



# C3P COUNTRY WORKPLAN FOR DRC



**August 2006**  
**Submitted on behalf of DRC**  
**C3P Country Coordination Unit**

**Contact**  
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## I. EXECUTIVE SUMMARY

This 15-month long project (C3P) aims at fighting against the Banana Xanthomonas Wilt (BXW) and the Cassava Mosaic Disease (CMD) with a view to mitigating/reducing the threats caused by these pandemics to food security in eastern DRC.

Discovered about twenty years ago, CMD came to be identified, subsequent to many surveys conducted by the National Institute for Agronomic Research (INERA) and other research institutions, as the main cause of damages to cassava crops and an estimated 5 to 90% losses of yields.

Nevertheless, the disease is prevailing in a variable manner in all DRC provinces. The average country incidence of the disease has varied between 59.6% and 100%, but with a highly alarming severity. Selection assessment that had been made were conducted both in eastern and western parts of DRC so as to select the varieties (Liyayi, Namale, Butamu Disanka, Mwazi, Nsansi, and Zizila) that are adapted to conditions in higher and lower altitudes.

A part from research mainly conducted by IITA and INERA; other institutions such as FAO, SECID and BCECO projects have proceeded with the multiplication and distribution of cassava cuttings and currently have CMD-resistant cuttings readily available for the September 2006 campaign. Further, the Mulungu INERA in South Kivu has more than 5,000.00 meters of cuttings that are used in the C3P project.

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With regard to the BXW, the disease first appeared in the North Kivu province since 2001, more specifically in the locality of Kitchanga, in Bashali. FAO, in collaboration with the North Kivu Provincial Agriculture Inspectorate, have put in place a project aimed at fighting against BXW.

As for both of these diseases, there is no coordination mechanism at country level for BXW while there exists one for CMD since 2002 within the framework the multi-donor project (involving USAID-EU-France-Belgium).

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The C3P project, within the framework of its activities, will work with local and International NGOs universities whom their proposals have been approved by RGC through CCU for C3P sub-grant.

The C3P project will work in synergy with other partners involved in CMD and BXW control that have obtained funds/grants from other donors such as the USAID Mission, the Embassies of France, Belgium, and the European Union etc.

The DRC C3P work-plan will be implemented through a Country Coordination Unit whose responsibilities will include selecting sub-grantees / sub-contractors, coordinating with CRS and IITA C3P management with respect to technical, administrative, and financial standards.. The CCU is headed by the CRS CPM and shall defer to the Chief of Party and Head of Programming (HOP) in CRS DRC for all administrative, financial, and Programmatic issues related to the C3P work plan as listed in the C3P Project document.

For the implementation of this work plan, CRD DRC program is hereby requesting a budget in the tune of US\$ 465.366.00 (65% for CMD and 35% for BXW) for a period of 15 months, from August 2006 to October 2007.

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## II. C3P PROFRAME FOR DRC

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**Goal: Threats caused to food security by agricultural crisis in DRC are reduced**

**SO 1: Stakeholders institutionalize coordinated agricultural disaster response mechanisms**

**IR 1: National response to CMD and BXW is well coordinated.**

Outputs

- CCU is established
- M&E system set up
- Collaborating linkages developed with related projects

Comment [M2]: Will a coordination unit for BXW be set up? It does not presently exist?

**IR 2: GIS technologies link data on diseases to data on vulnerability and food security**

Outputs

- Database established on status of food security, CMD and BXW prevalence.
- GIS map on food security, risks and vulnerability developed.

**IR 3: Existing institutions carry forward proven methods for coordination and knowledge sharing regarding agricultural disasters**

Outputs

- Collaborative framework for disaster responses established with a network of existing institutions
- Component of agricultural disasters response approach identified
- Plan for dissemination of early warning information developed

Comment [M3]: Does DRC have a mechanism or government agency responsible for response to disasters whether from crop diseases or others?

