



Figure 1 Mosaic disease



Figure 2 Cassava brown streak disease



Figure 3 Fall armyworm

Project objectives

The project aims to increase production, stability of yields and incomes of the main food and fruit crops in ten countries of central and west Africa thanks to the control of cassava virus diseases, of the fall armyworm on maize and mango fruit flies – by allowing national players and regional networks to properly manage biological risks.

Background

Pests and diseases are crucial factors limiting the production of cassava, maize and mangoes in West and Central Africa. Cassava mosaic disease (CMD) and cassava brown streak (CBSD) are the main biotic constraints and can lead to yield losses of up to 100%. Recently, the fall armyworm has invaded Africa and was reported in early 2016 in West and Central Africa. It attacks maize but has also been reported on other crops such as sorghum. In the most affected countries, production losses can be estimated between 25 and 50%. As for the mango fly, *Bactrocera dorsalis*, it can destroy between 50 and 80% of production and cause the rejection, by European countries, of exports. (In 2006 for example, it caused the interception at the borders of European Union of exports of mangoes worth more than a third of the total value of exports for the year).

The negative impact of these diseases and pests on crop yields therefore affect the economic performance (producer incomes, trade balance, competitiveness). It constitutes a considerable threat for the countries of West and Central Africa. The surveillance and control systems existing in the countries are not up to the challenges due to a lack of adequate equipment and surveillance network covering the whole territory, hence the need to have means of anticipation and management of these biological risks.

The theory of change to achieve the objectives

Anticipating emerging biological risks requires the establishment and operation of a robust institutional framework to coordinate surveillance, prevention and control actions through strategic collaboration between research and development organizations. To do this, CORAF, in interaction with the WAVE project – which aims to give smallholder farmers and other stakeholders the means to better manage virus diseases of root and tuber crops in West and Central Africa, plans to establish such a framework for coordinated actions at regional level and intends to use financial support from DeSIRA to contribute to an action plan. This strategy makes it possible to pool resources, limit duplication of activities on the same themes, and thus create synergies between actors through specific intervention modules.

The theory of change is articulated around 4 results which should allow, in the long term, an increase in production and a stability of yields and incomes of the main food and fruit crops in West and Central



Africa thanks to a mastery of threats from cassava virus diseases, the fall armyworm on corn and fruit flies.

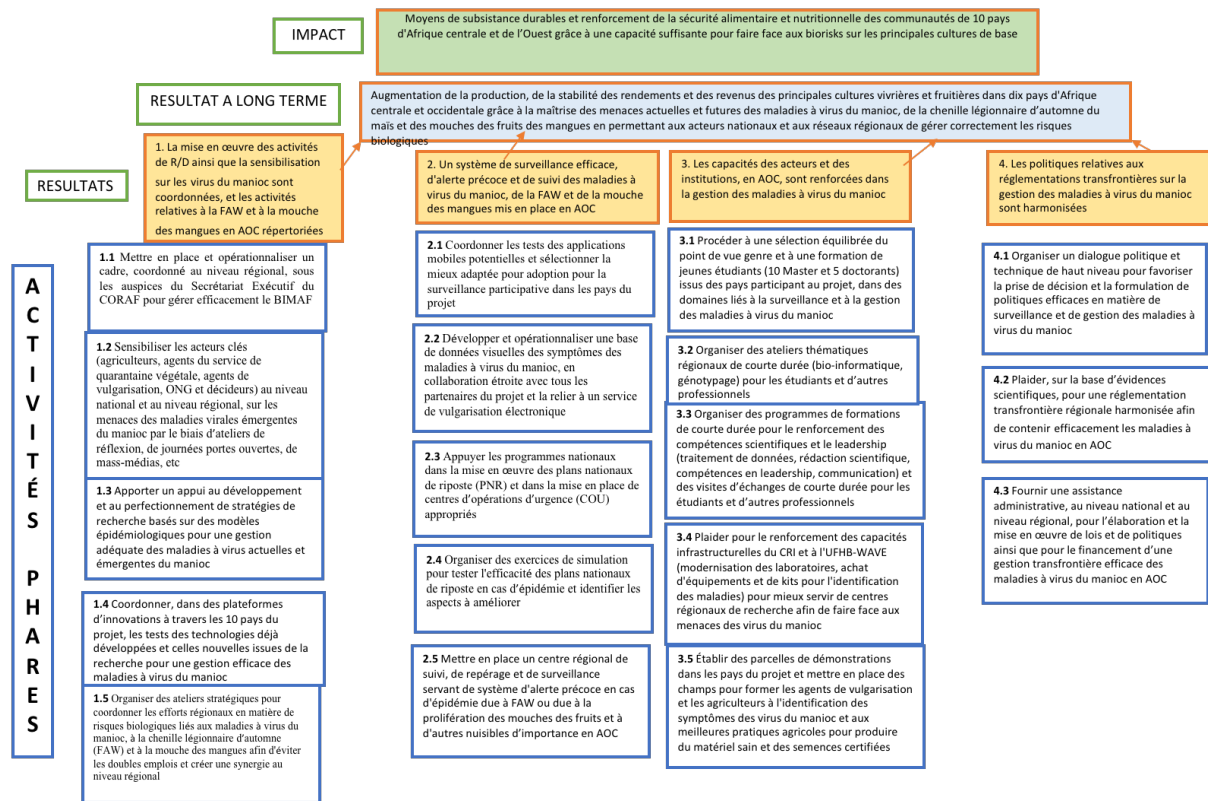
Result 1: This will involve strengthening national research capacities to assess epidemiological risks, to conduct research on control methods within the framework of innovation platforms, but also to define strategies aimed at coordinating control efforts. It will also involve carrying out awareness campaigns aimed at actors in the various value chains for the appropriation of control methods.

