] This is a complex topic but the essential proposal is that if a bioremedy is demonstrated to be derived from land races common to two or more countries then there should be no reason for regulators not to consider efficacy data from another country and thus reduce registration costs considerably as well as reducing the time taken for these to be completed

[5] Using as a basis a format similar and equivalent to the PEST CONTROL PRODUCTS ACT, CAP 346, 1982, KENYA, APPLICATION FOR THE REGISTRATION OF A MICROBIAL PEST CONTROL PRODUCT

**Table 3: Activities to be carried out under this PPG.**

| Activity | Responsible | Completion date | Expected output |
|---|---|---|---|
| Draw up detailed Terms of Reference for Consultant | Stephen Karangizi | July 2011 | Document; Terms of Reference |
| Selection of Consultant | Stephen Karangizi | July 2011 | Consultant selected |
| Period of analysis, consultation and information gathering | Consultant<br>Stephen Karangizi | Aug-Oct 2011 | Consultant in Zambia and other concerned countries |
| | | | |
| Presentation of Draft Project proposal | Consultant<br>Stephen Karangizi | Oct 2011 | Document and supporting documents; Draft grant application |
| Review | Stephen Karangizi | Nov-Dec 2011 | |
| Presentation of final Project proposal | Consultant<br>Stephen Karangizi | January 2012 | Document and supporting documents; Final grant application |

## 7. STAKEHOLDERS (GOVERNMENT, PRIVATE SECTOR, ACADEMIA, ETC.) THAT MAY HAVE AN INTEREST IN THIS PPG AND THE RESULTANT PROJECT AND WILL NEED TO BE CONSULTED DURING THE PP PHASE

All COMESA member states adopted the SPS regulations. EAC and SADC will be interested to the extent that the PPG is encouraging collaboration and implementation of common programmes as required by Annex 14 of the Tripartite Agreement. There have been a significant number of stakeholders consulted with a direct interest on the PPG. Many, but not all the stakeholders with an interest in the PPG are included in Section 5 and these will be consulted during the course of the Grant Preparation. Since many of these stakeholders are not based in Lusaka they will be consulted electronically where necessary. A final validation workshop in Lusaka at the end of the field work phase of the project will be held with available interested persons including those from the COMESA Secretariat, participating Governments and the private sector. National plant protection organisations and food safety authorities will be consulted during the field trips, as will key private sector stakeholders including East Africa Grain Council, maize producers, processors and traders.

## 8. LEAD PERSONS AND DEPARTMENTS IN THE DEVELOPMENT OF THE PPG PROJECT

The PPG will be directed by the COMESA Assistant Secretary General in charge of programmes, Mr.Stephen R. Karangizi, and more specifically the COMESA SPS Expert/ CAADP Regional Process and Partnerships Facilitator. However the actual work of research, data collation and project writing will be carried out by a consultant specifically brought in and hired for the purpose.

## II. BUDGET

### 9. TOTAL ESTIMATED BUDGET

The total estimated budget (in US$) required for this PPG is US$30,000 which is broken down in the table below. This amount is requested from the STDF. Other contributions in kind will be in the form of additional time from COMESA donor partners including the assistance of USDA personnel working in the region. COMESA will provide office and secretarial services as well as direct assistance in developing the grant Proposal. In kind contributions will amount to approximately US$ 3000.

**Table 4: Indicative budget for the Project Preparation Activities at COMESA in Lusaka, Zambia**

| Expenditure Category | Person days | Budget | Total Budget |
|---|---|---|---|
| **Expertise and consultants** | | | **17,400** |
| **National consultants** | | | |
| Project Coordinator ( supplied by COMESA) | 15 | 0 | 0 |
| **International consultant** | | | |
| Specialist in CODEX and crop remedy related SPS legislation, regulations etc | 24 | 14,400 | 14,400 |
| Specialist in crop remedy registration | 5 | 3,000 | 3,000 |
| **Contracts** | | | **0** |
| None | | | 0 |
| **Casual labour** | | | **0** |
| None | | | 0 |
| **Travel** | | | **11,000** |
| Air travel to Maputo (Mozambique), Lusaka (Zambia) and Lilongwe (Malawi) | | 2,000 | |
| Local travel | | 600 | 600 |
| DSA for Maputo, Lilongwe, Lusaka (approx US$ 350 day for hotels, M&IE) | 24 | 8400 | 8,000 |
| **Workshop** | | | **2,000** |
| Validation workshop (Lusaka) | 1 | 1,500 | 1,500 |
| Prepare materials | 1 | 500 | 500 |
| **Expendable equipment** | | | **0** |
| Training materials and office supplies (COMESA) | | 0 | 0 |
| **Grand Total** | 0 | **0** | **30,000** |
| **Grand Total** | | | |