Comment [M4]: Please see table below which has more examples of responses that could be considered depending on phase of disease. DRC has all three phases of the disease and C3P interventions might be more successful if tailored according to phase of epidemic in the areas where activities will be implemented. Since resources allocated may not be sufficient it may be best to select one zone and focus interventions there.

**SO 2: Farmers employ effective measures to control CMD and BXW**

**IR 1: CMD effective control is achieved through the multiplication, distribution of CMD resistant varieties and promotion of improved agriculture practices.**

Outputs

- Locations and quantities of CMD resistant plantation materials determined.
- Regional training: 14 extensionists trained on the rapid multiplication and distribution of cassava cuttings.
- At least 105 ha of CMD resistant varieties planted during the project lifetime.
- Publicity on the cassava varieties and on the source of plantation materials made through the media.
- Quality control measures are put in place at the level of wood parks.
- Voucher approach for the distribution of cassava improved varieties introduced.
- Stakeholders organized for the putting in place of a national multiplication and distribution chain for CMD resistant plantation materials.
- Training modules and materials for the management of CMD developed

Comment [M5]: Suggest to remove this as it will not be a country activity.

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Comment [M6]: This number of farmers could be considerably raised since training at community level is the key to effective management of BXW.

**IR 2: BXW effective control is achieved through the multiplication and distribution of resistant varieties and promotion of improved agriculture practices for the management of disease and plants that escape the disease.**

Outputs

- Locations and quantities of BXM resistant plantation materials determined.
- Regional training: 5 extensionists trained on the BXW recognition and management skills.
- 50 animators and 500 farmers trained on the BXW management by the team trained at region level.
- Farmers trained in macropropagation of banana suckers and at least 300 farmers provided material to support recovery.
- Publicity on the banana varieties and on the source of plantation materials made through the media.
- Training and communication materials for BXW management adapted, multiplied and distributed.
- Training modules and materials for the management of BXW developed

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**Draft framework for response to banana *Xanthomonas* Wilt**

	<b>Immediate</b>	<b>Medium term</b>
<u>Pre-epidemic</u>	<ul style="list-style-type: none"> <li>• <u>Education, Information and Communication/Training</u></li> <li>• <u>Surveillance</u></li> <li>• <u>Quarantine inbound banana products (fruits, suckers, )</u></li> <li>• <u>Form BXW management coordination task forces</u></li> <li>• <u>Cultural measures (male bud removal,</u></li> <li>• <u>Assess vulnerability (proximity to infected areas, crop management practices, agro-ecology, susceptibility of varieties, banana planting materials systems analysis etc)</u></li> <li>• <u>Policy to support prevention e.g. regulate trade in banana products coming from affected areas.</u></li> </ul>	<ul style="list-style-type: none"> <li>• <u>EIC/Training for prevention</u></li> <li>• <u>Surveillance</u></li> <li>• <u>Training in rapid multiplication</u></li> </ul>
<u>Epidemic</u>	<ul style="list-style-type: none"> <li>• <u>Training for BXW management (use Participatory Development Communication)</u></li> <li>• <u>Cultural control (vigorous male bud removal and disinfecting tools, restrict foraging animals etc)</u></li> <li>• <u>Minimise/stop crop management operations that require tools e.g. de-suckering, de-trashing</u></li> <li>• <u>Quarantine outbound products (fruits, suckers, leaves,..)</u></li> <li>• <u>Enact policies and by-laws to support compliance with preventive and cultural management measures</u></li> <li>• <u>Crop Substitution (SVF)</u></li> </ul>	<ul style="list-style-type: none"> <li>• <u>EIC/Training for management (use PDC)</u></li> <li>• <u>Crop substitution (livestock options?)</u></li> <li>• <u>Support for removing infected mats</u></li> <li>• <u>Assess food aid needs</u></li> <li>• <u>Develop strategic sites for producing / bulking clean suckers</u></li> <li>• <u>Plant on new land with training to avoid re-infection.</u></li> </ul>
<u>Post-epidemic</u>	<ul style="list-style-type: none"> <li>• <u>Crop substitution</u></li> <li>• <u>Remove infected mats</u></li> <li>• <u>Education on options to clean up infected fields (grow non-host crops, fallowing,.....)</u></li> <li>• <u>Assess demand for banana planting materials</u></li> </ul>	<ul style="list-style-type: none"> <li>• <u>Crop substitution</u></li> <li>• <u>Increase multiplication of banana suckers or import from unaffected areas</u></li> <li>• <u>Establish new banana farms on new land or</u></li> </ul>

