



SyRIMAO: How does a regional system of surveillance, monitoring and alert protect the mango sector in West Africa?

The SyRIMAO project has extended a fruit fly surveillance system to the 15 ECOWAS countries to protect the mango sector, a vital source of income. Despite successes in geographic coverage and data collection, the impact remains limited by a low rate of response to alerts and a strong dependence on external funding. The sustainability of this phytosanitary shield now depends on the establishment of sustainable funding involving states and private actors.

Introduction

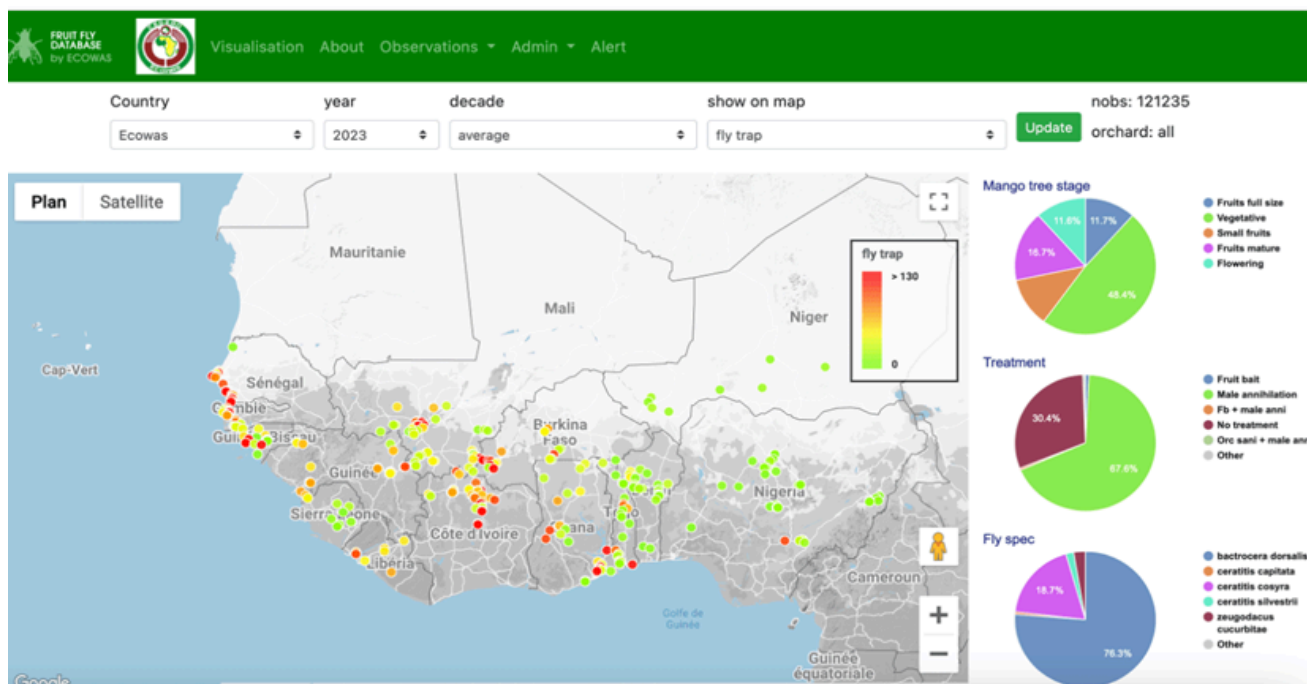
The mango, a strategic sector under high threat

The mango value chain represents a vital economic and social component for many West African countries. It constitutes a major source of income for thousands of producers and a strategic export sector that generates foreign exchange. However, this dynamic is severely undermined by recurrent fruit fly infestations, pests that can cause production losses of more than 50%. This threat has a dual impact: it drastically reduces producers' incomes and degrades fruit quality, thereby diminishing competitiveness in regional and international markets. A surveillance system was established under the Fruit Fly Control Project (PLMF); however, it covered only 11 of the 15

ECOWAS Member States and 15 of the 37 concerned agroecological zones, and suffered from weak ownership by local stakeholders, which jeopardized its sustainability. To address these challenges and consolidate previous achievements, the Regional Innovative System for Fruit Fly Control in West Africa (SyRIMAO) was established.

This note aims to share the lessons learned from the experience of this large-scale sub-regional project in terms of surveillance, monitoring, and alerts in the fight against fruit flies. It is based on a review of national and regional activity reports, online interviews with national actors responsible for implementing project activities at various levels, and field visits in three countries.