## 5. Appendixes

**Appendix 1:** Letters of support from each of the organizations supporting this proposal.

**Appendix 2:** Curriculum Vitae and record of achievements for any consultants proposed to implement this PPG.

## CURRICULUM VITAE

**Family name :** **Turner**
**Surname 1 :** **Anne**
**Surname 2 :** **Daniel**
**Date of birth :** 02/05/1958
**Sex :** F
**Nationality :** USA
**Country of Residence :** Zimbabwe

**Working language** (for each action listed below (reading/writing/speaking), indicate competence on a scale from 1= basic level to 5= excellent)

| | **Reading** | **Writing** | **Speaking** |
|---|---|---|---|
| English | 5 | 5 | 5 |
| French | 4 | 4 | 4 |

**Other working languages, including local: Shona, Kinyarwanda (both 1)**

**Individual contact of the expert**
Email : turner.annedaniel@gmail.com
Fixed telephone*:
Mobile telephone*: +263 776 404 159
Fax*:
Postal address: PO Box BW 1738, Borrowdale, Harare, Zimbabwe

**INITIAL TRAINING : for each training indicate the date, the title and the diploma obtained.**

| **Name of training** | **date** | **diploma obtained** |
|---|---|---|
| Cornell University, Ithaca, NY, USA | 1989-1993 | Ph.D., Vegetable Crops |
| Cornell University, Ithaca, NY, USA | 1983-1986 | M.Sc., Vegetable Crops |
| Stanford University, Stanford, CA, USA | 1977-1981 | B.Sc., with Distinction, Biological Sciences |

**SUPPLEMENTARY TRAINING**

| **Name of training** | **date** |
|---|---|
| **EUREPGAP Training of Trainers** | **September 2004** |

| Duration | country | Name of client | function | description of tasks |
|---|---|---|---|---|
| 12/10/2010 – 15/12/2010 | Burkina Faso, Ghana, Nigeria, Niger, Mali and Senegal | Dr. Marjatta Eilitta, Director, North & West African Division, IFDC Ghana, Tel. +233 (0) 21 780 830, e mail meillitta@ifdc.org | Consultant | Facilitator and Rapporteur for Training Course Developing and Implementing Targeted Subsidy Programs for Private Sector Agro-Input Markets; Finalization of Market Studies for six countries in West Africa |
| 22/08/2010-30/09/2010 | Swaziland and Zimbabwe | The World Bank, Pedro Arlindo Agricultural Economist, Agriculture and Rural Development, Tel. +258 21 482329, e mail parlindo@worldbank.org | Consultant | Using Value Chain Approaches to Enhance Integration of Swazi Small-Scale Horticulture Producers into Main-stream Markets |
| 26/07/2010-6/08/2010 | Burkina Faso | Dr. Marjatta Eilitta, Director, North & West African Division, IFDC Ghana, Tel. +233 (0) 21 780 830, e mail meillitta@ifdc.org | Consultant | Development of a Project Implementation Plan for the AGRA-funded "*Professionnalisation des Distributeurs d'Intrants du Burkina Faso*" (funded by the International Fertilizer Development Center) |
| 01/10/2009 – 18/06/2010 | Rwanda | USAID Post Harvest Handling and Storage Project, Implemented by CARANA Corporation. Contact: Mr. Joyjit DebRoy, Senior Vice President, Arlington, VA, USA, (Tel. +1 703 778 3222, e mail jdebroy@carana.com) | Project Director | Rwanda USAID Post-Harvest Handling and Storage Project. Responsible for overall provision of technical guidance as well as management of a 2.5 year project focused on strengthening food security in Rwanda. In charge of Post-Harvest Management component as well as providing guidance to Market Linkages and Investment Finance components. Served as leader for a Post Harvest Working Group for Rwanda's Ministry of Agricultural and Animal Resources. Took the lead on reviewing and processing grant applications, developing improved post-harvest management technologies and techniques and coordinating project's value chain activities with those of other projects/organizations. Responsible for overall management of budget, project technical and support staff, consultants and liaising with USAID/Rwanda. |

