

TERMS OF REFERENCE

ESTABLISHMENT AND MAINTENANCE OF FRUIT PRODUCTION AREAS FREE AND UNDER LOW PREVALENCE OF FRUIT FLY PESTS IN SOUTHERN AFRICA (STDF/PPG/567)

1 BACKGROUND

1.1. The fresh fruit industry of Southern Africa is continuously expanding. High volumes of fresh tropical, subtropical and temperate fruit are being exported from South Africa and Mozambique¹ (FAOSTAT, 2015). South Africa is the second largest exporter of citrus in the world and the third largest producer of deciduous fruit in the southern hemisphere. In 2014-2015, net revenues from export of subtropical, citrus and deciduous fruit totalled approximately US \$1.6 billion.² Recognizing the importance of complying with international SPS regulations in order to participate fully in the global economy, South Africa has developed a sanitary and phytosanitary (SPS) strategy, which includes development of pest free areas and promotion of regional SPS cooperation.

1.2. In Mozambique, agricultural produce comprises more than one-third of the country's overall exports³ and the annual growth rate of Mozambique's export to SADC countries and the European Union (EU) has increased over the last few years. Nevertheless, horticultural exports are a minor part in the total value of export products. Less than 15% of Mozambique's arable land is under cultivation, indicating a large potential for further agricultural development. The Diagnostic Trade Integration Study update⁴ for Mozambique specifically recommended a sector development strategy that focuses on diversifying into higher value product lines and other export markets with horticultural products (mango in particular) as the principal example. The subsequent crop diversification strategy promoted both by the government of Mozambique and the private sector has led in recent years to increased production of fresh fruits and vegetables. Mozambique has enormous potential for export as one of the main trading partners among the Southern Africa Development Countries (SADC), mainly to South Africa.

1.3. In addition to bringing important revenues to Southern Africa, fresh fruit industries also contribute significantly to employment in these countries. The citrus and deciduous fruit industries of South Africa employ more than 200,000 people directly on farm and in packing houses. It is estimated that a total of 1.5 million households are dependent on these two fresh fruit industries. Deciduous fruit alone provides on-farm employment for just over 100,000 people, with a further 437,000 or so dependents⁵. In Mozambique, agriculture is the most important sector, employing 80% of the workforce and accounting for 20% of GDP. The Action Plan for Reducing Absolute Poverty envisages agriculture and rural development as one of the strategic priorities to fight poverty, and improvement in horticultural revenue is an essential part of this.

1.4. The importance of agricultural production in the national economies and the possibility to exploit such opportunities are seriously undermined due to the rigorous restriction measures imposed by importing countries because of the risk of introduction of invasive pests. The inability to comply with SPS measures can lead to the loss of and exclusion from export markets. Fruit flies have always been considered a major constraint in horticulture in the region and several major pests had and still have a large impact on the fruit production and trade. As such, they form one of the main phytosanitary issues in Africa. In a recent study on establishing priorities for SPS capacity-building in Mozambique, among the six top priorities selected, four are related to fruit fly issues.⁶ Moreover, in the last decade, the problem is aggravated because of two new developments: the introduction of exotic invasive pests of Asian origin, and the recognition that some of the indigenous species are actually a complex of different species with their own ecological thresholds.

¹ FAOSTAT 2015

² Source: South Africa Department of Agriculture Forestry and Fisheries, 2016

³ Mozambique Update Diagnostic Trade Integration Study for 2015:

http://www.enhancedif.org/en/system/files/uploads/mozambique_revised_diagnostic_study_on_trade_integration_in_national_development_policies_-_august_2015.pdf

⁴ Idem

⁵ <http://www.namc.co.za/upload/all%20reports/Deciduous%20Fruit%20Subsector%20Study.pdf>

⁶ <http://www.standardsfacility.org/Mozambique>

1.5. Since its first detection in 2003, oriental fruit fly, *Bactrocera dorsalis* has spread over large parts of the continent, including southwards. Despite development of national action plans in South Africa and Mozambique, there is a clear progressive invasion of the oriental fruit fly in the region. This poses a direct threat to several major fruit producing areas, especially in the Western Cape region, which are currently free of the pest. In Africa, a further spread of three other exotic fruit fly pests is anticipated: the peach fruit fly (*Bactrocera zonata*), the melon fruit fly (*Zeugodacus cucurbitae*) and the solanum fruit fly (*Bactrocera latifrons*). These three exotic pests need to be monitored vigilantly across Africa, including the Southern African region. The development of adequate measures to control these exotic and indigenous pests is required to guarantee access to the international export market.