2 SYRIMAO: HOW A SYSTEM OF SURVEILLANCE, OF ALERT AND MONITORING REGIONAL PROTECTS THE MANGO SECTOR IN WEST AFRICA?



MAP OF THE MONITORING SYSTEM IN THE 14 STATES COVERED

Synthesis of the experience

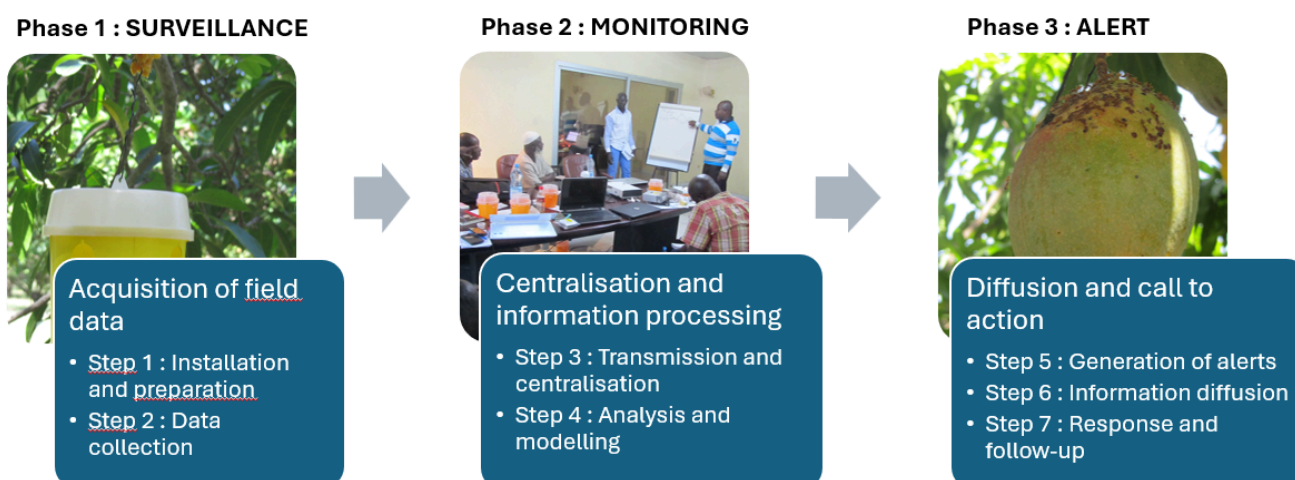
A device and an approach operational surveillance, monitoring, and alerts

The surveillance, monitoring, and alert system (SVA) set up by the SyRIMAO project is a process structured in several stages, ranging from the installation of equipment in the field to the dissemination of alerts, including the training of actors and the centralization of data. The approach aims to be coordinated at the regional level while being adapted to national contexts.

The material and geographical device

The heart of the system is based on a network of **sentinel orchards** specifically identified and installed in mango production areas in all 15 countries. These orchards serve as measurement points to assess pest pressure.

- **The opening:** The objective was to cover all 15 ECOWAS countries and 37 agro-ecological zones to have a representative view of infestations across West Africa. The distribution of orchards is designed to cover the main production areas. For example, in Burkina Faso, the 30 orchards are distributed in two major production areas.
- **The prapping:** In orchards of surveillance, different types of traps are installed to capture fruit flies. Four specific types of traps are used and distinguished by the nature of the sexual attractants, which are crucial for the effectiveness of the capture. The equipment is supplemented by logistical equipment (motorcycles, vehicles) and modern collection tools (smartphones, GPS) to facilitate the work.



SYRIMAO'S ORCHARD SURVEILLANCE, MONITORING, AND ALERT APPROACH

The surveillance, Monitoring and Alert approach

The approach is a cyclical and coordinated process that can be broken down into three main phases: *surveillance, monitoring and alert*.

A surveillance allowing the collection of data in the field - This first phase consists of collecting raw data in the surveillance orchards, and consists of:

- **Training of actors:** The success of the collection depends on the training of the various stakeholders. The farmers are trained in basic surveillance activities, while the **technicians and "super-users"** receive more in-depth training to master the modeling and alert system.
- **Collection of data:** Collectors (state agents, members of trade associations or leading producers) carry out regular readings of the traps. The collection frequency is generally **decadal** (every 10 days). This operation consists of counting the flies captured in each trap.

