EX-POST EVALUATION OF STDF PROJECTS

relating to

The Fight against Fruit Fly in West Africa (STDF/PG/255, 313 and 287)

and

SPS Risk Management in the Mango Sector in Mali (STDF/PG/283)

Summary Report

Final Version

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CONTENTS

ACRONYMS

AFD	French Development Agency
AGOA	African Growth and Opportunity Act
IAEA	International Atomic Energy Agency
WB	World Bank
EC	European Commission
ECOWAS	Economic Community of West African States
CIPV/IPPC	International Plant Protection Convention
EIF	Enhanced Integrated Framework
CIRAD	French Agricultural Research Centre for International Development
COLEACP	Europe Africa Caribbean Pacific Liaison Committee
CORAF/WECARD	West and Central African Council for Agricultural Research and Development
DPV	Plant Protection Department
FAO	United Nations Food and Agriculture Organization
OAU/IBAR	Organisation of African Unity/Inter African Bureau for Animal Resources
OMC/WTO	World Trade Organization
OIE	World Organisation for Animal Health
PCDA	Agricultural Competitiveness and Diversification Programme
PLMF	Fruit Fly Control Project (ECOWAS/EU/AFD)
NSPFS	National Special Programme for Food Security
TFP	Technical and Financial Partners
R&D	Research & Development
SAGIC	Support for Accelerated Growth and Increased Competitiveness for Trade
SPS	Sanitary and Phytosanitary
STDF	Standards and Trade Development Facility
EU	European Union
WAEMU	West African Economic and Monetary Union
WAFFI	West Africa Fruit Fly Initiative

1. REVIEW OF CONTRACTUAL ASPECTS AND PURPOSE OF THE SUMMARY REPORT

By contract dated 1 December 2015, the STDF Secretariat tasked Mr Christian Taupiac[1], an independent expert, with conducting an *ex-post* evaluation of four STDF funded projects, namely:

- the regional initiative to fight fruit fly in West Africa (STDF/PG/255);
- continuation of the West African fruit fly initiative (STDF/PG/313);
- information-sharing initiative on the actions to control fruit flies in Sub-Saharan Africa (STDF/PG/287);
- support for SPS risk management in the mango export sector (STDF/PG/283).

Under the terms of reference of the evaluation, upon its completion and following the evaluation of each project, the contract provided for the drafting of a summary report (eight pages maximum).

Pursuant to the terms of reference, this report proposes to (i) draw conclusions concerning the different projects evaluated; (ii) assess the synergies and coherence between these projects; (iii) take stock of past or ongoing fruit fly management projects by other donors and to that end review evaluations made by other donors; (iv) analyse the results and draw the global lessons from the totality of the projects carried out and in particular, identify complementarities between them, their coherence as well as a possible combined effect; and (v) formulate recommendations for any future fruit fly management projects to be undertaken, regarding the fields covered by such management, its geographical scope, its operational organization, the policy elements for its implementation and the guarantees of sustainability.

2. IMPORTANT CONTEXTUAL ELEMENTS

The STDF projects covered by this evaluation focused on fruit fly management with the added common denominator of linking it specifically to the mango sector.

The mango is **the world's sixth most widely produced fruit**. Global production was estimated at over 37 million tonnes in 2010. It is grown mostly in Asia (76% in volume terms). Africa is the world's second largest production area, especially West Africa and Cameroon.

In **West Africa**, the mango sector is of considerable importance. While it is primarily a fruit consumed and marketed locally, total mango production in West Africa (some 1.4 million tonnes in 2010) represents first and foremost **a substantial source of nutrition and revenue for producers**, most of whom operate small family orchards.

It is **one of the leading products in the economies of these countries given its export potential**. While accounting for just about 2% of total production, exports averaged 24,300 t/year over four months (April to July) for the period 2001 to 2010, or 2.4% of world mango exports. At the time of implementation of the project, Côte d'Ivoire, Mali, Burkina Faso and Senegal accounted for the bulk of West African mango exports to the EU.

With a **buoyant market** especially in Europe, where mangoes from West Africa accounted for 9 and 13% of imports of fresh mangoes between 2000 and 2010, there are good prospects of being able to add value locally through processing. **The competition** (Asia and South America) is managed on the basis of **seasonal complementarity**.

Origin **Season >>>>>**	Autumn/Winter	Spring	Summer/Autumn
South America (Brazil, Peru)			
West Africa (Burkina Faso, Mali)			
Middle East, Central America, Asia and West Africa			

Source: COLEACP.

[1] *Specialized in rural development and the environment, the consultant has worked in France and even more so abroad, on behalf of the French Government (MINAGRI, MINCOOP, MAE), the World Bank, ECOWAS or on his own account. He has implemented or managed several projects, helped to develop sectoral policies and has conducted many evaluations in Europe, South America and above all in Africa, in the field of capacity building in developing countries. The expert is independent of all the interested parties and has no conflict of interests that could affect the conduct of this evaluation.*

Damage linked to the fruit fly began appearing in West Africa in 2005 with the invasion of an exotic fruit fly species (*Bactrocera invadens*) originating in South Asia, which had the twofold impact of:

(i) **reducing the supply of good quality mangoes for local marketing** and hence the revenues of small producers, possibly even posing food security problems for families given the importance of mangoes during periods between harvests; and

(ii) **increasing the number of cases of interception and destruction of mangoes** entering the European Union (EU), representing significant financial losses to the West African exporting countries and a heightened risk of loss of international market access. The COLEACP was thus able to establish a link[2] between interceptions of shipments of infested (West African) mangoes in the EU (102 interceptions in 2011, of which 79 between May and July) and the contraction of West African market share (9% in 2011 versus 14% in 2007), despite an 8% increase in European mango imports.

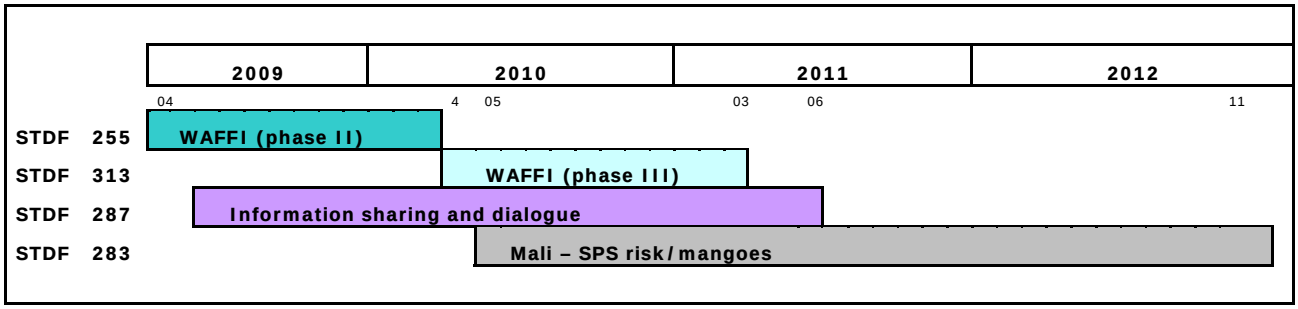
3. STDF-SUPPORTED PROJECTS

Since 2007, the STDF has mounted a series of projects, namely STDF 146; 255; 287; 313 and 283. Only the last four are of concern to this *meta* evaluation.

Table 1: List of SPS/fruit fly projects supported by STDF

		Title	Total amount (US$)	STDF amount (US$)	Start	End	Project manager
STDF	146	Upgrade/application of sanitary and phytosanitary measures to develop the fruit and vegetable trade in Mali	554,296	518,800	Jan. 07	Feb. 10	Min TRADE
STDF	255	Regional initiative on the fight against fruit fly in West Africa (WAFFI 1 and 2)	579,480	279,620	Apr. 09	Mar. 10	CIRAD
STDF	287	Information-sharing initiative on the actions to control fruit fly in Sub-Saharan Africa	136,500	82,800	Jun. 09	Apr. 11	COLEACP
STDF	313	Continuation of the West African Fruit Fly Initiative (WAFFI)	788,524	499,537	Apr. 10	Mar. 11	CIRAD
STDF	283	Support for SPS risk assessment in the mango export sector in Mali	477,213	423,400	May 10	Nov. 12	ANSSA
		Totals	2,536,013	1,804,157			

Table 2: Timetable of evaluated projects



[2] COLEACP "Fruit fly" Workshop - Ouagadougou - March 2012.

