

# CRS-C3P Rwanda

BXW, COMBINATION OF FFW / SEED FAIRS / ERADICATION / TRAINING & EDUCATION



Photo: CRS/Rwanda

Coordination meeting in Rubavu district between C3P partners BAIR, CRS and District authorities to clarify activities and define roles.

An action plan was developed based on information collected by district agronomists on BXW affected sectors, hectares, and farmers.

## Fighting Banana Xanthomonas Wilt Disease



Farmers uprooting BXW infected banana mats in Rubavu District, Rwanda



Fig1: BXW sites in Rubavu district

The highest concentration of BXW is located in eight sectors in Rubavu district, one of 30 districts of Rwanda.



Photo: CRS Rwanda ISAR, MINAGRI, CRS organized workshops in Rubavu district to raise awareness of BXW and teach BXW management practices to district and sector agronomists so they in turn could teach banana farmers how to control the disease.



Photo: CRS Rwanda

MINAGRI/RADA Plant Protection Director visits BXW affected communities to raise awareness farmers the principle ways of spread of the BXW disease – infected tools and plant material and importance of regular follow up of infected fields.

Coordination, education and awareness raising are key elements in the fight to eradicate BXW.

The coordination is done through the involvement n of the Ministry for Agriculture, the specialized Institution of Research and Local NGOs specialized in fight against BXW.



Photo: CRS Rwanda

MINAGRI Minister of State Dr. Kalibata officially inaugurates the World Food Program

**Background:** Banana is among the most important stable crops in Rwanda, a chronically food insecure country. Banana occupies approximately 22% of cultivated land, second only to roots and tubers (25%). Ninety percent of bananas is consumed locally, and as incomes rise among rural households, banana consumption increases vis a vis alternative staples. Most infected mats are those that are used to produce bananas for making banana beer, a mostly woman-led activity that provides substantial income to poor households.

In October 2005 *Banana Xanthomonas Wilt* (BXW) was found in two infected sites in Cyanzarwe sector, in Gisenyi Province (now Rubavu District), and in 2006 banana production actually decreased. Since then the disease has quickly propagated to all 6 Rubavu sectors. In 2005, the district began to address BXW through *Umuganda*, a national once-monthly community works effort, to uproot and bury infected trees, but this proved ineffective, given the breadth of the disease and overwhelming reluctance by farmers to uproot their infected bananas.

Given the importance of banana to food security in Rwanda and the menace BXW poses to the entire country and region, CRS in partnership with IITA was awarded USAID funding in 2006 for its Crop Crises Control Project (C3P) to help address the increasing prevalence of the disease in Rwanda.

Like banana farmers in the other five countries in the C3P region (Burundi, DRC, Kenya, Tanzania and Uganda), Rwanda farmers were targeted to receive training in BXW management techniques and increase through multiplication and distribution of wilt-escaping varieties. At the beginning of C3P BXW activities in Rwanda, an additional strategy to controlling the disease was promoted. Rubavu district had signed a contract with the central government



Photo: CRS Rwanda

C3P Rwanda assisted farmers with uprooting of banana fields affected by the BXW: comprising organization of uprooting campaigns, purchase and distribution of tools for uprooting, mobilization of labor force to help those who have not enough force/capacity to do uprooting on their own. The sensitization about the threats of the BXW and its control has been through dissemination of information about the BXW and its control via radio, local meetings and printed media.



Photo: CRS Rwanda

C3P Rwanda received technical visits from regional C3P, IITA and INIBAP staff. Here a

supported eradication component of C3P, using FFW. The ceremony was attended by CRS, WFP, USAID, Rubavu district representatives and participating farmers.



Photo: CRS Rwanda

In Rubavu district, CRS conducted 4 seed fairs to 1,291 BXW affected households access to substitution crops, especially beans and maize. Women, who are responsible for seed in households, were the majority of buyers. Seed suppliers received vouchers from participates, which were refunded by CRS/Rwanda

to eradicate BXW in the district. Given the concentration of BXW in primarily the Gisenyi area of northwest Rwanda, in September 2006 a meeting was held between CRS, MINAGRI, Rubavu district authorities and sector agronomists to define BXW interventions and define the role of Rubavu district. The CRS/Rwanda approach was to make sure that the Rubavu district took the leadership for coordinating the eradication effort. This meeting allowed various actors to better perceive the gravity of the disease and share detailed information on BXW expansion in Rubavu district.

Through a competitive bidding process, Bureau d'Appui Aux Initiatives Rurales (BAIR), signed a contract with CRS in October 2006, to provide on-site BXW awareness raising and technical support to banana farmers for the various BXW eradication and management activities.