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		<u>replant on fields cleaned up after previous infections.</u> <ul style="list-style-type: none"> <li>• <u>Training to avoid infection of replanted bananas.</u></li> </ul>
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### III. PROBLEM ANALYSIS

CMD in DRC has drawn the attention of authorities, researchers, as well as that of development and humanitarian agencies since 2000. Not later than in 2004, another disease, the “Xanthomonas Wilt”, this time around affecting banana, has appeared in the province of North Kivu and in eastern parts of DRC.

Although for CMD control activities and some coordination have been put in place, it is not the same with BXW for which activities are still at their initial stage.

**Comment [M9]:** But what will be the issues to be addressed for BXW ? These need careful consideration for DRC as there are unique circumstances there. E.g. BXW affected area and populations are within an insecure area which could make interventions difficult to carry out. This might necessitate crafting of unique partnerships, e.g with UN agencies FAO, MONUC, etc. More detail on problem analysis could help to focus interventions decided upon.

#### 3.1. COUNTRY LEVEL COORDINATION

The coordination mechanism put in place in DRC to control CMD started in 2002 with the multi-donor project, of which the members comprise of: the Secretary General of the Ministry of Agriculture, USAID, IITA, FAO, EU, and the Belgian Cooperation. The coordination put in place is proceeding well up to date with regard to the holding of technical meetings. The major problem which the project piloting committee did not resolve is the common national approach to be used with regard to the pattern for multiplication and distribution of cassava cuttings. Each partner remained clung to the approach which they consider to be the best.

The explanation that may be given at this juncture is the funding source for the multi-donor project. Projects had three different funding sources with three different partners: FAO funded by EU, SECID funded by USAID and the BCECO funded by the World Bank. Each partner has remained adherent to the approach it presented to its donor.

For the C3P project, we are going to use already existing mechanisms by improving them and extending them to the members of the committee, including the other NGOs which are already working in the cassava. CRS Congo CPM and DRC IITA Coordinator will play the role coordinating the CCU: they will discuss with the project piloting committee, play the role of the Secretary General of the Ministry of Agriculture, which was the coordinator of the multi-donor project. The DRC CCU shall, in conjunction with others, agree on the timing for the meetings, briefings, reports and to reach a consensus for the implementation of a common national approach with regard to the multiplication and distribution of cassava cuttings in DRC.

**Comment [M10]:** Is this accurate ?

The harmonious cohesion of the members of the DRC CCU to work together and orient project activities towards a common national vision at country level as well as at regional level will constitute a major challenge for C3P in DRC.

#### 3.2. Cassava

Cassava is the food crop consumed by more than 70% of the population in DRC. However, in early 1990, the production of cassava has drastically reduced, thus, causing food insecurity and general famine in many eastern parts of DRC. Amongst causes reported to be at the basis of this reduction, the **Cassava Mosaic Disease** turned out to be the largest and most harmful cause of losses of crop between 5% and 95%.

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The disease is prevailing every where across DRC. However, this prevalence varies from province to province. According to surveys conducted by INERA, the average country incidence varies between 59.6% and 100%, but with an alarming severity. The incidence of the disease was lower in Katanga (59, 6% sick plants) and in Northern Kasai (63%); while it was maximum (100%) for the case of most of the other provinces. This difference of CMD incidence may be due to the difference in varieties used, as well as to various virus strains examined in the visited areas.