4. RESULTS

Bearing in mind the anticipated results in terms of increased revenues for small producers, increased exports, less interceptions upon entry into the EU area, the outcomes must be viewed with caution:

- It was not possible to verify whether there was any real increase in producers' incomes, and the surveys (questionnaires) did not dispel doubts regarding this hoped for objective, which is understandable given the difficulty of gauging income impact in the absence of complex and costly household surveys. None of the implemented projects included **processes for assessing the revenues of small producers**. Nor was there any gauging of the initial situation versus that at the end of the project. Even if such an evaluation had been effected, it would have been difficult if not impossible to circumscribe the part played by mangoes in any such change of revenue, considering the number of variables at play in income fluctuation.

- As regards **increased exports**, most of the answers to the questionnaires did indicate such an increase and are corroborated by Eurostat figures[3] (see annex "Imports to the EU"), which shows that between 2009 and 2014, West African mango imports into the EU increased 101% in value and 67% in tonnage.

- The impact of the evaluated projects in terms of the **reduced number of interceptions upon entry into the EU area** also warrants confirmation (see specific annex on "Interceptions"). The statistics (europhyt sources) show a recent downtrend after the November 2014 alert in Côte d'Ivoire.[4] This trend can only be confirmed over time.

The STDF supported projects under evaluation yielded **significant results, mainly in the areas of research and development, the interaction of players and the mobilization of partners**.

- Research and development (R&D) results were particularly significant and have been acknowledged by the players as useful. Of the 12 species of Tephritidae (diptera) linked to mangoes in West Africa, two have been identified as the most harmful (*Ceratitis cosyra* and *Bactrocera invadens*), their populations and behaviour have been studied and analysed. Prevention based methods have been devised to manage them (if fly populations reach excessively high levels, there is no really effective method of controlling them). The only effective way of interrupting the development cycle of fruit flies is by means of a package of integrated pest control methods, if possible throughout the entire production basin. In essence these entail (1) the daily gathering and destruction of fallen fruit; (2) spot treatments, in particular, with Success Appat (GF-120) or other systems based on food attractants; (3) biological methods using oecophylla ants and parasitoids; (4) the mass capture of male flies (Male Annihilation Technique, MAT) using specific attractants. The effectiveness of these methods has been proven.

- As pertains to technical assistance, an **information dissemination** initiative has been undertaken thanks to funds raised through STDF 287 (drafting and sending of a letter on fruit fly management to over 3,000 addressees).

- For all the projects assessed, the mobilization of players has undoubtedly been the aspect that has produced the most significant and systematic results. This mobilization was welcomed unanimously by the people surveyed during the evaluation. It was achieved through information meetings (STDF 225, 313 and 287) and above all training sessions (STDF 283) which led to **rapprochement between private sector players** (exporters, fixers (*pisteurs*), processors and producers) and has generated **new awareness of the need for joint action involving all players**. This action is certainly not unrelated to the **creation of inter-branch associations** (Mali, Senegal and Burkina Faso). These associations are in turn largely responsible (especially in Mali – STDF 283)

[3] The figures for Ghana are nonetheless puzzling.

[4] The increasing presence of fruit fly bites on mangoes from this country destined for European countries could represent a "*plant health risk*" and lead to an embargo on fruit originating in Côte d'Ivoire.

for the rapprochement between the public sector (government departments responsible for quality control) and the private sector (exporters).

- Lastly, this mobilization has been highly instrumental in the **realization of the regional initiative** to combat the fruit fly with the implementation of the PLMF (ECOWAS), funded to the tune of €23.5 million by the EU, the AFD and Member States (see below).

5. ASSESSMENT OF SYNERGIES AND COHERENCE BETWEEN STDF PROJECTS

The **coherence** between the actions carried out with STDF funding was obvious at the time of this assessment. Among the goals attained and which to the evaluator represented clear evidence of coherence were: the finding of technological solutions (STDF 255 and 313), the sharing of information about them (STDF 287), awareness raising among players in the sector regarding the merits of a group approach (STDF 287), and focusing this approach on the quest for quality (STDF 283).

However, the many contacts made during this *meta* evaluation with beneficiaries or players have shown that this coherence was not clear to the vast majority of beneficiaries. It was this assessment that made them aware of the range of actions being undertaken by the STDF. This was so because beneficiaries often identified STDF–funded projects through the name of the agency responsible for their implementation or supervision (World Bank and CIRAD for the WAFFI - STDF 255 and 313, and COLEACP for STDF 287). STDF 283 in Mali was the only one recognized as STDF, but **the original beneficiaries largely lost sight of STDF support** owing to subsequent support from other programmes such as the World Bank's Agricultural Competitiveness and Diversification Programme (PCDA) or the Enhanced Integrated Framework (EIF) (WTO) support programme in progress since 2005. This reveals the need for the STDF to examine its positioning and hence its visibility strategy.

The coherence of the actions carried out by STDF can undoubtedly be ascribed to the underlying idea espoused by the STDF of achieving coordinated action by establishing a regional programme, and this well before the stakeholders (national or even regional) took ownership of this idea.

We also note that this coherence may have been further refined had the implemented projects undergone a mid-term assessment (only STDF 283 has been subject to such an assessment) in order to identify more points of convergence.

The **synergy** derived from STDF-supported operations has led to the implementation of the ECOWAS Regional Programme (PLMF). This outcome is sufficiently compelling evidence of the complementarity of STDF actions.

6. REVIEW OF ACTIVITIES UNDERTAKEN BY OTHER DONORS

The conduct of the review of fruit fly control activities varied depending on whether these actions were national or international.

Most of the Research and Development (R&D) activities took place at the international (regional or continental) level. Access to information about the operations carried out with the assistance of funding partners other than the STDF was facilitated through the support of CIRAD, which played a role of coordinator and whose culture in part consists of information gathering. The following table therefore shows the bulk of the players that were involved fruit fly management in West Africa over the period of execution of the projects under evaluation.

TFP	Scheduled timing	Purpose	Total US$ '000	Project name	No. of beneficiary countries (W. Africa)	Situation
WB-EU CIRAD/COLEACP	2008 12 months	R&D on fruit fly management, identification, ecology	90	WAFFI – I	7	Completed
WB-EU CIRAD/COLEACP	2009 12 months	Idem + fruit fly pop. management	299	WAFFI – II	8	Completed
WB-STDF CIRAD/IITA CIRAD/COLEACP	2010-2011 15 months	Id....	346	WAFFI – III	8	Completed
CRI (RSA) CIRAD and diff. AEZs	01.01.2011/ 31.12.2012 24 months	Research/*B. dorsalis* in Africa	?		4 (in W. Afr.)	Completed
DANIDA CIRAD	30.06.2011/ 30.06.2015 48 months	Research/weaver ants (*Oecophylla*)	1,797		1 (Benin)	Completed
WB-EU CIRAD	01.04.2011/ 30.12.2011 9 months	R&D fruit fly management	70	WAFFI – IV	8	Completed
IAEA CIRAD	01.01.2012/ 31.12.2014 36 months	R&D fruit fly management	900		10	Completed
WAEMU IITA	2012 12 months	R&D fruit fly management and use of ants	502	WAFFI – V	9	Completed
CORAF (Dakar-Senegal) IITA	2014-2017 36 months	Fruit fly extension work and use of ants	543		9	In progress

Accessing information regarding activities carried out by other funding partners has been more difficult in respect of national level, non-R&D projects. The main partners contacted for the purposes of the evaluation were USAID, the World Bank, EU, AFD, FAO, IAEA and the EIF. The mission also looked at documents on activities by the CBI. For most of the technical assistance programmes identified it is difficult to ascertain whether their operations cover fruit fly control. Indeed, these programmes entail actions designed to enhance the competitiveness of sectors that are especially vulnerable to the ravages of fruit flies, the mango sector first and foremost. Yet the activities would seem to be concentrated on the post-harvest link in the value chain (adding value and processing).