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| 09/2008-02-2009 | Uganda | USAID Uganda LEAD Project, Implemented by ARD Inc. (contact Ed Harvey, e mail EHarvey@ardinc.com) | Agriculture Unit Director | Responsible for oversight, management, and direction of the technical aspects of all value chain (VC) agricultural activities both under grants and otherwise, for all LEAD geographic areas. Responsible for all activities that fell under increased agricultural productivity. Assisted facilitation of the Farmer Field School (FFS) programs, producer organization (PO) identification and development; ensured that protocols developed were technically sound and both FFSs and POs had a commercial orientation. Monitored the efficacy of the FFS and PO programs as they developed, and flagged areas for improvement, crafted solutions and strengthened identified weaknesses. Directed agricultural resources and activities in the "south" of Uganda, as well as serving as a resource and ultimate authority to/for all agronomic activities throughout the geographic reach of the project. Identified and advised on technical challenges and opportunities, both those pre-identified and included in the Annual Work Plan strategy, as well as those that arose unforeseen. Managed technical staff, consultants, Business Development Services, and other assistance in agriculture-related activities. Responsible for assessing the soundness of grants – either by direct assessment of by delegating this analysis to AUD staff. |
| 04/2008-08/2008 | Tunisia | African Development Bank, Tunis, Tunisia (contact Dr. Dougou Keita, Manager, OSAN 2, Tel. +216 71 10 20 86, E mail d.keita@afdb.org) | Senior Agronomist | Managed a portfolio of Bank projects in northern Nigeria and Ghana. Identified new investment opportunities to improve agricultural value chains in selected countries in West and Central Africa. Developed project proposals for agricultural development in Sierra Leone and Liberia. Served as member of Task Force managing the African Fertilizer Financing Mechanism. Conducted analysis of constraints to the seed sector in selected countries in sub-Saharan Africa. |
| 02/2008-03/2008 | Uganda | ARD Inc,, Contact Ed Harvey (e mail eharvey@ardinc.com) | Consultant | Conducted study to identify value chains (including horticultural crops for regional as well as export markets) with greatest potential for impact on lives of the rural poor in Uganda |

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| 09/2007 | Kenya | FINTRAC, Contact Bob Rabatsky (e mail bob@fintrac.com) | Consultant | Analysed the Kenya Horticultural Development Project's approach to provision of extension services and establishment of partnerships between private companies and smallholder farmers for production, processing and marketing of horticultural crops. |
| 03/2007 – 08/2007 | Madagascar | Agrifood Consulting International Inc. Contact Dr. Francesco Goletti (e mail f.goletti@agrifoodconsulting.com) | Consultant | Served as Agribusiness Advisor and managed team of local consultants to evaluate market and investment opportunities for selected agricultural (horticultural and staple crops and livestock, as well as fish/seafood) products in six regions of Madagascar. Provided training for operators in the public and private sector on using a value chain analysis approach to development as well as other agribusiness development strategies |
| 02/2007 – 03/2007 | Burundi | The World Bank, Implemented by Sterling International (no current address available) | Consultant | Participated in the elaboration of different scenarios for the privatization of the coffee sector in Burundi |
| 09/2006 – 10/2006 | Guinea | USAID Guinea GAMLA Project, implemented by Chemonics International Inc. Contact Mr. Tom Easterling (e mail tom_easterling@yahoo.com) | Consultant | Produced value chain analyses, product development plans, and feasibility studies for the production, processing, and marketing (local, regional, and international) of selected horticultural crops by smallholder farmers in Guinea-Conakry |
| 06/2006 – 07/2006 | Guinea | USAID Guinea GAMLA Project, implemented by Chemonics International Inc. Contact Mr. Tom Easterling (e mail tom_easterling@yahoo.com) | Consultant | Lead a team of Guinean consultants in the analysis of input supply constraints for production of targeted crops by smallholders |
| 05/2006 | Rwanda | Ministry of Agriculture and Animal Resources, Kigali, Rwanda (no current contact available) | Consultant | Advised the Ministry of Agriculture for the Government of Rwanda on development of the horticulture industry, including drafting of legislation to establish the Rwanda Horticultural Development Authority, developing the National Code of Practice for horticultural producers, building local expertise in compliance with EUREPGAP, organic, and Fair Trade regulations and assisting with establishment of SPS services. |