1.6. A number of international organizations and donors are working with national authorities on various initiatives to control fruit fly in South Africa and Mozambique. The work to be carried out under this PPG will be designed and implemented in close cooperation with stakeholders involved in other relevant ongoing/planned initiatives in order to ensure synergies and avoid duplication, For instance:

- ERAfrica is a European Union project aimed at promoting a unified European approach to collaborating with Africa in the field of science and technology, research for innovation and sustainable development. The ERAfrica⁷ project works with different institutions in participating European and African countries providing the funding for different project themes. The three year ERAfrica "Fruit Fly" project started in June 2014, and includes as partners Citrus Research International (as coordinator) (South Africa), Royal Museum for Central Africa (Belgium), CIRAD (Reunion, France) and Centre National de Recherché Agronomique (Cote d'Ivoire).
- FRUITFLYNET is a networking initiative funded by the Belgian Science Policy (BELSPO) of the Belgian Federal Government. The general objective is to facilitate the creation of a network between a RMCA and non-European partners in order to initiate a long-term consolidated network. In the particular case of FRUITFLYNET, RMCA intends to develop a network with three other African partners: Stellenbosch University, the Sokoine University of Agriculture (Morogoro, Tanzania; SUA) and Eduardo Mondlane University. The network activity focuses on and provides funds for organizing meetings to discuss how monitoring and surveying activities with regard to fruit flies and conducted by these institutions, can be standardized and harmonized.
- The IAEA Technical Cooperation regional project (RAF5062) entitled Preventing the Introduction of Exotic Fruit Fly Species and Implementing the Control of Existing Species with the Sterile Insect Technique and Other Suppression Methods. Its main outcomes are to increase awareness and knowledge on the technical capacity to detect and address tephritid fruit fly pest outbreaks and to increase technical capacity of Member States in the region to integrate the Sterile Insect Technique as a part of a phased conditional approach. This regional project will be succeeded by a new IAEA regional project (RAF5074) entitled Enhancing Capacity for Detection, Surveillance and Suppression of Exotic and Established Fruit Fly Species through Integration of Sterile Insect Technique and Other Suppression Methods.
- An IAEA Coordinated Research Project (CRP) on "Resolution of Cryptic Species Complexes of Tephritid Pests to Overcome Constraints to SIT Application and International Trade" which was recently completed provides the taxonomic

⁷ The aims of the project are to develop effective and accurate detection methods for fruit fly pests in Africa and the Indian Ocean region. The specific objectives of the project are to (i) determine the efficacy and sensitivity of different trapping systems for monitoring Afrotropical fruit fly pests; (ii) analyse the population genetic structure of key indigenous and exotic fruit fly pests in the Afrotropical region for a better understanding of their geographic ranges and dispersal patterns; (iii) develop identification tools for Afrotropical fruit flies and; (iv) set up a standardized fruit fly detection system in Africa and the Indian Ocean region.

background on the correct identity for the Natal fruit fly, the melon fruit fly and the oriental fruit fly (main pests involved in this PPG).

- RMCA and EMU are partners in a North-South-South Project (third partner Sokoine University of Agriculture, Tanzania) funded by Belgian Development Cooperation, aiming at improving Integrated Pest Management methods for mango in Manica Province, Mozambique. The Eduardo Mondlane University has a fruit fly research laboratory established in this province with funding from the World Bank.
- FruitFly Africa is an industry owned service body created to plan, coordinate, and execute area-wide fruit fly control programs in collaboration with producers and local government in various production regions, in partnership with Department of Agriculture Forestry and Fisheries. FruitFly Africa programs are based on best practices aligned with requirements set by the IAEA and Agricultural Research Council (ARC).
- Fruit Fly Program in Mozambique funded by World Bank and USDA-APHIS : through the fruit fly surveillance component of this project, the southern region of Mozambique was declared a pest free area for the oriental fruit fly in 2009, but this ceased to be a pest free area in 2011 because of further spread and establishment. Currently due to the detection of melon fruit fly in the northern region in the country, the Government of Mozambique is undertaking efforts to determine its distribution.