A batch for centralization and analysis of data - Once collected, the data is centralized for analysis :

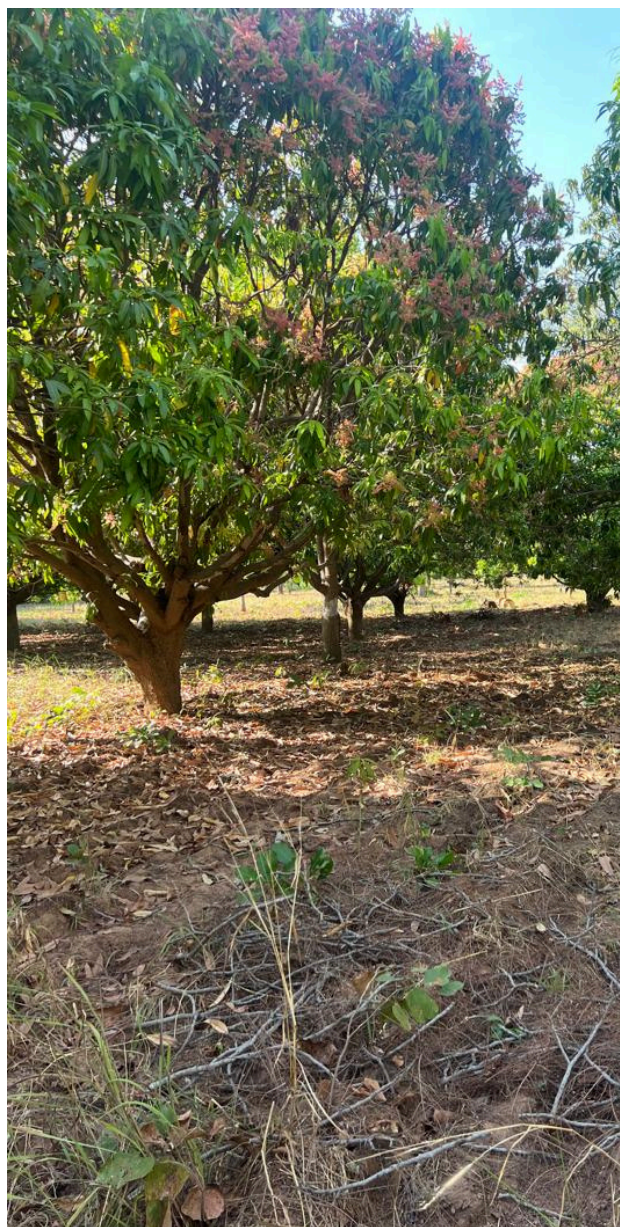
- **Transmission of data:** The capture data is transmitted from the orchards to a **national database**, then compiled into a **centralized regional database**, named **ECOWAS FFDB**. This centralization makes it possible to have an overview and to monitor cross-border dynamics.
- **Analysis of data:** National structures in charge of plant protection, with at the center a "super-user", are responsible for the analysis using a dedicated application while the research centers proceed to identification. This analysis makes it possible to identify the species of flies, to calculate their prevalence (number of flies per trap and per day) and to detect the population peaks which justify an alert.

Alerts through the dissemination of information and invites to the responses appropriate - Data analysis leads to the dissemination of information to trigger action..

- **Production of alerts:** When the infestation thresholds are reached, alerts are generated. These follow a scale of severity materialized by colors:

red for a strong infestation requiring an immediate response, such as a phytosanitary treatment; **orange** for a less severe infestation indicating the need to take sanitation measures, and **green** for a minor infestation requiring no action.

- **Diffusion:** Alerts are disseminated through a multitude of channels to ensure they reach producers, exporters, and plant protection services. The channels used vary from one country to another and include the **newsletters**, messages on the **local radios**, and **SMS or WhatsApp messages**. In some cases, such as in Côte d'Ivoire, the collector directly relays the alert to the owner of the orchard, who then activates a "brigade" of neighboring producers for coordinated action.
- **Monitoring of actions:** The project also planned the organization of follow-up missions in the field to verify the reaction of producers and assess the effective handling of alerts. The ultimate goal is to ensure that the alert is followed by concrete control actions (biological, agroecological, etc.).



MANGO ORCHARD IN TOUSSIANA, BURKINA FASO

A resounding success but a limited impact from a geographical point of view

The results achieved by the SyRIMAO project present a very encouraging record. The project has achieved undeniable success in terms of institutional anchoring and geographical coverage. By 2024, the system covered all 15 ECOWAS countries and the 37 targeted agroecological zones, a remarkable expansion compared to the 11 zones covered in 2021.