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| 02/2008-03/2008 | Uganda | ARD Inc,, Contact Ed Harvey (e mail eharvey@ardinc.com) | Consultant | Conducted study to identify value chains (including horticultural crops for regional as well as export markets) with greatest potential for impact on lives of the rural poor in Uganda |
| 09/2007 | Kenya | FINTRAC, Contact Bob Rabatsky (e mail bob@fintrac.com) | Consultant | Analysed the Kenya Horticultural Development Project's approach to provision of extension services and establishment of partnerships between private companies and smallholder farmers for production, processing and marketing of horticultural crops. |
| 03/2007 – 08/2007 | Madagascar | Agrifood Consulting International Inc. Contact Dr. Francesco Goletti (e mail f.goletti@agrifoodconsulting.com) | Consultant | Served as Agribusiness Advisor and managed team of local consultants to evaluate market and investment opportunities for selected agricultural (horticultural and staple crops and livestock, as well as fish/seafood) products in six regions of Madagascar. Provided training for operators in the public and private sector on using a value chain analysis approach to development as well as other agribusiness development strategies |
| 02/2007 – 03/2007 | Burundi | The World Bank, Implemented by Sterling International (no current address available) | Consultant | Participated in the elaboration of different scenarios for the privatization of the coffee sector in Burundi |
| 09/2006 – 10/2006 | Guinea | USAID Guinea GAMLA Project, implemented by Chemonics International Inc. Contact Mr. Tom Easterling (e mail tom_easterling@yahoo.com) | Consultant | Produced value chain analyses, product development plans, and feasibility studies for the production, processing, and marketing (local, regional, and international) of selected horticultural crops by smallholder farmers in Guinea-Conakry |
| 06/2006 – 07/2006 | Guinea | USAID Guinea GAMLA Project, implemented by Chemonics International Inc. Contact Mr. Tom Easterling (e mail tom_easterling@yahoo.com) | Consultant | Lead a team of Guinean consultants in the analysis of input supply constraints for production of targeted crops by smallholders |
| 05/2006 | Rwanda | Ministry of Agriculture and Animal Resources, Kigali, Rwanda (no current contact | Consultant | Advised the Ministry of Agriculture for the Government of Rwanda on development of the horticulture industry, including drafting of legislation to establish the Rwanda Horticultural Development |

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| | | available) | | Authority, developing the National Code of Practice for horticultural producers, building local expertise in compliance with EUREPGAP, organic, and Fair Trade regulations and assisting with establishment of SPS services. |
| 09/2002 – 12/2005 | Rwanda | USAID Agribusiness Development Assistance in Rwanda, Implemented by Chemonics International Inc. Contact Geoffrey Livingston (Tel. +39 332 667 8470, e mail g.livingston@ifad.org) | Horticulture and Commodity Development Manager | Coordinated and managed horticulture and commodity development group of the ADAR project; targeted products included passion fruit, specialty/organic coffee, Bird's Eye chili, "Unimix" (maize-soy food supplement) and Fair Trade certified honey. Supervised regular review of the project action plan and the effectiveness of activities. Facilitated and generated horticulture market studies and market linkage analyses that contributed to building marketing awareness, improving export infrastructure, and enhancing export competitiveness. Established working relations with key producer and export organizations. Conducted surveys to determine suitability of different zones for crop production and developed and improved production systems. Provided training to producer associations on sustainable crop production and appropriate harvest/post-harvest handling and processing. Organized inspections for organic certification and monitored certified producers to ensure compliance. Developed fact sheets and manuals on IPM techniques for horticultural crops. Ensured integration of horticulture and commodity development activities with other donor, government, or private initiatives. Integrated HIV/AIDS activities into overall project program. Managed component staff and served as acting Chief of Party during the project director's absence. |
| 08/2003-09/2003 | Uganda | USAID Agricultural Productivity and Enhancement Program, implemented by Chemonics International Inc. No contact currently available. | Cash Crop Specialist | Identified critical cash crop production needs and constraints, recommended commodities and cropping systems for APEP to support and promote. Reviewed coffee, tea, cocoa and horticultural crop activities and issues, proposed how APEP could collaborate with specific ongoing and/or new programs and activities. |