2 PURPOSE AND EXPECTED OUTPUTS OF THE PPG

2.1. In this context, this Project Preparation Grant (PPG), requested by: (i) Department of Agriculture Forestry and Fisheries (DAFF), South Africa; (ii) Citrus Research International (CRI), South Africa; (iii) Stellenbosch University (SU), South Africa; and; (iv) Eduardo Mondlane University (EMU) (also representing the Ministry of Agriculture and Food Security), Mozambique, and approved by the STDF Working Group in October 2016, responds to the above-mentioned needs.

2.2. The PPG will bring together the different stakeholders to assess the development of Pest Free **Areas (PFA)** and **Areas of Low Pest Prevalence (ALPP)**, to evaluate the current situation and knowledge/expertise on the topic, to define the shortcomings, and to consider the feasibility of the establishment of PFAs and ALPPs. These include the different research groups and experts who will provide the technical information, the government bodies who will implement the actions proposed, and the grower associations who will benefit from such an establishment.

2.3. The main output of this PPG is a comprehensive project proposal to establish pest free and low pest prevalence areas in selected parts of South Africa and Mozambique with regard to invasive and indigenous fruit fly pests in tropical, subtropical and temperate horticultural commodities.

3 ROLE AND RESPONSIBILITY OF PARTNER ORGANIZATIONS

3.1. The DAFF and EMU will collaborate with the implementing organization and act as the national coordinators for the implementation of this PPG.

Specifically, the DAFF and EMU will:

- Designate one National Focal Point respectively for this PPG who will work in close collaboration with the implementing organization to ensure that the DAFF and EMU provide the necessary support throughout implementation.
- Identify, in consultation with the implementing organization, the key stakeholders to be consulted during the implementation of the PPG.

- Ensure that all the relevant stakeholders are informed and invited to PPG activities, assist the implementing organization in the preparation of necessary documentation for the workshop(s), and arrange for its timely circulation to participants.
- Provide technical inputs to the implementing organization during fieldwork and elaboration of project proposal.
- Secure letters of support from all the stakeholders for the resultant project proposal.
- Facilitate communication by the implementing organization with all stakeholders (such as in securing meetings, scheduling the fieldwork and various consultation meetings).

3.2. The CRI and SU are two relevant research institutions with ample experience in horticultural research in southern Africa. CRI and SU will collaborate with the implementing organization under this PPG. Specifically the SU will:

- Collect baseline data on all relevant aspects with regard to the development of the full project proposal, including inter alia: fruit fly biology (distribution, host range, phenology, developmental biology, dispersal capacity, detection methods) and host specificities (distribution, major areas of production, economic value, seasonality).
- Carry out an analysis on: (i) overlap between hosts and fruit flies; (ii) predictive modelling for each target species; (iii) overlap between hosts and predicted distribution of fruit flies; (iv) seasonal overlap between host and fly phenology and; (v) the number of generations of fruit fly that can develop per year.
- Provide scientific background and assistance to the implementing organization in order to allow the latter to execute the indicative tasks that will lead to the development of the full project proposal.

4 ROLE AND RESPONSIBILITIES OF THE RMCA

4.1. The applicants have designated the Royal Museum for Central Africa (RMCA; Belgium) as the implementing agency for this PPG. The RMCA will be responsible for the overall implementation of the PPG. In particular, it will:

- Contact DAFF and EMU and request the designation of National Focal Points for this PPG.
- Brief the National Focal Points, CRI and SU (and other relevant stakeholders, as required) on the various steps of implementation, the timeline, the deliverables and any administrative arrangements required by RMCA.
- Lead the necessary fieldwork to achieve the above-mentioned PPG objectives. The main objective of the fieldwork is to undertake in-depth consultations with stakeholders to assess the situation in terms of knowledge and feasibility of the establishment of PFAs and ALPP and formulate a project proposal that would aim to establish these PFAs and ALPP in South Africa and Mozambique on the basis of the findings of the PPG. This fieldwork can be conducted directly by RMCA or by a consultant, working under the guidance of RMCA, or as a subcontract to one or several of the partners of this PPG. It will include the following tasks:
 - i. Collect and review reports, undertake data collection (literature review, consult relevant databases), needs assessments and gather information on ongoing or planned research and capacity building projects undertaken by international organisations, bilateral donors, NGOs and Governmental institutions directly or indirectly related to fruit fly control in Southern Africa.