- **USAID** has been active in the realm of West African export development. Already in 2005–2006, the Trade and Investment Program for a Competitive Export Economy (TIPCEE) was working to achieve "exponential" growth in Ghana's agricultural exports. USAID has also supported local initiatives in Senegal, Mali, Burkina Faso, though strictly at a local or national level. Currently, USAID is still providing this support through the West Africa Trade and Investment Hub, set up in Dakar (with branches in Ouagadougou and Accra). This initiative maintains a special focus on (i) getting private players on board; (ii) **including activities being conducted in the AGOA bilateral framework** (Country – USA partnership for reciprocally increasing agricultural trade) and (iii) extending its reach to the regional level (WAEMU and ECOWAS). The initiative is designed to support private operators in boosting their competitiveness by forging links between operators. Twelve West African countries are eligible under a programme covering the period 2014-2019.

  USAID is currently very active in Senegal through the Support for Accelerated Growth and Increased Competitiveness for Trade programme, in the framework of the Economic Growth project (SAGIC/PCE).

The evaluator regrets that his attempts to obtain USAID evaluation documents were unsuccessful, as the USAID stated that it has not undertaken actions in the specific field of fruit fly management. The fact that the projects under evaluation are not recent perhaps largely accounts for the impossibility of obtaining the studies requested.

- The **World Bank (WB)** has been a major partner in regard to the topic and area covered by the projects under evaluation. It supervised the STDF 255 and 313 projects. It has completed STDF 283 in Mali. The person responsible for the supervision (Mr Ravry) is no longer with the World Bank, but was contacted and agreed to talk with the evaluator. In contrast, the people currently in charge were unable to provide information regarding operations that took place admittedly many years before they came to office. The World Bank is active in many countries through programmes to boost competitiveness (PDCA in Mali, PDMAS in Senegal and PAFA (?) in Burkina Faso).

- The **European Union** has been central to concerns over the fruit fly since the very first initiatives to combat the insect (2007) and strongly supports the principle of region-wide management of the problem. The agents responsible for the fruit fly dossier in the delegations were not in place at the time of implementation of the projects under evaluation. This dossier is handled directly by the Commission in Brussels. The very deep involvement of the EU has translated into the provision of the bulk of the funding for the PLMF (regional fruit fly management programme), implemented under the aegis of ECOWAS with the support of the AFD, which is the executing agency (see details in paragraph on AFD). The EU also helped finance the COLEACP (PIP and EDES programmes), which has carried out activities to combat the fruit fly.

- The **French Development Agency (AFD)** currently plays a key role in co-funding and supervising the Project to Support the Regional. Plan to fight and control fruit flies in West Africa (PLMF), a project managed by ECOWAS. Funds to the tune of €23.5 million have been raised for this project as follows: EU (10th EDF Regional Indicative Programme) €17 million; AFD €1.5 million; ECOWAS €1.5 million; Member States €3.5 million. This programme aims to (i) increase fruit exports to Europe by 50%[5]; (ii) make more fruit available on local markets; (iii) transfer to the mango sector organizational arrangements developed in other sectors. This project is being implemented on the basis of five components, namely surveillance, pest management, capacity building, applied research and coordination. It was decided on in 2014 and launched institutionally in 2015, when the project team was put in place. The credits for implementation in the eight countries concerned were scheduled to become available as of 2016. It will last five years.

- The **International Atomic Energy Agency (IAEA)**, jointly with the **FAO**, is mobilizing networks of researchers (Tephridit Workers Database) on the basis of a project entitled "Enhancing Capacity for Detection, Surveillance and Suppression of Exotic and Established Fruit Fly Species through Integration of Sterile Insect Technique with Other Suppression Methods" (ref RAF 5074; €1.1 million; 2016-2019). See https://nucleus.iaea.org/sites.naipc/twd/pages/default.aspx.

- The **Import Promotion Centre (CBI)** is part of the Netherlands Enterprise Agency. It is funded by the Dutch Ministry of Foreign Affairs. Convinced that the fresh fruit and vegetable sector is one of the five most promising for West African exports, the CBI strives to assist West African fruit and vegetable producers and exporters in penetrating the European market and establishing lasting trading relations with EU importers. It acts in complementarity with the COLEACP (PIP programme). In 2012 it launched a fruit and vegetable export support project that will last until 2017. This project has a twofold purpose: developing long-term exports and promoting exports to the European market. Activities under this project cover Benin, Burkina Faso, Ghana, Mali and Senegal. The project initially concerned 34 entrepreneurs. The main products involved are mangoes,

[5] Some 44,679 tonnes were exported to Europe in 2014, worth US$54.6 million (source AFD), or a c.i.f cost of $1,222/tonne (€940/t or CFAF 617/kg). Depending on the country, the price per kg of mango paid to producers ranged from CFAF 40 to CFAF 60 in Mali or in Burkina Faso for "orchard run fruit", to CFAF 250 in Senegal's Niayes region for packaged mango.

pineapples, papayas, limes and green beans. This project came about after the implementation of the STDF projects.

- The **Enhanced Integrated Framework (EIF)** has been an active partner:

  In **Mali**, where it has been supporting the production and export of shea products, gum Arabic and mangoes since 2005. The EIF has mobilized funds for the marketing and export of mangoes. It has also financed the creation of an export guarantee fund for SMEs. The EIF Mali has worked together with the STDF to facilitate the preparation, validation and updating of diagnostic trade integration studies (DTIS) as well as the preparation of projects (STDF PG/146). It is still working to strengthen the mango processing sector by adding value to products such as preserves and dried fruit through the automation of women's cooperatives in rural areas and by expanding the private sector. Fruit and vegetable processing units have been set up in cooperatives and women are being trained in preservation techniques.

  In **Senegal**, the EIF is funding a Category II project called "Project to Improve the Competitiveness of Senegalese Mangoes (PACMS)", funded to the tune of US$3.1 million and designed to boost the competitiveness of mangoes and promote diversification on extra European markets while building production, processing and marketing capacities.

- The **FAO**: The FAO has played only a modest role in fighting fruit fly in West Africa. In southern Africa, however, it has carried out the project called "BONAZAZI" (Botswana, Namibia, Zambia and Zimbabwe) designed to manage the fruit fly. The project ended in December 2015 but its follow up activities are still being supported by the African Solidarity Trust Fund (ASTF). Lessons can be learned from these projects useful to the discussion of the appropriateness of a continental approach. Also worthy of note is the joint IAEA/FAO project to promote fruit fly management using the sterile insect technique (SIT). Lastly, the FAO uses its technological information exchange platform (TECA) to share technological information with producers, including the collection of practical guides produced by the Technical Centre for Agriculture and Rural Cooperation (CTA).

7. REGIONAL FRUIT FLY MANAGEMENT INITIATIVE AND THE PLMF

1. Description of the STDF 225 "Regional Programme" initiative

An EU-funded study describing the situation regarding the damage caused to mangoes by the fruit fly was produced in early 2008 by the ITALTREND consulting firm. The study was validated by ECOWAS Member States at a workshop held in Bamako in July 2008.

Despite the progress it represented in terms of identifying actions to be taken to combat the fruit fly, the study nonetheless embodied some shortcomings, including (i) lack of precision in determining national and regional-level actions; (ii) a logical framework still to be outlined; (iii) lack of a detailed budget, and (iv) lack of a structure for coordination between regional and national levels.