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| | | | | Reviewed the role of producer organizations and firms in production and marketing of cash crops and identified issues and areas where APEP could assist. Reviewed production, marketing, extension, technology transfer, research, and market information activities of cash crop sector production and identified appropriate interventions for APEP. Assisted with the development of APEP's Results Framework and Monitoring and Evaluation system. |
| 07/1998 – 08/2002 | Zimbabwe and Zambia | Xylocopa Systems/Organic Producers and Processors Association, Zambia and Zimbabwe. Contact: Mr. Peter Wilkinson (Tel. +61 40 7017 345, e mail xylocopa@optusnet.co.au) | Agricultural Program Manager | Managed teams of technical and support staff in the design, implementation and analysis of a series of on farm trials. Evaluated cultural practices and non-chemical products for effectiveness in managing pests (pathogens, insects, weeds, and nematodes) and improving soil fertility, with an emphasis on technologies acceptable under certified organic standards. Conducted diagnostic studies to determine the cause of production problems in a range of horticultural as well as staple crops. Disseminated information on methyl bromide alternatives and liaised between the United Nations Environment Program and research/training institutions and farmer associations to ensure steps were being taken to replace methyl bromide with environmentally friendly pest control techniques in compliance with the scheduled phasing out of this pesticide with an emphasis on horticultural crops and tobacco. Led awareness-raising activities on the importance of legislation to protect biodiversity and community rights of the rural poor in Zambia. Developed and conducted courses on production and marketing of organic fruits and vegetables for the Zambia Export Growers' Association (ZEGA) Training Trust in Lusaka, Zambia. Sourced buyers for producers of organic products in markets seeking fair-trade transactions. Handled scheduling of horticultural crop production by farmers for fresh produce companies. |
| 11/1993 – 06-1998 | Zimbabwe | Cornell International Institute for Food, Agriculture and Development, Zimbabwe Smallholder Horticulture Program. Contact: Prof. H.C. | Coordinator | Development of Smallholder Horticulture Program in Zimbabwe, Cornell International Institute for Food, Agriculture and Development, Harare, Zimbabwe. Responsible for coordinating activities between local partners and the Cornell-based steering |

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| | | Wien (Tel. +1 607 255 4570, e mail hcw2@cornell.edu) | | committee and for managing locally hired technical and support staff responsible for office and field work. Reviewed proposals for and monitored progress of program-sponsored projects. Organized workshops, and edited and published proceedings. Sourced funds from other donor agencies. Conducted research on constraints to horticulture, particularly the smallholder sector; problems investigated included integrated pest management/environmentally sound production practices, non-traditional crops and post-harvest handling and processing, marketing, and gender issues. Developed extension materials for integrated pest management. Taught undergraduate and graduate students in horticultural crop production, post-harvest handling and processing. Prepared and conducted courses for extension and community development workers on post-harvest handling of horticultural crops. Participated in the development of policies to reduce pest and disease problems associated with the production of paprika and tobacco. |
| 04/1993 – 10/1993 | New York, USA | Department of Fruit and Vegetable Science, Cornell University, Ithaca, NY, USA. Contact: Prof. H.C. Wien (Tel. +1 607 255 4570, e mail hcw2@cornell.edu) | Post Doctoral Research Fellow | Conducted research on stress-induced physiological disorders in peppers. Taught course in tropical vegetable production to graduate and undergraduate students |
| 08/1989 – 03/1993 | New York, USA | Department of Fruit and Vegetable Science, Cornell University, Ithaca, NY, USA. Contact: Prof. H.C. Wien (Tel. +1 607 255 4570, e mail hcw2@cornell.edu) | Graduate Research Assistant | Investigated basis for cultivar differences in resistance to environmental stress in peppers. Participated in research on fruit formation disorders in a range of vegetable crops, and the use of screening techniques to select genotype resistance. Assisted in studies on temperature effects on flowering and fruit production in cucurbits, and on weed-crop and crop-crop interactions in grain legumes. |
| 05/1987 – 07/1989 | Taiwan, Niger, Burkina | Vitamin A Africa Project, The Asian Vegetable Research and Development Center. No contact | Resident Scientist | Set up and managed project in Niger over the first 18 months of its operations, including negotiating MOU with host institution, hiring and training administrative and field staff, managing the project's |