An action plan was developed based on the information collected in each sector. In these preliminary stages and even with the obvious presence of the disease, farmers showed reluctance to cut infected banana mats. Indeed, previous attempts by the GOR to undertake eradication efforts through *Umuganda*, the once monthly community works day, proved insufficient to limit the spread of the disease.

CRS agreed to support the district's "eradication" effort to diminish the prevalence of the disease. Eradication meant the systematic uprooting and burial of infected banana trees over approximately 400 hectares of land. This meant, however, intensive awareness raising and remedial measures to encourage farmers to uproot the mats on a large scale while providing compensatory food security measures. Moreover, the use of FFW was also planned, using rations from World Food Program to create greater incentives for uprooting infected mats against farmer reluctance and lava strewn

joint visit is being conducted during the uprooting process in one of the banana removal sites.



Photo: CRS Rwanda

Partner capacity building is a primary activity of CRS/Rwanda. Here, partner staff are trained in the use of GPS in order to map the spread of the BXW and CMD in Rwanda.

soil and to address short-term food insecurity.

### **Toward a long-term solution**

#### **Seed fairs**

Fields of infected bananas could not be replanted with clean banana material for 6 months after removal. After the district identified the most affected banana farmers, it was important to address the potential for increasing food security among targeted farmers from uprooting and the inability to immediately replant clean material in a short period.

From September 11-18<sup>th</sup>, 2006, CRS/Rwanda, through technical assistance from CRS/Burundi, undertook training for BAIR and district agronomists in conducting seed fairs using the CRS model, to increase access to substitute crops, especially maize and beans. It was necessary nevertheless to solve a problem of availability of substitution seeds for this population.

Four seed fairs were conducted. in Rubavu district in September 21-22<sup>th</sup> 2006 and October 6-7<sup>th</sup> 2006. Over 11,917 kg of bean seed, 556.5 kg of maize seed, and 225 kg of pea seed were sold among 1,223 families who were destroying their infected banana mats.

#### **BXW Eradication**

The complete uprooting of infected banana mats would also create temporary food insecurity among the poorest households, waiting for the first harvest of their banana substitute crops. This problem in particular, combined with the overall reluctance of farmers to cut

infected mats, justified the use of temporary FFW used which had a double advantage of reducing short-term food insecurity within BXW affected households and the acceleration of BXW eradication process.

A meeting held in Rubavu in September 2006 confirmed the 396 hectares of BXW infected banana mats to be uprooted. CRS developed a proposal for World Food Program to provide FFW rations, and purchased tools, including shovels, picks and crow-bars, for distribution to 1,291 workers with infected banana plantations.

CRS received GOR support in its efforts to eradicate BXW. In October 2006, the population of Nyundo sector participated in the official launching of the WFP FFW eradication effort. To give weight to the importance of this effort, the launch was attended by the Secretary General of MINAGRI, USAID, WFP, CRS, Caritas, the Mayor of Rubavu district and other district authorities.

CRS provided technical assistance to BAIR and sector agronomists to help organize FFW activities around 43 « team captains » to cover activities in 6 targeted sectors. Also, 6 sector agronomists received training in October 17-18<sup>th</sup> to ensure that team captains correctly registered participants, tracked work schedules and calculated food for work rations, as well as provide follow up support on behalf of CRS.

By June 2007, around 1,800 people from affected households were employed in FFW eradication efforts. Around 380.5 ha of the targeted 396 ha envisaged (90.9%) were uprooted. In addition, a total of 10.6 km of hillsides was protected against erosion by planting soil-fixing grasses. Mrs. Venantia UWIZEYIMANA, a member of one of the work teams, lost bananas in 3/4 of her field

due to BXW. She stated that she was convinced of the importance of fighting and managing BXW. She later substituted her uprooted plot with sweet potatoes, due to the improved food security in her household provided by the FFW rations. Mrs. UWIZEYIMANA is representative of many other farmers affected by the disease who were able to purchase other substitute crops through savings wrought by FFW rations. The total kilos of FFW distributed among 1,291 workers from October 2006 to June 2007 amounted to 193,650 kg of cereals, 96,850 kg of legumes and 13,335.2 kg of vegetable oil.

### **Information/Education/Communication**

Collaborative training and education efforts to support correct BXW control methods among banana farmers included the use of media, workshops and on-site technical assistance by Rubavu agronomists. National coordination of education and awareness raising efforts included on-going involvement of MINAGRI, ISAR and CRS. MINAGRI and CRS collaborated in the broadcasting of national and local BXW radio spots. At the local level, raising awareness among the population to fight BXW became one of the priorities of Rubavu district. On Rwanda's 4<sup>th</sup> of July Independence Day (yes, the same date as that of the US), some sectors of Rubavu district (Rugerero sector for example), distributed BXW posters to celebrants.