ECOWAS therefore commissioned a complementary study (co-funded under STDF 225 and by the European Commission). It was entrusted to COLEACP and conducted by F. Plumelle in June-July 2009.

It produced a **draft regional action plan to control fruit fly** comprising four aspects, namely "surveillance", "pest management", "applied research" and "capacity building". It was validated in September 2009 by donors convened by ECOWAS in Bamako.

The technical content of this regional plan was **updated in February 2012** at a workshop organized by COLEACP in Ouagadougou (EU funding – WB national programmes (PAFASP, PCDA and PDMAS) and FIRCA Côte d'Ivoire).

After these delays the causes of which are examined subsequently in this report, this regional programme was finally able to raise the necessary funding. ECOWAS entrusted its implementation

to the AFD[6] under the title **"Project to Support the Regional Plan to Combat and Control Fruit Flies in West Africa" (PLMF)**. Its overall cost is €23.5 million. It is being co-funded by the EU (€17 million), ECOWAS Member States (€3.5 million) and the AFD (€1.5 million). The project covers all ECOWAS countries affected by fruit flies. As of the date of the evaluation mission, the countries concerned were the eight that had been the subject of the initial study, namely Benin, Burkina Faso, Cote d'Ivoire, Gambia, Ghana, Guinea, Mali and Senegal.[7]

2. Comparison of the initial regional plan with the PLMF project

The PLMF project consists of five interdependent components and therefore retains the same structure as the regional project (a coordination component having been added):

1. **"Surveillance" component**: It serves to monitor national and regional fruit fly infestation rates and to trigger alerts and rapid reactions as necessary.

Based on nine activities distributed across national and regional levels, its content is identical to that of the regional programme.

At the regional level, it is planned to have a manual describing the operational aspects of the process of practical implementation of field activities and designating responsible persons at each level. The PLMF takes into account the harmonization of the methodological approach to information gathering at the regional and national levels, in order to obtain reproducible data.

The PLMF provides the means for monitoring the infestation rate and for putting in place a rapid alert system. One notable omission is its failure to provide for a geographic information system (GIS) for reasons not clearly elucidated.

It provides for the identification of highly infested or sensitive areas (priority areas) and of 110 export-oriented pilot orchards in 22 agro-ecological areas. There will be five orchards per agro-ecological area, four information collection points per orchard and four traps per collection point.

Data is to be collected at the surveillance points every week throughout the year and across the eight registered countries (22 agro-ecological areas) in order to gauge the density of the population in real time. Special attention should of course be paid to harmonizing the quality of data collection among the countries. The collection and transmission of information will be entrusted to a private company in each country, which will also be tasked with training DPV agents in surveillance.

The data will be processed by ECOWAS.[8]

It is planned to supply decision-makers (producers, operators, etc.) with real time information by means of an early warning system.

At national level, activities will focus on (i) the formulation of long-term national surveillance plans; and (ii) the installation of the national surveillance scheme in a sample selection of orchards in the agro-ecological areas of the different countries. The first national data will be gathered as of May 2016. Management of the projects will be entrusted to the National Committees representing players in the sector and trained for the purpose.

The project will supply the surveillance equipment (including traps).

2. The **"pest management" component**, which aims at regional coordination and support for national fruit fly management activities at three levels: prevention by means of raising awareness of good practices across the subregion; intensifying pest management in highly infested regions identified through alerts; and integral pest management/eradication for smaller but economically high-stake areas.

[6] AFD code op CZZ1816 - contract signed in August 2014.

[7] Approaches have since been made by Togo and Nigeria.

[8] The documents in our possession do not specify who will undertake this processing (it is dangerous to leave this service to the private sector). Alternatively, which government agency is equipped to do so?

This component is also similar to content proposed in the 2009 version of the regional programme.

The overall aim is primarily to provide countries with national fruit fly management plans, with a special focus on Guinea (a country that is lagging behind in this regard). It also includes the training of trainers and raising of producer awareness regarding preventive management. Pest management activities are concentrated in highly infested areas. There are plans to treat 300 ha of targeted orchards (pilot orchards using biological control methods (VPLI), the effectiveness of which is still to be determined under the project).

Provision is made for post-harvest treatments.

DPVs will also be supported (see capacity building).

3. The **"capacity building" component**: Capacity building in national, public and private entities that are or will be involved in surveillance and pest management.

While following most of the proposals in the regional programme, the PLMF does not include the idea of creating a geographic information system (GIS). This "saving" is understood to have been dictated by fear of ineffectiveness or a decision to use this type of equipment at a later stage, a vision not shared by the evaluator, who instead believes that this is a critical tool for managing the geographical evolution of fruit fly populations and hence the effectiveness of efforts to combat them.

This capacity building is targeted mainly at (i) members of the National Committee improving their capacities in project management, monitoring/evaluation, preparation of campaigns, etc.; (ii) national laboratories; (iii) the DPVs and border control posts.

Broadly speaking, this component follows the proposals of the revised regional programme.

4. **"Applied research"**: This proposes supplementary funding for existing research and development programmes for the operationalization of improved pest surveillance and management technologies and to facilitate their transfer and their adoption by different groups of players.

The applied research content from the regional programme has been included and set out in detail in the PLMF.

The envisaged research content includes:

1 = Integrated Pest Management (IPM) research, biological pest management methods, pest management products, and the drafting of manuals on available new procedures. It aims to improve knowledge of the biology, ecology and physiology of the fruit fly, develop and improve techniques for (i) fruit fly detection and management, (biological management and management based on natural pesticides). It includes:

- ⇒ the development and adaptation of post-harvest treatment techniques;
- ⇒ the adaptation and improvement of the integrated pest management strategy adapted to different agro-ecological areas;
- ⇒ the installation and operation of a Scientific Committee and a coordination system;
- ⇒ research capacity building in the countries;
- ⇒ the installation and operation of innovation platforms for the CRA (with the support of the CORAF/WECARD programme).

2 = Creation of a centralized information network accessible via the Internet;
3 = Dissemination of research outcomes through seminars, brochures, etc.;
4 = Evaluation of outcomes.

5. **"Coordination" component**: This addresses the implementation of the project as a whole. The cross-cutting actions (planning, information, training, and monitoring/evaluation) fall under this component, which was – advisedly – added to the proposals contained in the regional programme. It covers the operation of a Project Coordination Unit based in Bamako, in the heart

of the area with the most orchards in the region. This Unit is responsible for executing regional aspects and supervises the execution of national aspects of the project.

To conclude, the overall content of the regional programme has indeed been followed. The PLMF very faithfully incorporates the bulk of the regional programme as revised in Ouagadougou. Moreover, it represents a means of scaling up the WAFFI initiatives. It may therefore be said that the WAFFI initiatives have contributed significantly to advancing fruit fly management.

The overall governance scheme has been preserved. The evaluator is nonetheless of the view that the place given to the private sector is insufficient, both in decision-making bodies such as the National Committees (where the leading exporters are still not present[9]), and in financing. This topic is dealt with subsequently in this report.

Lastly, the evaluation notes that the original spirit, that of sharing information – if not decision-making – with technical and financial partners, seems not to have been preserved. The PLMF is indeed an EU/AFD project. Players such as the World Bank and STDF, which have given decisive and historic support to the fight against fruit fly, are not associated with it.[10] It would seem to be more a matter of avoiding overload than an attitude of wanting to "go it alone".

8. GLOBAL LESSONS LEARNED FROM ALL THE ACTIVITIES CARRIED OUT

(a) Research and Development

The limitations of the research carried out have been circumscribed, especially based on the outcomes of STD 255 and 313:

- First, while it is accepted that one cannot reasonably expect to eradicate the fruit fly in general and the *Bactrocera invadens* in particular[11], **it is possible to reduce the pressure from the *B. invadens***, above all if pest management activities are concentrated on the **target zones** (e.g. the Niayes area of Senegal and the Skasso and Bamako areas in Mali) where **production** is already organized for **export**.[12] This amounts to considering the establishment of Pest-Free Areas and Areas of Low Pest Prevalence within the meaning of the IPPC's International Standards for Phytosanitary Measures (ISPM) (in particular ISPM 26 and ISPM 30) and hence the accompaniment of research endeavours with regulatory action designed to secure international recognition of these areas.