Currently, the problems that facing the DRC population as regards CMD include:

- The lack of CMD resistant varieties for their fields;
- The lack of supervision in the management of CMD; and
- Ignorance of the package of improved agricultural techniques for cassava.

In order to resolve these problems, advanced evaluation selections have been conducted in South Kivu so as to identify varieties that are CMD-resistant and adapted to conditions for high and mid-altitude regions in eastern DRC. These materials have been introduced from the Uganda IITA research center.

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The MM96/0287 called LIYAYi and MM/967204 called NAMALE varieties are being multiplied and distributed in North and South Kivu.

While the Zizila, Nsansi, Butamu, Disanka and Mwazi varieties being multiplied and distributed in the western parts of DRC.

Multiplication and Distribution activities for the cuttings are ensured by projects funded by the multi-donors, FAO, IITA/SECID and PMURR/BCECO.

**The FAO project** in North and South Kivu is working for the multiplication and distribution of cassava cuttings. It is relying on relay structures in order to carry out the multiplication and distribution of cuttings. Where there is no relay structure, the project is relying on farmers-producers associations which the project itself is training on the multiplication of cuttings and management of wood parks. FAO is providing the starting plantation materials and an amount of \$250.00 to cover the expenses incurred from the tilling of the land to the harvest of cuttings. Upon the harvest, 40% of cuttings and tuberos go to the relay structures or farmers association. The remaining 60% are recuperated by FAO to be distributed to other structures or associations. FAO currently has 8,000,000 linear meters of cassava cuttings in North and South Kivu for the September 2006 season. For the whole of DRC, FAO has multiplied and distributed 83,000,000 linear meters of cassava cuttings.

**The USAID project implemented by SECID/IITA** has identified 10 new structures of which 8 are found in North Kivu and 2 in Maniema. These structures are helping a total of 37 community associations. SECID approach consists in identifying structures or community associations. These associations in turn identify the locations/fields where they will work as a group. SECID does not give money for field works (tilling). Upon the harvest, farmers take for themselves all the harvest which they will use to plant in their own private/production fields. SECID buys from farmers a small quantity of the cuttings which it needs for project expansion in other communities. As it is the case for FAO, the initial cuttings are provided by SECID but in a small quantity, more-so as the farmers' fields are also small in size. SECID has in eastern DRC (Kisangani and North Kivu) for the October 2006 campaign, 245,700 linear meters of high altitude cassava cuttings and 644,400 linear meters of low altitude cassava cuttings. SECID has multiplied and distributed a total of 80,000,000 linear meters of cassava cuttings throughout the entire country.

Beside its resources, the Mulungu IITA/INERA, the Bukavu Caritas Development, all in South Kivu, have 5,000 and 53,000 linear meters of cuttings respectively for the September 2006 agricultural campaign.

**The World Bank Project implemented by BCECO** has also been involved in the multiplication and distribution of healthy cassava cuttings since 2002. The approach is similar to that utilized by FAO. Up to date, project activities have been focalized on western DRC. The 2005 target quantity

aimed at 18,853,000 linear meters of cassava cuttings. But the actual number in 2005 is 12,352,500 linear meters of cuttings.

The impacts of all of these multiplication and distribution activities are not as yet felt. According to a survey conducted by the Ministry of Agriculture, the country total need for cassava cuttings is estimated at 3 billion linear meters. To date, the total amount of cassava cuttings multiplied and distributed by all project merged is about 175,410,500 linear meters, which represents <math>1/10^{th}</math> of total needs.

True it is that multiplication program at the level of each project have worked well as evidenced by the availability of cuttings. However, the distribution of cuttings did not work just as well owing to different approaches used at the level of each project.