At the same time, the volume of data collected experienced exponential growth, rising from 25,693 records in 2021 to nearly 1.46 million in 2023, reflecting strong adoption of the tools. The operationalization of the alert system is also a major achievement, with the number of alerts soaring to 401 in 2023



FRUIT FLY TRAP INSTALLED, TOUSSIANA, BURKINA FASO

However, the ownership of the system is very heterogeneous depending on the country, with countries with mango orchards under (i) high surveillance (Côte d'Ivoire, Burkina Faso, Ghana) ; (ii) good surveillance (Togo, Mali, Guinea) ; (iii) low surveillance (Benin, Guinea-Bissau, Niger, Nigeria, Senegal in 2025) and (iv) very low (Liberia, Sierra Leone, Gambia). Cape Verde, n'ahaving integrated the project only very late, the system is still not very functional.

Finally, the prevalence of flies increased in 2024, which raises questions about the overall effectiveness of the responses provided. Furthermore, we note a **poor translation of alerts into concrete actions proven**. In 2024, only 14% of alerts were followed by effective control action, which significantly reduced the impact of the system on reducing infestations.

Lessons

Success factors

The success of the project was driven by several factors. The **strong involvement of local stakeholders**, including national multi-actor fruit fly control committees institutionalized in almost all countries, was decisive for the ownership of the system. The **economic pressure** linked to the requirements of export markets (EU standards) acted as a powerful engine for mobilizing stakeholders for the rigorous implementation of the system. The **availability of software** facilitating data analysis and alert issuance has also facilitated information management and rapid decision-making.

Conversely, the **delay in acquiring funding** and insufficient resources have compromised the regularity of activities and the motivation of actors in some countries. A **weak phytosanitary governance** in some countries has slowed coordination, while dependence on external **funding** represents a structural threat to the survival of the system. Technical problems, such as **malfunctions of the software** analysis and alert issuance, have also hampered effectiveness in some countries.

Sustainability conditions

To ensure the sustainability of the system, the most critical condition is the **establishment of stable and long-term financing**. The system cannot survive by relying solely on occasional external funding; contributions from governments, producers, and the private sector (exporters) are essential. In some countries, such as Burkina Faso and Côte d'Ivoire, the state has begun to take responsibility for surveillance activities. This effort is further supported by financial levies collected by mango interprofessional organizations on exports, part of which is used to fund the acquisition of surveillance equipment. Sustainability also depends on **strong institutional and community anchoring**, clarifying the roles of all stakeholders, and on a regular supply of inputs and surveillance equipment.

Finally, national ownership of technical tools is crucial, notably, the platforms and software for data analysis and alert issuance are crucial for ensuring maintenance and autonomy.



INFESTED MANGO

Scaling conditions

Whether it is to strengthen the system or cover other pests, the **scaling up** of the experience requires a **clear institutional framework, strong governance**, and strong political support. A **public-private co-financing mechanism** must be defined to share the costs. This type of mechanism is being installed in countries such as Burkina Faso, Côte d'Ivoire, Ghana, and Senegal.

The **strengthening of technical and scientific capacities** of stakeholders and the **increased involvement of producers** through training and incentives are essential. Above all, scaling up requires integrating surveillance into a **broader integrated pest management strategy against pests**, to ensure that alerts lead to concrete and effective responses.



FRUIT FLY TRAP (KHOROGO, CÔTE D'IVOIRE)

Perspectives and recommendations

Perspectives

The SyRIMAO experience has shown that it is possible to deploy an effective cross-border surveillance system, even with limited resources, provided that it relies on strong local mobilization and suitable tools. However, the fragility of the achievements calls for decisive action to sustain the system. The prospects depend on the capacity of regional and national actors to transform this project into a **sustainable and co-funded, integrated into national policies**. The **digitization** of data collection and the strengthening of the **link between alert and control action** are the next priority areas.

Recommendations

Faced with these observations, several recommendations are made:

- **To ECOWAS**, it is imperative to **sustain funding** by establishing a participatory contribution from States and the private sector.

- We must also **strengthen the logistics** of national services and **digitize the collection process** to improve the efficiency and responsiveness of the system.
- **At the level of national committees**, it is crucial to **accelerate the validation of national financial mechanisms** to ensure budgetary autonomy. Alert messages must be enriched by integrating **proposals for concrete actions** to guide producers. Finally, it is essential to obtain the **technical mastery of software tools** to guarantee their maintenance and local adaptation.



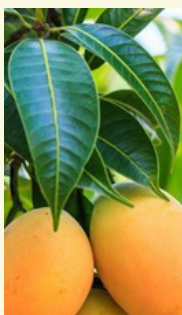
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This publication is produced with the financial support of the European Union and the Agence française de développement. Its content is the sole responsibility of ECOWAS and do not necessarily reflect neither the opinions of European Union nor the ones of the Agence française de développement.



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