- Another lesson to be learned from the evaluation is the **immense variety** of technical, social and economic environments in the areas concerned, which means that **no two regions can be treated identically**. It is imperative to recognize a typology of the areas to be treated, including not just the characteristics of fruit flies, but also the social and economic parameters of producers, the level of involvement of producers' organizations, and so on …

Besides, **the cost of this pest management is appreciable**: Already between 2009 and 2012, US$2.5 million were raised (1.8 of which was borne by the STDF). Expressed in terms of exported tonne in West Africa (25,000 t/year on average) at the time, the cost was $20 per exported tonne (or roughly 2% of the c.i.f. value per tonne of mangoes). Expressed in terms of average price paid to the producer (from 40 to 60 CFA/kg, depending on operator, quality, variety, …), the **cost of research has been about 30% of the value per "export quality" kg of mangoes paid to the producer**.

[9] Given the National Committee representatives present at the project launch in Dakar (February 2016). The main exporters in volume terms are not members … Perhaps they do not yet feel the need for membership?

[10] It is noteworthy that the acronym STDF does not appear once in the AFD's PLMF project identification report.

[11] In Mexico and with considerably more funds available than in West Africa, this possibility has been abandoned (source, Plumelle).

[12] The success of pest management activities will require the involvement of key players such as exporters, who must help bear the costs and provide services such as the raising of seasonal credits, supplying plant protection products, and outreach work (in the absence of any effective business association).

Moreover, although the effectiveness of the management methods has been proven, their **degree of acceptance by small producers was not evaluated** while the projects were being executed. Yet this *ex-post* evaluation has revealed that **although technically sound, the methods developed are not accessible to all producers**, whether:

- in terms of **cost**, being too expensive in the view of producers consulted in Mali "*CFA 24,750 per drum of Actara 25WG for 1 ha, and this must be repeated three times per season, this is prohibitive!*");

- in terms of **labour available to implement them**: the tasks to be done in the orchards in terms of soil preparation, orchard management (pruning, daily gathering of fallen fruit) requires significant amounts of labour which is not available (especially in the Malian context where gold mining considerably reduces the available labour supply).

Answers to questionnaires and interviews with producers also revealed that:

- **The existence of untapped local expertise** in terms of **methods and products** (especially baits produced from local products) that are cheap and not sufficiently disseminated by the research agencies.

- **Demand for "soft" technologies**: Producers' awareness of the dangers posed by the available products is hampering the adoption of the chemical treatments on offer. Their health concerns are very real and must therefore be taken into consideration with a view to developing softer technologies.

Lastly, it has now been proven that fruit flies are no longer the only priority for players in the industry. Other phytosanitary priorities have appeared, making it **extremely urgent to be prepared for the integrated management of other agents, primarily bacterial blight** (as well as fungal diseases and termites) that are beginning to destroy orchards and their produce.

(b) Information/training/awareness raising

It has been confirmed that the methods developed are **known only to an insufficient number of producers**. Despite efforts to circulate information letters (3,000 addressees identified for the COLEACP letter supported by the STDF 287 project), instructions and other technical information sheets, an *ad hoc* survey conducted during the evaluation (field visit in Mali) indicates that less than 10% of producers are aware of the pest control methods.

- Producers wishing to better protect and/or better manage their orchards realize that they are surrounded by neighbours who are ignorant of these technologies for lack of information and awareness raising, and this detracts from their own efforts.

- Besides, it is to be regretted that initiatives to disseminate information sheets (STDF 287) **made no provision for satisfaction surveys among readers** in order to assess their relevance and impact as well as the information needs in this field.

- Furthermore, producers and fixers (*pisteurs*) are largely **ignorant of the impact of fruit flies on exports and of the interceptions of shipments upon entry into European territory**. Only exporters are informed, which is normal given the financial costs bound up with the interceptions. It may be surprising that the inspection services too are themselves so ill-informed about the impact in terms of image and economic cost.

(c) Registration of plant protection products:

Meetings with producers' organizations (Mali) and answers to questionnaires have made it possible to identify a great need for:

- support of the **plant protection product registration process**;

- **harmonization across countries** of the list of approved products.[13]

(d) As regards mobilization of players, many lessons have been learned:

- **Towards national traceability systems**? Thanks to the STDF 283 project, Mali now has a national traceability system designed to make players more accountable in the pursuit of "quality". One would have expected this system to be a ground breaking tool that could be replicated across the region. The questionnaires have shown that **Mali's national traceability system is unknown in the countries of the region**. Even in Mali, despite the beneficial impact of the system in terms of inducing supportive and responsible behaviour with respect to the fruit fly problem, its effectiveness among producers and players is yet to be demonstrated. Interviews conducted in the field have in fact revealed that "*It serves no purpose if it lacks the operating funds!*" One may train any number of inspectors, but if they lack the wherewithal for putting their training into practice, it will have no impact.

- Furthermore, **exporters have not been sufficiently mobilized** with respect to (i) **the setting of research priorities**, and (ii) **participation in the funding** of research endeavours. Ultimately, exporters are the main beneficiaries of the outcomes of investment, which between 2008 and 2012 amounted to US$2.5 million, allocated to R&D and technical assistance.

- Despite the efforts deployed through published documentation (leaflets, instruction sheets, letters, etc.) (3,000 addressees identified for the COLEACP letter on fruit fly management), it has been admitted that **producers are suffering from a severe lack of access (cost and physical availability) to the plant protection products** envisaged under the available technologies, a situation that could incite some producers to use unregistered products, with all the potential consequences during inspections on entering the European area.

- **Inter-branch organizations**: As has been underlined above, one of the major outcomes of the projects under evaluation has been greater awareness on the part of the private sector and government departments regarding the usefulness of working together in an attempt to arrive at a quality based approach. During the visit to Mali, the evaluator observed that **creating an inter-branch organization** was hailed as the outcome of this rapprochement and the end of all the sector's problems. It seems necessary to alert the players (public sector as well as financial donors) regarding:

    - **The pressing need for a clear definition of the role of this inter-branch organization**. It could be a place for information and discussion, first among private players (exporters, fixers, processors, producers, researchers, trainers). No doubt it will also be the venue of the struggle among the players who will be sharing among themselves the added value created in the industry, and where prices, contracts, etc. will be negotiated. Other sectors provide examples of how this works.[14]

    - It may also be a **meeting place for the private sector and government departments** – though this is still to be discussed.

    - Such an organization can only be effective **if the parties are all represented and the forces are balanced**. It is crucially important in the mango industry for all the main exporters to be present and active (determined to shoulder their part of the responsibility for managing the sector). It is just as important for producers' organizations to be present and strong (in possession of negotiating leverage, capacities allowing them to choose between delivering unprocessed product and processing. …).

[13] Although the best suited treatments vary according to agro-ecological area, the basic range of plant protection products is partly the same, which justifies harmonization across countries.

[14] Especially in Mali, with respect to shea products and beef.

- It must have an **autonomous budget** (parafiscal levy on the sector's products?) enabling it first and foremost to set up information and observation bases so as to provide its members with statistics and also to participate in determining technical assistance programmes (research, training, communication …).
- The inter-branch organization must not duplicate the work of the national fruit fly management committees.

- The **National Committees for fruit fly management** were set up with the advent of the ECOWAS regional programme (PLMF), and warrant special attention. In the light of the meeting with the evaluator (session launching the PLMF in Dakar in February 2016), it does seem necessary to ensure that:

  - The **composition** of these Committees adequately reflects the sector and in particular includes important private sector players (especially major exporters), which for the time being has not been ascertained.