For the C3P project, multiplication activities for cuttings will be conducted as far as can be at each site (village) near the beneficiaries. Then will follow the tertiary multiplication, the primary one having been done at the level of Mulungu INERA and the secondary done by FAO producers. Sub-grants provided to CRS contracting partners will be used to cover the production costs for the cuttings. Distribution will follow a classical pattern or will be done through the use of 'voucher'. If the partner has used a community farm with farmers to achieve the multiplication, upon the harvest, each farmer will recuperate 500 linear meters of cuttings in order to plant them in their own field. If the farm has been established by the partner itself, upon the harvest, cuttings will be distributed to the beneficiaries. In the case producers have been used to achieve the multiplication, upon the harvest, cuttings will be distributed to the beneficiaries with the use of vouchers. Therefore, producers will have money to continue establishing multiplication farms. It is this system that the C3P project intends to encourage so as to perpetuate the project activities even beyond its lifetime. Within this system, losses due to transport will be minimized as multiplication will be carried out in sites, not far from the beneficiaries.

### 3.3. Banana:

Following the example of cassava, banana plays a key role for the food security of North Kivu HHs. It is the basic food for the population and is consumed in various ways: as a fruit for cooking (the sweet type), as a dessert (ripe banana), as a local drink (banana juice and banana wine), banana wheat (Nchimba) which is very nourishing and recommended for diabetes patients, and elderly and for babies.

Comment [M11]: Do you mean banana flour ?

The BXW appeared in the North Kivu province since 2001, more specifically in the territory of Masisi, collectivity of Bashali, locality of Kitchaga, on the Bwere hills.

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Upon being discovered in 2001, the disease spread over a radius of 5 km. The situation of its propagation as in May 2006 shows that the disease has spread over a radius of 50 km, Kitchanga being considered as the epicenter of the disease.

Therefore, the disease has affected the collectivity of Bashali and is currently affecting the collectivity of Oslo in the territory of Masisi and the collectivity of Bwito in the Rutshuru territory.

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Unlike for cassava, research has not as yet developed BXW resistant varieties. The impact of the disease is hence very negative on the socio economic life of the population. The banana production has collapsed from 20 tons per ha per year to zero ton per ha per year (source: Provincial Inspectorate of the Ministry of Agriculture).

Expected revenues fell from \$1600 per ha per year to \$0 per ha per year (source: idem)

#### Problems currently facing the North Kivu population mainly include

- The lack of BXW resistant varieties,
- Insufficiency of training and sensibilisation for farmers

- Ignorance of BXW control and prevention measures,
- The lack of knowledge on the identification and management of the disease,

In order to address these problems and try to control the BWX disease, FAO/Goma in collaboration with the Provincial Inspectorate of the Ministry of Agriculture intervened in 2004 by destroying sick plants to stop the spread of the disease. Sixty ha have hence been uprooted in Bwerere.

They have been replaced by other **crops**. Forty ha out of sixty have been exploited by cultivating maize, beans, sweet potatoes and cassava in stead of the sick banana trees.

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In May 2006, an attempt, inspired from the Uganda BXW control experience, has been tried. In fact, as the uprooting of the sick banana trees necessitates a sizable labour, Ugandans have rather used a "Round Up" herbicide in order to effectively destroy the banana trees. The Round Up is injected in the banana tree and **within three weeks** the banana falls to the ground and its stumps decays. This attempt is made over 1 ha for observation. **The Round Up also enables to eliminate the BXW.**

Fifty sensitization workers have been trained on the knowledge, the spread mode and prevention as well as the control of BXW (quarantine of banana products and materials, the disinfection of agriculture **tools** prior to their uses, the sensitization of the population) and 16 agronomists have been trained on the use of the Round Up herbicide.

Comment [M12]: I suggest to avoid herbicide use. The most potent herbicide is 2,4D, it acts quickly, but it is thought to have adverse effects on environment and is likely not to be approved by the agency funding C3P.

Comment [M13]: This is not proven.

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Comment [M14]: ?

Right now, it is still too early to give a precise assessment of the BXW control activities currently being undertaken. Nevertheless, some lessons may be drawn **anticipatively**. FAO Goma declares that round up herbicide is not effective in the Goma conditions, banana does not **fall after 3 weeks** as planned so the round up herbicide becomes ineffective. The uprooting activity: this activity necessitates a sizable amount of labor and stirs the opposition of villagers to uproot the banana trees.