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| | Faso and Mali | currently available. | | accounts and liaising with headquarters in Taiwan. Conducted surveys to assess the status of and major constraints to fruit and vegetable production in the Sahel. Developed and tested techniques to overcome production problems within the resource limitations of small-scale growers, in on-farm and station experiments. Collected information on and screened germplasm of indigenous species and locally grown genotypes for potential use as food crops in the Sahel. Developed and conducted a training course on production of vitamin A-rich fruits and vegetables for extension and community development workers from four countries in the Sahel. |
| 09/1986 – 04/1987 | New York, USA | International Agriculture Program, Cornell University, New York, USA. Contact: Prof. H.C. Wien (Tel. +1 607 255 4570, e mail hcw2@cornell.edu) | Project Assistant | Gathered and reviewed information on agricultural development in selected countries in Africa in order to brief committee members on possible project interventions. Assisted in the planning and organization of workshops and conferences. |

**Total number of years of experience: 24**

**MISCELLANEOUS**

**1. Other skills :**

**(a) Membership of professional bodies and other:**

- International Society for Horticultural Science
- American Society for Horticultural Science

**(b) Other skills and training:**

- Full Microsoft Office Suite, Statistical Analysis Packages (SAS, MSTAT)

**NGONI NENGUWO; CURRICULUM VITAE**

**(2) Family name:** Nenguwo

**(3) First name 1:** Ngoni

**(4) First name 2:**

**(5) Date of birth:** 27/12/1962

**(6) Sex** ☐ F ☑ M

**(7) Nationality:** Zimbabwean

**(8) Country of Residence:** Zimbabwe

**(9) Working language:** Indicate competence on a scale of 1 to 5 (1 - excellent; 5 - basic)

| Language | Reading | Speaking | Writing |
|---|---|---|---|
| English | 1 | 1 | 1 |

**(10)** Other working languages: French – (Read/Write/Speak 3)

**(11)** Individual contact details of the expert
Email: ngoni.nenguwo@gmail.com
Fixed telephone:
Mobile telephone: +263 77 5214 951
Fax:
Postal address: Box BW1738, Borrowdale, Harare, Zimbabwe

**(12)** Contact of firm or the structure
Email: ssaassoc@gmail.com
Fixed telephone: +27 12 809 0867
Mobile telephone: +27 83 290 6246
Fax: +27 86 537 7908
Postal address: Box 11218, Silver Lakes, Pretoria 0054, South Africa

**(13) Initial training:**

| Institution (name of training) | (Date from - Date to) | Degree(s) or Diploma(s) obtained: |
|---|---|---|
| Silsoe College, Cranfield Univ, U.K. | 1990 – 1991 | M.Phil. Postharvest Technology |
| Silsoe College, Cranfield Univ, U.K. | 1989 -1990 | M.Sc. Postharvest Technology |
| University of Zimbabwe | 1983- 1985 | B.Sc. Hons. Crop Science |

**(14) Supplementary training:**

| Institution (name of training) | (Date from - Date to) | Degree(s) or Diploma(s) obtained: |
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**(15) Present position:** Freelance Consultant.

