



Fruit Fly Free: Pest-free and low prevalence areas to support fruit production and exports

The key objective of the project is to establish and develop a framework for maintenance of pest free areas (PFAs) and areas of low pest prevalence (ALPPs) for fruit flies in South Africa and Mozambique. The expected outputs for the targeted fruit fly pests in this project are:

- Established PFAs in South Africa and Mozambique
- Scientifically based evidence for specified low prevalence levels
- Established ALPPs in South Africa and Mozambique
- Operational database platform for determination of PFAs and ALPPs in different regions in South Africa and Mozambique
- Identification protocol and service for rapid and unambiguous identification
- Financial model for maintenance of PFAs and ALPPs

Check the Fruit Fly Free project [webpage](#) in ARC website to learn more.

STDF/PG/567

Status

On-going

Start Date

01/09/2020

End Date

31/08/2023

Project Value (US\$)

\$2,893,259

STDF Contribution (US\$)

\$721,584

Beneficiaries

Mozambique

South Africa

Implementing Entities

Agricultural Research Council (ARC) - South Africa

Partners

Department of Agriculture Land Reform and Rural Development (DALRRD) - South Africa

Citrus Research International (CRI) - South Africa
Stellenbosch University (SU) - South Africa
Eduardo Mondlane University (EMU) - Mozambique
Department of Plant Protection (DSV) - Ministry of Agriculture - Mozambique
Royal Museum for Central Africa (RMCA) - Department of Biology - Belgium

Background

The Standards and Trade Development Facility (STDF) supports countries in building capacity to implement international sanitary and phytosanitary (SPS) standards, guidelines and recommendations. This project aims to develop a regionally harmonised framework for development, implementation and recognition of Pest-Free Areas (PFAs) and Areas of Low Pest Prevalence (ALPPs) for regulated fruit fly pests of fruit commodities in southern Africa (South Africa and Mozambique) following the directives of the relevant International Standards for Phytosanitary Measures (ISPMs), as approved by the International Plant Protection Convention (IPPC).

A number of fruit fly species are pests that restrict the export of fruit from many regions of the world including southern Africa. Countries importing fresh fruit and fresh fruit products require that these commodities be free of fruit fly pests. Pre-harvest and post-harvest measures are part of control packages for fruit fly pests in fruit production systems. However, these measures perform less efficiently at high pest pressure. Many fruit production systems with local fruit fly pests in Africa are also at risk of introduction of invasive exotic fruit fly pests due to increasing trade and movement of people within Africa and between Africa and the rest of the world. The establishment of pest-free areas in fruit production regions would entail early detection and exclusion measures for exotic fruit fly pests. The establishment of areas of low pest prevalence for local fruit fly pests would render an effective fruit fly management system and would enable the implementation of a systems approach for managing fruit fly risk in commercial fruit in particular for those fruit types which are less susceptible to fruit fly infestation.

The project's objective is to i) establish and maintain PFAs and ALPPs of specified regulated fruit fly pests in South Africa and Mozambique following ISPM 26, ii) establish pest-free areas for fruit flies (Tephritidae), ISPM 35, iii) systems approach for pest risk management of fruit flies (Tephritidae), Annexure 1, iv) establish areas of low pest prevalence for fruit flies, ISPM 29, v) recognition of pest-free areas and areas of low pest prevalence, and ISPM 37, vi) determine host status of fruit to fruit flies (Tephritidae). Other general standards would also be followed as a result, such as ISPM 4, Requirements for the establishment of Pest-Free Areas, ISPM 6, Surveillance, ISPM 8, Pest status, and ISPM 9, Eradication. As such, the project addresses good practices in SPS, by safeguarding and improving at a regional scale, the production of several main horticultural commodities in southern Africa. It will assure them of continued or new market access by adherence to requirements for export of fruit free of fruit fly pests. Importantly, it will protect and promote the fruit industry, an important economic driver in the countries concerned, resulting in income for the farmers, revenue for the government, job creation and opportunities for further development of the sector. National Plant Protection Organisations (NPPOs) from South Africa and Mozambique as well as public and private research institutions are participating in the project. The project will create a framework for the development of fruit fly free areas and areas of low fruit fly prevalence which could be adopted in other African regions. The target fruit fly pests in the project are: Oriental fruit fly, *Bactrocera dorsalis* (Hendel); Mediterranean fruit fly, *Ceratitidis capitata* (Wiedemann) and melon fly, *Zeugodacus cucurbitae* (Coquillett).