Comment [M15]: This is true. Round up acts slowly, it is 2,4 D that acts quickly.

In the C3P project, CRS and its contractors will use synergy with partners already on the ground such as FAO, the Graden Catholic University, and the Provincial Inspectorate of the Ministry of Agriculture etc. For the activities **on the ground**, it will **take** account that there are 4 zones in infected area. The intervention strategies will **take** account of different infestation zones.

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**Zone 1: Highly infected by the BXW (> 10%):** Collectivities of Bashali, Oso and Bwito,

**Zone 2: Partly infected by the BXW (<10 %):** Idem zone 1,

**Zone 3: Healthy zone but located closely to the infected and threatened region in short term** (other locations in the territories of Masisi and Rutshuru).

**Zone 4: Healthy zone threatened in medium term** (The whole Province of North Kivu and northern parts of South Kivu Province).

Zone 1 and 2 are considered to be **CRISIS ZONES** in which the mechanical destruction of banana plants, sensitization, the substitution of banana by other cultures and control over the disease will be used as appropriate intervention strategies.

In zone 3, a great sensitization of the population on disease prevention measures will be used as intervention strategies.

Finally, in zone 4, the sensitization of the population shall be conducted. It is in this zone that tolerant varieties that have **escaped the disease** will be identified and used for multiplication.

Comment [M16]: Will it be possible for C3P to intervene in all zones given the level of funds available ? I would suggest to focus on one zone and aim for maximum impact there, may be at the frontline. Please see comment and table inserted above on various possible responses.

With regard to uprooting, the C3P project intends to employ familial labor by providing some monetary incentive in order to avoid the costs of a labor permanently employed by the project. The project will attempt to ensure revenue and food by substituting to banana other livelihood cultures such as beans, maize, sweet potatoes and cassava. As there does not exist any BXW resistant variety in the province, the C3P project will encourage the use of healthy local varieties from non infected zones for multiplication and distribution to villagers **who may wish to replant bananas. All suckers disseminated will be as part of package with training on how to avoid infections that may arise later through tools or insects.**

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## IV. TARGET AREA AND PARTNER CRITERIA

### 4.1. Geo targeting

The DRC C3P project will work in the three provinces (North Kivu, South Kivu and Maniema) in eastern DRC. The choice of these provinces is motivated by the fact that they are post conflict zones, they share borders with the rest of the sub-region, they have a high prevalence of the disease but with a deficit of intervention in terms of resistant varieties despite the presence of partners and their ability to implement the project, and they have high population density.

Although food security surveys are not as yet conducted, C3P activities will be not fully cover each province. Activities will be focalized only to the Ruzizi flatland, Fizi, Mwenga, Kavumu, Murhesa, Katana and Nyangezi for the Province of South Kivu; Rutshuru, Kitchanga, Oso, Bashila, Bobadana, Bwito, Kisharo and Masisi for the Province of North Kivu ; Lukando, the town of Kindu, the town of Kasongo, Kipata and Wamaza for the Province of Maniema, Kalemie, Kongolo and Kabalo for north Katanga.

In these locations, planting materials are available from FAO Goma, INERA Mulungu and Caritas Bukavu. Also, the eastern of DRC has a lot of local and international NGO with a long experience on the multiplication and dissemination of the cassava cuttings.