Result 2: Anticipating and managing bio-risks requires strengthening surveillance and alert functions to counter pests such as cassava viruses, the fall armyworm and fruit flies. It will be a question of defining methods and tools for a participatory surveillance of the diseases (and thus appealing to the producers and actors on the ground). It will also involve defining national action plans and testing surveillance and intervention strategies, among others, through emergency operations centers in countries that will be in contact with a regional monitoring. The set must serve as an early warning system for the three identified biobanks.

Result 3: The training of actors (researchers and professionals) but also the strengthening of the capacities of partner institutions are essential for achieving the objectives of the project. This is the essence of this third result through academic training, short training for producers and professionals in the supply chains, but also workshops to share results and experiences. Institutional capacity building also involves investments in laboratories and experimental devices to provide the necessary research infrastructure.

Result 4: Plant diseases know no borders, therefore harmonized policies and regulations must apply to all West African countries. To achieve this result, the planned activities include the organization of political dialogues on the new measures to be implemented, advocacy activities for a regional policy for the prevention of biohazards and administrative assistance at national and regional level for the development of policies adapted to the management of biohazards.

Figure 4 : The intervention logic of the project is described below :



Main activities

The main activities that will be carried out during the execution of the project are as follows:

- ✓ Workshops to raise awareness about threats from viruses and other pests. More specific thematic workshops will be organized for various categories of actors to strengthen the capacities of individuals and institutions.
- ✓ Experiments and evaluations of technologies and innovations will be carried out in demonstration plots and as part of innovation platforms.
- ✓ A database informed by actors in the field will be built to help monitor diseases and prevent them.
- ✓ Field schools will be organized for the training of extension agents and farmers.
- ✓ Short-term training to strengthen scientific and leadership skills will be organized for students and other professionals. Diploma courses will be given for postgraduate students (Master and PhD).
- ✓ Advocacy sessions will be organized with heads of organizations and political decision makers at national and regional level to contribute to the development of national and regional strategies and policies for the management of biological risks.
- ✓ Open doors and exchange visits to share experiences but also to bring technological advances to the attention of as many people as possible for better adaptation and appropriation of innovations and successful scaling up.

Organization

The project is organized around four results:

- ✓ The CORAF Executive Secretariat, with its capacity to mobilize the actors, will coordinate actions, will be responsible for all regional activities as well as administrative and financial management.
- ✓ The UFHB-WAVE will provide leadership on the technical aspects of the project (viral diseases of plants with roots and tubers) with regard to the epidemiology and management of the main viral

diseases of cassava. The UFHB-WAVE will also provide its laboratories and staff for the training of project partners, including diploma training programs and short courses.

- ✓ BIMAF will be responsible for monitoring and early warning actions, but will also recommend emergency measures to be taken in the event of an illness.
- ✓ The Regional Center of Excellence on roots and tubers will carry out technology tests for virus control, will set up technology demonstrations and, in collaboration with the UFHB-WAVE will welcome students in its laboratories.
- ✓ The Regional Center of Specialization on maize will establish a link between project activities and BIMAF in order to protect the interests of cassava producers who invariably practice intercropping cassava / maize.
- ✓ The Regional Center of Specialization on fruits and vegetables will play a major role in the training of students and other professionals but also in the conduct of research for an effective fight against the mango fly in West and Central Africa.
- ✓ The National Agricultural Research Institutes (INRA) will be responsible for the implementation of specific activities which will be dedicated to them in relation to their level of competence which depends on the existence of qualified human resources and adequate infrastructure or equipment to take care of instructs the execution of these activities.
- ✓ The project partners within the Executive Secretariat of CORAF and UFHB-WAVE will consult regularly for the implementation of activities.

Implementing organization

CORAF



Project partners

Felix Houphouët Boigny University - Central and West African viruses Epidemiology for food security (WAVE)



Other stakeholders

- ✓ Council for Scientific and Industrial Research (CSIR), Crop Research Institute (CRI) Ghana, Biorisk Management Facility (BIMAF),
- ✓ National Centers of Specialization designated by CORAF and ECOWAS,
- ✓ Associated Universities and National Agricultural Research Institutes

Region

Benin, Burkina Faso, Cameroon, Côte d'Ivoire, DRC, Gabon, Ghana, Nigeria, Sierra Leone and Togo

Funding and co-funding

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| EU | € 5,000,000 |
| Total budget | € 5,000,000 |

Period

5 years (2020-2024)