Expected Results

First expected results

1. Established PFAs in South Africa and Mozambique for target fruit fly species

Characterization of PFAs for the Oriental fruit fly and melon fly in South Africa. Characterization of PFA for the melon fly in Mozambique.

The Oriental fruit fly is currently declared present in the north and eastern parts of South Africa and the south coast of KwaZulu-Natal Province. The pest is considered absent in other parts of the country. Detections of the pest were recorded in some locations in the provinces in South Africa which are free of the pest and eradication actions were thereafter implemented. The melon fly was only reported in northern parts of Mozambique. Establish PFAs by setting up trapping points will be established in proposed PFAs in South Africa and Mozambique. Surveying activities will be first carried out for 12 consecutive months, using specific traps and lures to confirm the absence of pest within proposed PFAs and to identify buffer zones. Traps will be monitored every month and trapping results will be entered into a centralized database. An action plan is already available for the Oriental fruit fly in South Africa. An action plan will be developed for the melon fly as a rollout plan following the detection of the pest in the PFAs.

2. ALPPs Thresholds

Collate historical information from different fruit production regions/farms on (1) fruit fly catches across the season (2) rejections at packhouses for selected fruit types (3) fruit fly interceptions on the selected fruit at markets not requiring post-harvest disinfestation treatments.

Develop scientifically based threshold by relating new fruit fly trapping data (using specified traps and attractants at specified trap density) in selected fruit production areas with (1) field infestation of fruit at picking ripeness, (2) fruit from the selected areas which are rejected due to fruit flies during packing and sorting, and (3) fruit from the selected areas which are rejected by inspectors at packhouses.

3. Established ALPPs in South Africa and Mozambique for target fruit fly species

Propose model ALPPs for Oriental fruit fly in Mozambique and South Africa, and for Mediterranean fruit fly in South Africa based on historical records. Surveying activities, using specific traps and lures in specific trap deployment methods will be conducted in the proposed ALPPs for 12 consecutive months. Surveillance data in proposed ALPPs will be compared with developed thresholds.

4. Identification and database services

Develop identification tools for all parties involved in monitoring surveys. A protocol for identification and further confirmation and verification will be set up. The use of automated identification of both adults and larvae will be assessed. Develop a relational database on a platform accessible through the internet, for all parties involved in monitoring surveys. A protocol for data access will be drafted, to ensure easy data entry but also confidentiality and protection of database, after wider consultation with potential additional subcontractors.

5. Operational and economic model

The development of an operational plan supported by an economic business model that will ensure the maintenance of the recognized PFAs and ALPPs will only start in year 2.

Second expected results

1. Established PFA in South Africa and Mozambique for target fruit fly species

Report of PFAs to trading partners. Results of the trapping data during the survey period and other compliances with ISPMs 4 and 26 will be included in an official report by the respective NPPOs to be presented to trading partners.

2. ALPPs Thresholds

Establish threshold level of specific fruit fly pest species in specified trapping systems on the selected fruit commodities by estimating the risk of fruit fly infestation at different trapping levels based on results obtained.

3. Established ALPPs in South Africa and Mozambique for target fruit fly species

Establish ALPPs by the implementation of phytosanitary measures. Official declaration of ALPPs in South Africa and Mozambique. Establish a general corrective action plan in an ALPPs for Oriental fruit fly and Mediterranean fruit fly as per Annex 1 of ISPM 35 which will include a flow chart of response and actions, delimiting surveys and recommendations on control measures.

4. Identification and database services

Provide training sessions to end-users of identification protocol and database platform. Develop an online training course that can be offered to relevant technical staff involved in fruit exports to support rapid pre-identification, and that can provide ongoing training support after completion of the project.

5. Operational and economic model

Conduct a detailed financial cost-benefit study for each area and per individual fruit fly species. Compile a series of whole-farm financial models for PFAs and ALPPs. Apply the cost-benefit analysis and the multi-period whole-farm models in combination for sensitivity analysis. Identify cost-efficient intervention strategies to negate the loss of status by multidisciplinary design techniques. This will aim to develop operational plans for maintenance of ALPPs for Oriental fruit fly in South Africa and Mozambique and operational plans for maintenance of ALPPs for Mediterranean fruit fly in South Africa.