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**Table 1 : Cassava**

Territoiries	Specific locations of program interventions	Total population of the Territory	Population of program intervention	Estimated Farmers to be served as direct beneficiaries of the CMD program per Location
Walungu	Nyangezi	440.000	80.597	400
Kabare	Kawumu Murhesa	427.000	140.000 270.000	1.500 2.000
Kalehe	Kalehe	416.400	93.089	400
Uvira	Kirungwe Kiringi Lubarika	400.000	17.650 23 290 19.117	1.250 1.715 612
Masisi	Bobadana	554.538		
Rutshuru	Bobadana Bwito Kisharo	551.126	202.618	400
Kailo	Kindu Lokando		221.084 3.000	2.000 500
Kasongo Kabambare	Kipata Wamaza	560.000 392.117	116.809 44.163	400 500
Kalemie Kongolo Kabalo				1.320 1.320 1.320

**Table 2 : Banana**

Territoires	Specific locations of program interventions	Total population of the Territory	Population of location of program intervention	Estimated Farmers to be served as direct beneficiaries of the CMD program per Location
Masisi	Bashali		192.950	800
	Kitchanga Osso	554.538	197.000	800
Rutshuru	Bwito	551.126	202.618	550
Lubero	Batangi	890.346	256.978	1000
Mwenga				1.980

Comment [M18]: Will there be any extra measures/precaution taken to ensure activities are implemented in the areas that are not presently very secure?

Comment [M19]: These numbers are low especially considering many more farmers will be reached through participatory training and through mass media.

#### 4.2. Partner criteria

The C3P project will work with NGO (local and international) whom their proposals have been approved for a sub-grant by RGC through CCU.

These contractors partners should be well established in the eastern of the DRC, they should have a qualified staff which has been working with local communities in the multiplication and distribution of healthy cuttings. Most of these partners should have benefited from grants from other EU donors and sister Caritas from Europe and elsewhere. They should also have an acceptable administrative and financial system, a technical service comprising of agronomists and community animators to ensure the follow up and technical supervision of villagers on the ground.

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## V. PROGRAM DESIGN AND STRATEGY

**Goal: Threats to food security caused by agricultural crisis are reduced.**

**SO1: Country stakeholders institutionalize coordinated agricultural disaster response mechanisms.**

**IR1: National responses to CMD and BXW are well coordinated.**

#### Outputs

- CCU is established
- M&E system set up
- Collaborating linkages developed with related projects

**IR2:** GIS technology links data on diseases to data on vulnerability and food insecurity.

**Outputs**

- Database established on status of food security, CMD and BXW prevalence.
- GIS map on food security, risks and vulnerability developed.

**IR3:** Existing institutions carry forward proven methods for coordination and knowledge sharing regarding agricultural disasters.

**Outputs**

- Collaborative framework for disaster responses established with a network of existing institutions
- Component of agricultural disasters response approach identified
- Plan for dissemination of early warning information developed

**S02: Farmers employ effective measures to control CMD and BXW**

**IR1:** Effective control of CMD is achieved through multiplication and distribution of CMD resistant varieties and promotion of improved management practices.

**Outputs**

- Locations and quantities of CMD resistant plantation materials are determined.
- At least 105 ha of CMD resistant varieties are planted during the project lifetime with 2,100,000 linear meters of cuttings produced before the 2007 agricultural season.
- Quality control measures are put in place at the level of wood parks.
- Voucher approach for the distribution of cassava improved varieties is introduced.
- An evaluation on plantation materials management system is introduced.
- Stakeholders are organized for the putting in place of a National chain for the multiplication and distribution of good quality and CMD resistant plantation materials.
- Training materials and modules on the management of CMD are developed.
- Team of researchers and animators are formed at regional level and teams of supervisors of villagers are formed at country level on the rapid multiplication and CMD management.
- Planting materials are adopted by villagers.

The strategy put in place by the C3P project to achieve these results is the multiplication and distribution of CMD resistant varieties combined with activities aimed at the promotion of appropriate agricultural practices and the supervision of farmers on the ground.

**Specific Activities to be conducted in order to reach these results include:**

Identification of producers: contracting partners are working with local associations, community groupings and private companies for the multiplication and distribution of cuttings at secondary level. These producers are identified by partners, they sign a partnership agreement with them and cuttings are provided by partners.

Choice of the location: This activity will be conducted by the producers under INERA supervision or that of experts from the National Service of Seeds (SENASA).