**(16) Years within current firm**:

**(17) Specific country experience:**

| **Country** | **Date from - Date to** |
|---|---|
| Africa | Angola, Ghana, Mozambique, Rwanda, Zambia, Zimbabwe |
| Asia | Bangladesh |

**(18) Professional experience**

| Date from - Date to | Location | Company& reference person (name & contact details) | Position | Description |
|---|---|---|---|---|
| July 2010 - present | Zimbabwe | | Freelance Consultant | |
| April 2010 – June 2010 | Rwanda | PHHS Project, 16 Umudugudu W'Amajyanbere, Kigali, Rwanda, Dr A.D. Turner, Chief of Party, turner.annedaniel@gmail.com | Post-harvest training consultant | Developed and conducted training program for the measurement of storage losses in grain stores for use by project staff |
| Sept 2008 - March 2010 | Ghana | DAI Inc, 7600 Wisconsin AveBethesda MD 20814, USA, Don Humpal, Project Director for CMC/MiDA Ghana Project don_humpal@dai.com +1-301-771 7600 | Postharvest Infrastructure Manager | Developing guidelines and providing recommendations for post harvest infrastructure activities for horticultural and grain crop production and export systems in Ghana for MCC funded project. Providing advisory services as well as coordinating activities to upgrade Ghana's regulatory institutions to enable agricultural exports to become IPPC compliant |
| Jan – April 2008 | Bangladesh | Northwest Crops Diversification Project, Dept of Agric Extension/UCIL Pvt Ltd, Khamarbari, Farmgate, Dhaka, Dr S.P. Ghosh, Team Leader, +880-2-9129583 | Post Harvest and Marketing Specialist | Developed training programs for post harvest handling and processing of high value crops in Bangladesh for ADB funded project under the Dept of Agricultural Extension. Including village level processing of jams and pickles and providing advice on utilisation of postharvest infrastructure. |
| April 2007 | Zambia | ASNAPP Project, P.O. Box KL 24, Lusaka, Zambia, Bismarck Diawuo, Project Manager, bhadbad@yahoo.com +260-1-263065 | Horticultural Consultant | Developed a research proposal to investigate possibilities for smallholder farmers in Malawi, Mozambique and Zambia to enter into paprika production for export |

| Date from - Date to | Location | Company& reference person (name & contact details) | Position | Description |
|---|---|---|---|---|
| March 2006 | Zambia | ASNAPP Project, P.O. Box KL 24, Lusaka, Zambia, Bismarck Diawuo, Project Manager, bhadbad@yahoo.com +260-1-263065 | Horticultural Consultant | Developed recommendations and proposals for improved access to high value markets for smallholder horticultural producers in Zambia through improved product quality and quality assurance methodologies |
| Aug 2004 | Angola | RAPID/Chemonics, P.O Box 602090, Gaborone, Botswana, Nancy Jaffie, COP, njaffie@chemonics-rapid.com | Horticultural Consultant | Developed recommendations and proposals for improved access to high end supermarkets for smallholder horticultural producers in Angola through improved product quality and quality assurance methodologies |
| May 2004 | Zambia | RAPID/Chemonics, P.O Box 602090, Gaborone, Botswana, Nancy Jaffie, COP, njaffie@chemonics-rapid.com | Horticultural Consultant | Developed recommendations and proposals for improved access to upmarket tourist hotels for smallholder horticultural producers in Zambia through improved product quality and quality assurance methodologies |
| Feb 2003 | Rwanda | ADAR/Chemonics, P.O. Box 3582, Kigali, Rwanda. Geoffrey Livingston, COP, g.livingston@ifad.org | Horticultural Consultant | Provided production, post harvest handling, processing and marketing information to commercial and small holder fruit and vegetable growers in Rwanda |
| June 2002 | Rwanda | ADAR/Chemonics, P.O. Box 3582, Kigali, Rwanda. Geoffrey Livingston, COP, g.livingston@ifad.org | Horticultural Consultant | Provided fresh produce exporters in Rwanda with training on construction and utilization of charcoal evaporative coolers for storing fresh produce |
| July 1997 & July 1998 | Mozambique | DANIDA/Dept of Agriculture, Tete, Mozambique (Address not known) | Horticultural Consultant | Trained Dept of Agric extension staff in Tete, Mozambique on how to set up and manage nurseries for production and multiplication of improved fruit tree varieties for DANIDA funded project |