- ii. Identify key relevant institutions and stakeholders and ensure their buy-in and full engagement in the implementation of this PPG and in the resultant project proposal.
 - iii. Explore possible answers to the following key questions during fieldwork and consultations with key stakeholders:
 - What is the exact distribution of exotic (i.e. *Bactrocera dorsalis*, *Bactrocera zonata*, *Bactrocera latifrons*, *Zeugodacus cucurbitae*) and indigenous fruit fly pest species and how can we adequately monitor them?
 - What are the major production areas that are, in the short to medium term, vulnerable to invasion of these pests?
 - What baseline data are available and should be obtained for establishing PFA for fruit flies (in accordance with IPPC ISPM 26) and/or establishing ALPP for fruit flies (in accordance with IPPC ISPM 30)?
 - What are the practical implications for establishing such PFA for fruit flies (in accordance with IPPC ISPM 26) and/or establishing ALPP for fruit flies (in accordance with IPPC ISPM 30)?
 - What is the cost-benefit analysis with regard to establishing PFA or ALPP?
- Ensure, during the fieldwork and throughout implementation, that proper consultation takes place with other ongoing/planned relevant initiatives in the SPS area.
 - As much as possible, RMCA should ensure that the Insect Pest Control section of the joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture is involved in the technical guidance to this PPG. Where possible, IPPC's Technical Panel of Pest Free Areas and Systems Approach for Fruit Flies (TPFF) should be consulted.
 - Consult with donors (and particularly those who have demonstrated possible interest in funding the establishment of PFA and ALPP, including the World Bank, European Union and the United States of America) during the implementation of the PPG and seek their views on possible funding for the resultant project proposal. Relevant development partners should be invited to participate in the validation workshop.
 - Act as budget holder for PPG expenditure, and ensure that the expenses of the fieldwork, the workshop (s) and other activities in the PPG are disbursed as appropriate.
 - Lead the elaboration of the resulting project proposal. This task will include preparing a draft version of the resulting project proposal based on the data collected during the fieldwork and consultation meetings; and incorporating comments from stakeholders. Submit the draft project proposal to the donor(s) identified as a potential source of funding. If no donor was identified for the resulting project, the proposal should be submitted in the STDF format⁸ after consultation with the STDF Secretariat.
 - Organize and lead two stakeholder workshops to agree on the priorities identified and validate the backbone of the resultant project. This includes: (i) designing the agenda of the stakeholder workshop; (ii) drafting a workshop summary; and (iii) advising DAFF and EMU on dissemination of information among relevant stakeholders.

⁸ Available at: <http://www.standardsfacility.org/projectgrants>

- Explore possible options for implementation of the resulting project based on discussion with potential implementing agencies, in consultation with DAFF and EMU and other relevant national agencies.
- Draft a PPG implementation report as explained in section 5 below.
- Update the STDF Secretariat regularly on progress made in the implementation of the PPG and report on any challenges met.

5 DELIVERABLES

5.1. RMCA shall deliver the following key outputs:

- i. a short report containing a description of activities undertaken for the PPG, the results achieved, and the key stakeholders who were actively involved and/or consulted, as well as a bibliography of documents reviewed (for inclusion in the STDF Virtual Library).
- ii. a proposal for a project based on operational feasibility, conducted under this PPG, to establish PFA and ALPP in South Africa and Mozambique on the basis of the cost-benefit analysis conducted and the findings of the PPG.

6 TIMEFRAME

6.1. The planned starting date is **24 July 2017** with an expected completion date of **24 July 2018**.