  - These Committees must also **be locally based** so that needs can be adequately transmitted from the bottom up and alerts efficiently transmitted from the top down.

  - The **non-duplication of mandates and roles** corresponding to the inter-branch organization (see above).

  - **Government departments** (**trade, agriculture, finance**, …) **are coordinated before taking up their places** on the national committees.

(e) Political will: The lessons to be drawn from this evaluation should include the need to question the real **political will of beneficiary countries to introduce fruit fly management systems**. Two major questions arise:

- **Will current technical assistance to government departments prove lasting**? In the largely export-oriented mango sector, the government departments mainly concerned are Agriculture, Trade and Finance (Customs). It is clear that these departments still have a long way to go towards achieving maximum complementarity. Special mention should be made of the **departments responsible for monitoring**, which have been deprived of the operating funds required to adequately discharge their functions in West Africa's mango sector. At the time of the evaluation, just one of the 8 PLMF beneficiary countries, namely Côte d'Ivoire, had an operating and investment budget of its own for promoting quality in the mango sector. The provision of this budget (special fund) was the government's response to the threat of an embargo issued by the EU in 2014 against Ivorian mangoes given the increased number of interceptions of mango shipments from that country. The question remains open as to how long this decision to allocate funds will last once the immediate threat has been removed? For the duration of the PLMF regional programme, i.e. until 2019 (?), the funds allocated by the country to the PLMF can be used for that purpose. Indeed, the PLMF has made its work contingent on a simultaneous allocation by ECOWAS Member States of their own budgets to the tune of €3.5 million intended to defray the operating costs of monitoring services. At the meeting in Dakar in February 2016, the representatives of the national committees noted that these budgets were non-existent.[15] …

- Why did the **regional fruit fly management programme (PLMF)** take so long to progress from the mooting of the idea (2008) to concrete expression in 2016 with the provision of credits intended for the national fruit fly management committees? It is worth recalling that the idea of this regional programme was born in 2007. The regional programme was identified in June 2008[16], laid out in detail in June 2009[17], approved by donors and ECOWAS Member States in September 2009, but only came into existence in 2014 (ECOWAS/EU agreement) and was effectively launched in February 2016 (official

[15] Except for Côte d'Ivoire, which still has some of the funds allocated in 2014 in response to the threat of embargo.

[16] ITALTREND study.

[17] COLEACP complementary study, Plumelle, co-funded under STDF 225.

launch of the programme in Dakar and meeting of the National Committees). On the strength of interviews (European Commission, AFD, EIF and representatives of the National Committees), the evaluator has identified two possible reasons for this abnormally long delay:

- In the case of region wide programmes (i.e. multi-country programmes), it is observed that the level of political commitment is often not the same among governments.[18] If regional programmes are to succeed, it is necessary to identify one (or two) "champions" among the beneficiary countries. It would appear that the "fruit fly" programmes did not manage to find their champion(s), which may have been either Senegal or Côte d'Ivoire, West Africa's leading mango exporters. Located on the edge of the fruit fly infested area, Senegal believed that it could handle the fruit fly problem alone (with very strong bilateral support from the United States (USAID and USDA). Côte d'Ivoire for its part was grappling with internal political problems at the time when the decision was taken to launch the PLMF programme. These two countries have not exercised any leadership in respect of the fruit fly problem.

- ECOWAS has been unable to assemble (for lack of champion countries?) enough donors for the PLMF under its leadership. Perhaps these donors doubted its capacity to put in place procedures to manage projects on such a scale.

(f) Scale of pest management and sharing of responsibility: Questioning the political will of States to manage the fruit fly raises a fundamental issue pertaining to the scale and content of such management, and to the sharing of responsibilities. Some lessons are offered by the experience gained from STDF supported projects:

- Adapting the content of pest management: It can be seen from the completed projects that successful fruit fly management requires that it **be adapted to the range of different environments** in regard to:

  - managing pathogen populations;

  - the degree of organization of producers; or

  - the culture of inspection in government agencies from one country to another;

  - the degree of penetration of exporters in the sector: In some countries, exporters reach out to producers and secure their loyalty through contracts and by giving them support in the form of seasonal credits, by supplying plant protection products, etc. In other countries, some exporters limit their activities to receiving fruit from "fixers", without any further involvement in the day-to-day operations of orchards.

It is advisable to avoid having a single vision of solutions, opting instead for a **variable geometry concept for fruit fly management activities to be carried out**. That geometry requires project managers to display flexibility (adaptability), responsiveness, and to have their own resources, …

- This pest management geometry must consider several elements relating to the scale of intervention and governance:

  - The fruit fly problem is a global one in that it concerns Asia, Africa, Central and South America and very recently, Europe.[19] Yet the contexts differ considerably[20], and while this raises questions about the global management of this scourge, it does not rule out information sharing, which should be stepped up.

[18] Evaluator's personal experience as adviser to the President of the ECOWAS Commission.

[19] *Ceritits capitata* and more recently (2016) Drosophila Suzukii (cherry).

[20] For a time it may have been thought possible to transfer the pest control technologies developed in Mexico (see Plumelle) to West Africa. The contexts (especially production structures) were vastly different.

- Countries have preferred to take national ownership of pest management (see STDF support in Mali, USDA and USAID support in Senegal, Côte d'Ivoire …), pursuant to their own regulations. The overwhelming representation of administrative services (plant protection) in forums for discussion between donors and beneficiaries initially led country representatives to support this trend.

- Greater involvement of producer organizations in forums for the discussion of pest management strategies and resource mobilization.

- The involvement of major exporters is instrumental in highlighting the implications of interceptions in terms of reputation and hence the erosion of competitiveness. Whether in Senegal or in Mali (the only two countries that the mission was able to visit), the presence of exporters was deemed insufficient (except by representatives … of government departments).

- The more recent wish to make this pest management regional in scope and the mobilization of the Regional Economic Communities (RECs): This trend has been supported by the donors (especially STDF, the EU, WB and AFD …) but raises questions regarding the capacity of the RECs for implementation, whether in terms of political leadership, governance or technical competence. This underlines just how necessary it is first to study the distribution of roles and responsibilities between national and regional bodies and among the regional bodies themselves (lack of clarity in West Africa between the responsibilities of ECOWAS and WAEMU).

- The appropriateness of continent wide fruit fly management: The African Union Inter African Phytosanitary Council (AU-IAPSC) is discussing this issue. The idea is presumably to set up a continental fruit fly management platform. The CPI has carried out information and awareness raising campaigns on the fruit fly problem.[21]

(g) Lastly, three lessons can be drawn from this *meta* evaluation that are directly relevant to the management of STDF projects: They relate to the timeliness of reviewing the monitoring/evaluation procedures put in place by the STDF for its projects[22] (including the time lapse between project completion and the date of the *ex-post* evaluation), and the image and visibility of the STDF as a donor.

- The **time lapse between project completion and the *ex-post* evaluation** has been as long as five years (STDF 255-313), which is too long and considerably affects the recollections of projects in the memory of the persons surveyed (if they are still in office, which is not always the case). The result is that replies to the questionnaires fall far short of expectations. This aspect has been dealt with in detail in the evaluation reports on the different projects. It is recommended that the evaluation be held within a maximum of two to three years (by an independent expert) in order to measure impact and durability.

- It would seem timely to consider the possibility of **re-examining the evaluation principles applied to STDF funded projects**:

  - **Enhancing the robustness of the logical frameworks and incorporating information gathering measures to ensure continuous monitoring**: The logical frameworks in fact contain aims that are not always verifiable (e.g., increasing producer incomes, STDF 255-313) and are even less so in the absence of the data gathering envisaged (for example household surveys designed to gauge income increases, including the identification of the part played by mangoes in that increase). The immediate impact of activities is therefore difficult to verify owing to the lack of any *ex-ante* and *ex-post* evaluation of them (for example, training courses have been held (STDF 283) with no on-site evaluation; similarly, letters and information sheets (STDF 287) have been circulated to 3,000 addressees

[21] Three workshops have been held on fruit fly identification and reclassification: in Cairo in 2009, in Arusha in 2010, and in Banjul in 2011.