| Date from - Date to | Location | Company& reference person (name & contact details) | Position | Description |
|---|---|---|---|---|
| Aug 1994 - June 2001 | Zimbabwe | Nyanga Experiment Station, Dept of Research & Specialist Services, Ministry of Agriculture, Zimbabwe | Acting Officer in Charge | Studied the effect of dormancy breaking sprays on production of deciduous fruit in Zimbabwe.<br>Conducted research on the use of thinning and pruning techniques for grape and peach production in Zimbabwe |
| Jan 1986 - Oct 2002 | Zimbabwe | Horticultural Research Centre, Dept of Research & Specialist Services, Ministry of Agriculture, Zimbabwe | Research Officer | Ran agronomic trials on fruits (passion fruit, apples, peaches, grapes, strawberries, raspberries and blueberries) and vegetables (asparagus, beans, peas, tomatoes and cabbage); trials included fertilizer management, spacing and cultivar selection<br>Conducted research on post-harvest handling and processing of a range of fruit and vegetables commodities; trials included solar dehydration of fresh produce and techniques for extended storage of onions |

**(19) Total Number of years of (work) experience; 24**

## (20) Miscellaneous

### (a) Membership of professional bodies and other:

### (b) Other skills and training:

- Computer skills (MS Word, Excel, PowerPoint, MSTAT)

## (21) Selected list of publications and presentations

- **Nenguwo, N.** Postharvest Loss Measurement Methodologies (PowerPoint Presentation prepared for MIDA Agriculture Project, March 2010)
- **Nenguwo, N.** Way Forward for CDFO Public Infrastructure Investment (PowerPoint Presentation prepared for MIDA Agriculture Project, August 2009)
- **Nenguwo, N.** Upgrading Ghana's Institutional Capacity to Meet IPPC Standards: Compendium of Equipment Needs for PPRSD, WRI and GSB with Specifications, Quantities and Cost Estimations (Prepared for MIDA Agriculture Project, May 2009)
- **Nenguwo, N.** Agribusiness and Marketing Centres: Recommendations for Development and Support (May 2009)
- CDFO Agricultural Extension Training Videos (High Value Vegetables, Maize Production and Marketing, Rice Production) prepared for MIDA Agriculture Project, April 2009.
- **Nenguwo, N.** Fruit Pack house Prefeasibility Proposal (prepared for MIDA Agriculture Project, December 2008)
- **Nenguwo, N**. 2004. Review of Vegetable Production and Marketing (Supply Chain Analysis). Chemonics International Inc. (www.dec.org/pdf_docs/PNACY604.pdf)
- **Nenguwo, N**. 2002. Appropriate Technology Cold Store Construction and Review of Postharvest Transport and Handling Practices for Export of Fresh Produce from Rwanda. Chemonics International Inc. (www.dec.org/pdf_docs/PNACQ751.pdf)
- **Nenguwo, N**. 1995. The preservation of flowers in the marketing chain. Paper presented at the Post Harvest Technology and Commodity Marketing Conference, Accra, Ghana. November 1995.
- **Nenguwo, N.** 1988. Hops: The introduction of a new crop in Zimbabwe. DR&SS Annual Symposium, Harare, Zimbabwe. September 1988.
- **Nenguwo, N.** 1987. Wine Grapes: Systems and Severity of Pruning Trials. DR&SS Crops Symposium, September 1987.
- Boyd, C., A. Turner, **N. Nenguwo** and G. Bockett. 1997. Post harvest constraints facing small holders growing horticultural crops: a needs assessment of four districts in Zimbabwe. Natural Resources Institute (U.K.) Publication.
- Donaldson, T.J., T. Marange, V. Mutikani, B. Mvumi, **N. Nenguwo**, V. Scarborough and A. Turner. 1996. Household food security study: rapid rural appraisal of villages in three communal lands of Zimbabwe. Natural Resources Institute (U.K.) Publication
- Bepete, M., **N. Nenguwo** and R.P. Rice. 1995. Evalulation of asparagus cultivars for Zimbabwe. Zimbabwe Journal of Agricultural Research, 33 (1): 93-102.

- Bepete, M., **N. Nenguwo** and J.E. Jackson. 1993. The effect of sucrose ester coating on ambient temperature storage of several fruits. Post harvest handling of Tropical Fruit: Proceedings of an international conference held in Chiang Mai, Thailand. July 1993.