BAIR, on its own accord, published several articles in local farmer newspapers and nation-wide dailies on eradication efforts in Rubavu, as well as producing a 30 minute radio spot.

Also, in early June 2007, CRS, MINAGRI and ISAR also organized a joint national TOT training of 60 BXW extensionists from 12 Rwanda districts, including Rubavu, where banana cultivation is

highest.

In collaboration with IITA and ISAR, CRS distributed 2,500 posters, 800 calendars and 9,000 pamphlets on BXW to the targeted districts. BAIR also participated in BXW trainings and exchange visits to Uganda, which helped to reinforce the farmers' knowledge of BXW, including how to identify its symptoms, vectors, effects on banana mats, and how to apply good practices aimed at diminishing the incidence of the pandemic. In particular, BAIR helped to assist farmers on how to disinfect tools and uproot and dispose of infected mats.

At least 1,800 banana farmers were mobilized, and they can easily identify BXW symptoms in their fields. Many are practicing preventive farming techniques to fight the disease, such as the amputation of the male bud and the sterilization of tools.

With multiple information streams to increase awareness of BXW and control methods, supported by FFW, and increased access to substitute crops, the majority of banana producers overcame their reluctance to participate in the eradication efforts, thereby encouraging others to do the same.

**Conclusions:** Systematic uprooting is one method for diminishing BXW prevalence, especially in large areas of concentrated infected banana mats. Labor intensive eradication in Rubavu required uprooting and digging burial holes in lava strewn soils. This difficulty accompanied by farmer reluctance to dig up their infected plants was mitigated by using seed fairs to provide substitute crops and FFW rations to improve short-term food insecurity and provide an incentive for participation. There was also the prospect of a later introduction of new healthy varieties, which would be a sustainable solution to that BXW problem.

It is believed that overall prevalence of the disease was diminished through the eradication efforts.

However, even if C3P recorded positive results in the reduction of the BXW inoculum level in targeted sectors, the disease has propagated in new sectors, especially Kanama, Gisenyi and Busasamana sectors of Rubavu and in the Kigeyo, Kivumu and Nyabirasi sectors of Rustiro district. Consequently, further investigation should be planned to determine the BXW incidence and strategies for combating it.

### **Lessons learned**

**GOR Ownership/Involvement is Critical to Success:** The BXW campaign in Rwanda was carried out with the assistance of other stakeholders. Local and national government involvement is essential to increasing ownership by authorities. At the national level, MINAGRI's involvement and participation in the national training was essential to ensuring district agronomist participation. Local government involvement by coordinating eradication efforts and allowing sector agronomists to attend in BXW workshops, helped to increase farmer participation in eradication efforts.

**Links to Research Institutes Provide Important Subject Knowledge for Stakeholders and Follow on Research:** Technical input from IITA, BioVersity and especially ISAR was a successful determinant in the development of appropriate training curriculums, posters and brochures. Follow-on research is still needed to analyze the results of the eradication efforts in diminishing the spread of the disease.

**Multiple Strategies Needed to Combat Farmer Reluctance to Participate in Eradication:** Given the high level of importance of bananas to food security among small farmers, they were reluctant

to cut their infected banana mats. **Training** of BXW extensionists was a very important activity aiming at the fight against the BXW Awareness raising by a **respected local partner (BAIR), on-site encouragement by sector agronomists**, combined with **FFW rations**, and **increased access to crop substitutes through seed fares and/or economic transfers from FFW rations**, encouraged large scale participation in eradication efforts. Also, the FFW rations helped to overcome the difficulty in uprooting in volcanic soil.

**Farmer Involvement Key To Success and Sustainability:** It is a bit trite, but no less true that farmer involvement and adoption of BXW eradication efforts and control methods was essential. However, efforts are needed to use farmer-to-farmer approaches to encourage more widespread BXW management, especially in the banana growing districts that are not as affected as Rubavu.

**Local Partner with Local Knowledge, a Catalyst for Change:** BAIR, a long-time respected farmers association in the region catalyzed the eradication, awareness raising and local technical assistance, after training. The principal achievements of BAIR was particularly in organizing and following up with eradication campaigns and increasing awareness raising through radio spots and news articles.

**Training Good but Not Enough:** Training alone could not reduce the prevalence of BXW or eliminate the problem if other actors such as local authorities, a strong local partner, research institutions, and farmers were not fully engaged and committed to work together to address the additional menace brought by BXW to Rwanda's already chronic food insecurity.