[22] As gleaned from the projects covered by this *meta* evaluation and without considering any improvements that may have taken place subsequently in this field.

without any survey being done of safe receipt or reader assessment of their content).[23]

- **Introduce mid-term evaluations**: These will make it possible to introduce needed corrective measures, including the reorientation of a project or a review of the logical framework. This was done in the case of STDF 283 but has not become general practice. It is important to underscore that for projects 255, 283 and 313, the STDF had delegated its supervisory powers to the World Bank. This delegation of supervision, which was removed from STDF operational rules in 2014, established a system exempting the STDF Secretariat from any monitoring function (delegation of powers), leaving it entirely dependent on the procedures followed by the supervising agency. Consequently, the evaluation did not have the benefit of information from the supervising agency and it was therefore impossible to judge whether there had been an opportunity to review the logical framework and take relevant corrective measures during the execution of the project.

- **On-site evaluation upon project completion**: The desirability for future project schedules to include a post completion monitoring phase. Hence, after the holding of the final project workshop (often the last meeting of the steering committee), this latter committee would remain operational for three to six months in order to examine what has been accomplished and compare it with the initial objectives. This would be under the responsibility of the project owner.

- Another lesson to be learned from this *meta* evaluation is the **difficulty beneficiaries experience in associating the project with its donor the STDF**, which can be important for this latter entity. STDF projects are in fact generally attributed to the executing agency (or formerly to the supervising agency). This detracts from the profile of the STDF in the field and hence its recognizability as a player in SPS capacity building and hence as a point of reference for receiving and disseminating technical assistance information.

9. APPROPRIATENESS OF GIVING CONTINENTAL SCOPE TO FRUIT FLY MANAGEMENT

This section examines the appropriateness of continent wide fruit fly management in Africa. To that end, it takes as a basis the lessons learned from the projects and programmes discussed above as well as experience garnered from other initiatives carried out on the continent, namely pan-African animal health programmes[24], as well as the Partnership for Aflatoxin Control in Africa (PACA). Without claiming to offer detailed guidelines or an exhaustive study (given the limited resources made available for this evaluation), this section attempts to provide the interested parties with some avenues for reflection in order to further the examination of the appropriateness of the continental initiative and what it might look like.

(a) Discussion points based on experience with animal health programmes:

There is no denying past successes with animal health programmes such as those to combat rinderpest, foot and mouth disease and the like. The Pan African Rinderpest Campaign (PARC Programme – 1986-1999), for example, effectively eradicated the rinderpest epidemic from East Africa. The Pan African Programme for the Control of Epizootics (PACE 1999-2007), the fight against the H1N1 virus (avian flu) or successive programmes to combat desert locusts (since the 1950s) have had acknowledged results. It should be noted in respect of all these programmes that:

- They have all mobilized appreciable resources. In the case of the PACE Programme, for example, the FAO estimates that the European Union alone has invested some $120 million in this campaign over the past ten years.

- They are long-term programmes (20 years in the case of PACE).

[23] It would seem that the Secretariat has tackled this problem since the completion of the projects evaluated.

[24] Taken from interviews with Dr J. L. François (AFD, ex-IBAR) and J. Domenech (ex- FAO/OIE) – details in Annex IV.

- Their success may be ascribed to:

    - the pooling of efforts between technical support agency (FAO), implementing agency (OAU/IBAR), and the agency responsible for the regulation and control of veterinary products (shared between OIE and FAO);
    - the existence of credible associated technical structures (laboratories) (including LANAVET in Côte d'Ivoire);
    - the capacity for information sharing and the benchmarking of local or national initiatives;
    - the existence of stimulating dynamics bringing together public and private sectors (overcoming old, long-standing, mainly cultural divides between East and West Africans);
    - the creation of a club of facilitators drawn from the profession: heads of African Animal Health Departments.

But the problem was a specific one, considering first and foremost that it was a matter of tackling one disease that had one solution (a vaccine) and it took 20 years to deal with the problem. In the case of locusts, it is a matter of one well known insect and climatic factors the effects of which are fully identified. The following must be borne in mind in any attempt to apply these findings to crop production:

A. in the realm of plant health, **several pathogens** are present simultaneously (not just fruit flies), and not all the solutions for them have so far been identified (whence the need for a vast plant health research programme – certainly at the continental level and involving substantial and long-term investment in R&D);

B. the growing wish of importing countries to limit the number of chemicals present on fruit (imported or not);

C. the reality and strength of the agro-ecological transition movement[25] being promoted by producers. It should be borne in mind that mango producers produce primarily for their own consumption and for local markets before producing for export, which accounts for their concern with limiting the use of plant health products that are harmful to their own health;

D. the solution will also in part require a crop schedule (treatments cannot be applied at any time, this being less applicable in the realm of animal health, where vaccines may be administered throughout the year);

E. contrary to pan-African experiences in the field of animal health, one special feature of crop production is that it involves private sector players other than exporters, and this calls for public and private sector agents to be brought together in a "club";

F. the need to identify, in the realm of crop production, the equivalent of the OIE/IBAR/FAO trio to address zootechnical aspects.

(b) The Partnership for Aflatoxin Control in Africa (PACA)

The fight against the harmful effects of aflatoxins[26] on animals as well as humans (cancer, liver disease, retarded growth, weakening of the immune system, …) has mobilized appreciable resources and numerous players at continental, regional, national and local levels.

Aware that the social and economic dimensions of the issue of "aflatoxins" could have led to interesting institutional advances, the STDF Secretariat requested the evaluation mission to

[25] The transition to new agricultural systems that make more efficient use of natural resources, mobilize organic regulatory functions and help maintain and enhance the functions of ecosystems.

[26] In Kenya, considered as East Africa's leading aflatoxin flashpoint, almost 200 people died between 2004 and 2006 from acute aflatoxicosis after eating corn (maize) contaminated with aflatoxins. In 2010, some two million sacks of corn were declared unfit for human consumption owing to high levels of aflatoxins.

examine the lessons learned from these initiatives in respect of "aflatoxins" that could be used in fruit fly management, at least at the institutional level.

As discussed in Annex V, the PACA platform was set up at continental level (AU Commission) in 2011. Several other actions were carried out thereafter in respect of "aflatoxins" both by the Regional Economic Communities (ECOWAS as well as COMESA, EAC and SADC) and by donors to countries or research entities.

The evaluation mission notes the recommendations that these various implementation or coordination platforms or initiatives had included among those being put forward by participants at the Lilongwe workshop in 2014, among others, the urgency of creating an effective inter-regional coordination mechanism (EAC-COMESA-SADC).

At this stage therefore, and based on information in its possession[27], the evaluation mission notes, together with the recommendations made by attendees at the Lilongwe workshop organized by the RECs EAC, COMESA and SADC in 2014, that the coordinative role entrusted to the PACA Platform has not yet attained its goal owing to the existence of a number of initiatives and players that have so far failed to coordinate their activities. Unlike what has been identified in the realm of animal health, caution is advised when it comes to the lessons to be learned from the PACA initiative for the institutional management of the fruit fly.

To conclude, it is clear today that in combating the fruit fly, the continental dimension is not yet a reality and that each subregion is working in relative isolation, thereby foregoing synergies, the pooling of efforts and economies of scale. In addition, with the emergence of the idea of designating "basins" where the degree of fruit fly infestation is homogenous, questions arise regarding (i) the need for inter-regional recognition (certification?) of such areas, and (ii) the risk of persistence of reservoirs of infestation in regions where there is less active management, etc. A continental approach may therefore be deemed necessary, though it should not be exclusive but instead complement interventions at other levels (see recommendations below).

10. RECOMMENDATIONS FOR POSSIBLE FUTURE PROJECTS

This section attempts to put together some recommendations to be borne in mind when preparing roadmaps for future fruit fly management projects, irrespective of their scale. These recommendations are grouped by topic:

(1) Institutional scale and sharing of responsibilities:

In the African context, the evaluation recommends that fruit fly management be undertaken on a multi-dimensional basis:

- **Continental**: At this level, the legitimacy and leadership of the Commission of the African Union (or of technical bodies, the CPI in this case) may be an asset for mobilizing the political will of governments, which is ultimately lacking. In the specific case of fruit fly management and by analogy with successful animal health projects, it would seem that continent wide missions should focus on (i) building awareness on the part of the political leadership so that the fruit fly problem can be included among continental priorities and resources mobilized over the long run. This awareness raising role should extend beyond continental bodies and bring the problem of fruit flies in Africa before the relevant international forums; (ii) a role of coordination and monitoring/evaluation; (iii) the sharing of information (forum) and expertise (DVP club similar to what has been done in the realm of animal health) within the continent and with other regions of the world.

- **Regional**: Experience with the PLMF shows that the regional economic communities could play a regional role supported by the necessary technical structures (CORAF or some other) in coordinating programme funding and implementation;

[27] Source of information: Internet research and CIRAD interview (Mrs C. Brabet).

- **National**: Fruit fly management takes place by and large at the national level. While plant protection departments must play a key role in applying regulations, the coordination of activities at this level must take place in a framework that closely associates – if not mandates – inter-branch associations whenever they have demonstrated their effectiveness.

- **Local**: Extending pest management activities to the entire territory entails an intermediary role for inter-branch organizations, especially of producers, but also partnership contracts with private exporters, in order to ensure that account is taken of the variety of contexts and the existence of technological resources already tried and tested locally.

Paradoxically – and this is a significant challenge – fruit fly management initiatives must simultaneously entail variable geometry and:

- be adapted to technological, social and economic contexts that vary widely from one country to the next ("research landscape ecology");

- take into account the agro-ecological dimension desired by producers and aimed at ensuring their security in terms of sustainable development (use of products whose potential harmfulness to producer and consumer has been evaluated).

(2) Mandate and field of intervention:

All initiatives and, *a fortiori*, those involving a broad scope of intervention must have a clear mandate adopted by all, irrespective of their school (continental, regional, national, etc.). In this case, it is important, if there is to be a continental fruit fly management initiative, to know whether the scope of intervention is limited to one fruit fly species (*B. invadens*) or to all of them. There are pros and cons to both options, but the decision must be taken on a collegial basis, involving all stakeholders.

(3) Sharing of responsibilities:

Thought should also be given to conducting an operational analysis of the role of players, possibly by inviting them to a meeting convened by an organization such as the FAO/IAPSC, which would study the following:

- **private sector**: Role and form of representation of players in inter-branch organizations, available resources in adapted …

- **government departments – inter-branch organization**: Are national committees enough? Are they representative? How sustainable and independent are they?

- achieving complementarity in fruit fly management at **local, national, regional and continental levels**, by drawing on the lessons learned from "animal health" programmes (see above).

This distribution of roles should be the subject of country by country consultation, with a continental overview, to be organized without delay and which would determine on a collegial basis the role and responsibilities of the players mentioned above, as well as:

- the role of technical institutions and research bodies (for example IITA, ICIPE, etc.);

- the role of international organizations and platforms (FAO (including IPPC) IAEA, CABI, STDF);

- the role of donors.

It seems important to restore decision making capacity to beneficiaries (States as well as producers or operators/exporters), in contrast to the past, when this had largely been exercised by external partners (donors as well as research entities). One key

condition for this is clear political will on the part of States as well as the private sector (producers and exporters).

Paradoxically – and this is a significant challenge – fruit fly management initiatives must simultaneously entail variable geometry and:

- be adapted to technological, social and economic contexts that vary widely from one country to the next ("research landscape ecology");

- take into account the agro-ecological dimension desired by producers and aimed at ensuring their security in terms of sustainable development (use of products whose potential harmfulness to producer and consumer has been evaluated).

(4) Research programmes:

Research programmes on fruit fly surveillance and management must be continued and buttressed, bearing the following in mind:

- From the start, they must **take on board key private sector players, namely exporters** as well as **producers**, when determining the aims of R&D programmes.

- They must be the subject of a **study of acceptability** by small producers, covering:

  - notions of cost (find an inexpensive trapping system costing about €2 or €3 per tree with attractant); this cost reduction could entail the use of already existing local technologies and products that are not sufficiently widely disseminated);

  - their **compatibility with the available supply of labour** (reducing the number of traps per hectare, to be changed every month …) and;

  - their level of **safety for the health of the local population** and first and foremost of the person applying them.

- They should seek rapprochement with if not join in regional and continental research initiatives through the relevant institutions and platforms. These include the West and Central African Council for Agricultural Research and Development (CORAF), the Forum for Agricultural Research in Africa (FARA) and international institutions involved in fruit fly management on the continent, such as the International Institute of Tropical Agriculture (IITA) and the International Centre for Insect Physiology and Ecology (ICIPE). They should also draw on local expertise gleaned from the specific experiences identified through local platforms pertaining to the National Centres of Specialization (CNS)[28], thereby giving some exposure to tried and tested but not very widely disseminated local practices.

- As far as possible, these programmes should take account of **other pathogens** that may be infesting the areas under treatment for the fruit fly and thus compromising the effectiveness of the treatments being applied. In the mango sector for example, efforts to combat the fruit fly could be seriously undermined by new diseases such as mango tree bacterial blight, attacks by termites that could endanger the life of trees, as well as fungal diseases such as fusarium, alternaria (black spot) and anthracnose.

- They must be **planned for the long term** (it took 20 years to overcome rinderpest, and this in a less complex context where there was better knowledge of the one agent involved, for which there was a single solution, namely vaccination.

[28] http://www.coraf.org/database/technologiewaapp/cns.php

(5) Implementing research outcomes:

The effectiveness of R&D programmes entails measures to disseminate pest control technologies and allow producers access to these technologies, by:

- **disseminating research outcomes** through **professional networks** starting with Plant Protection Department clubs (see lessons learned from animal health projects above),
- **expanding the range of producers reached** by technological information, small producers in particular;
- **translating instruction sheets into local languages**;
- **using additional communications media** (especially local radio stations);
- verifying **producers' access** to plant protection products and to that end:
    - promote the **registration of plant protection products** being made available thanks to R&D;
    - **harmonize among countries** the list of the registered products;
    - promote the granting of **seasonal credits** needed to purchase plant protection products, independently of those that may be supplied by exporters under their contracts with producers.

There is also great need for **capacity building** and coordination among players, without which R&D will not be effective. The evaluator is of the view that this capacity building should target primarily inter-branch associations and national fruit fly management committees. The evaluator notes that the PLMF programme (ECOWAS) has taken into account the need for effectively functioning national committees, though support for inter-branch associations is not among the objectives of this programme.

(6) Mobilization and involvement of private sector players:

The mission strongly recommends greater involvement of exporters and other upstream players from the sector (other than producers, i.e. processors and fixers (pisteurs)) **in its development and funding**. These private sector players ultimately benefit from the outcomes of investment by the international community (US$2.5 million raised between 2008 and 2012 in connection with STDF supported projects, and €23.5 million through the ECOWAS PLMF programme). These players could conceivably be involved[29] – possibly by means of a business tax; they could be taken on board, more than just symbolically, for the formulation of research programmes (already highlighted above), as well as through **participation in the funding of research (possibly subsidized through ("matching grants")), and in awareness raising activities, training, and supplying seasonal credits and phytosanitary products**.

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[29] The ECOWAS PLMF project does not concern itself directly with the private "processing and export" sector, which is in principle represented on the national fruit fly management committees.