Trainings: The training will be conducted at three levels, a) one training at regional level which will bring together research experts, NGOs (FHI) technicians and CRS staff taking part in the C3P project, b) technicians trained at regional level will train, in turn, supervisors at country level and, c) The latter (supervisors) will train villagers on techniques of rapid multiplication and CMD management.

Installation wood parks: This activity comprises of a series of operations starting from plowing, harrowing, the staking out and the sowing. The activity will always be supported by SENASA or INERA experts.

Health inspection and care: health inspection and regular monitoring on the physical status of cassava the level of the wood parks. This inspection aims at removing any cassava plant showing the symptoms of the mosaic disease and replacing it by a healthy cutting. The care also consists of a series of operations which

are *inter alia* hoeing, earthing up etc. At least three rounds of care will be required for the first before the first harvest.

Harvest of cuttings: This activity consists in cutting ripened cassava plants which will serve as plantation materials.

Distribution of cuttings: two scenarios are envisaged for this activity: where possible, the voucher approach shall be used consisting in giving vouchers to beneficiaries in order for them to buy cuttings. Where the voucher approach is not feasible, we shall use the classical distribution method.

Meetings with stakeholders: These quarterly meetings will aim at putting in place a National system for the multiplication and distribution of healthy and CMD resistant plantation materials

Publicity of new varieties: In order to promote improved varieties, an intense publicity will be conducted through the mass media, community radio stations, TV where possible, newspapers, pamphlets, demonstration parcels, open days etc.

Sensitization of villagers: conducted by community animators, this activity will aim at persuading farmers to use the package of appropriate CMD control techniques.

**IR2:** Effective control of BXW is achieved through promotion of appropriate agricultural practices and use of wilt-escaping varieties.

### Outputs

- Locations and quantities of BXW resistant varieties are identified
- 50 popularizers and 500 farmers are trained on the BXW management by the DRC team of trainers.
- At least 300 farmers received and planted 40 stumps per farmer.
- Publicity on banana varieties and on source of quality plantation materials made through the media.
- Training modules and tools on BXW management developed.
- Quarterly reports are produced.
- Community fields are implanted
- Private fields are implanted.

The strategy put in place in order to reach these results consists in the promotion of appropriate agricultural techniques for the management of the disease through the multiplication and distribution of wilt-escaping varieties.

### **Activities will include :**

- Identification of locations and availability of banana stumps
- Trainings
- Destruction of sick banana plants
- Purchase of banana plants
- Installation of multiplication fields
- Sensitization of farmers on the disease prevention and control
- Surveillance

### **Key Assumptions and Risks**

Key risks that may hamper the implementation of this project consist of "insecurity". All rebellion wars that have paralysed the country always started in eastern DRC. The country is going through a fragile period of elections. It is critical that government must guarantee the security of persons and their assets in eastern DRC.

**Comment [M20]:** Please see comments earlier above. Training of farmers and raising awareness has to be the priority. The action to be taken are to vary depending on phase of epidemic. Please see some suggested responses in table attached.

**Comment [M21]:** This is not the focus. Appropriate agricultural techniques will be transferred to farmers through participatory training, public awareness and demonstration of technologies

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**Comment [M22]:** Why purchase ?

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**Comment [M23]:** Is this likely to be the case ?

The second assumption that may disturb the reaching of these results, with regard to the BXW is the population reluctance to uproot infected banana plants. This may be gotten around by an awareness-raising sensitization of the population persuading it to use substitution cultures.

## VI. IMPLEMENTATION CALENDAR (See Excel Worksheet)

## VII. MONITORING & EVALUATION

Intermediate Results	Key Indicators	Frequency of collection ?	Whom responsible for the collection?
A National response to CMD and BXW is well coordinated	Number of meeting held and reports produced	Four times	CRS and Partners
GIS technology links data on diseases to data on vulnerability and food insecurity.	% of under-five children showing signs of malnutrition	Two food security surveys, at the beginning and at the end of the project	IITA GIS team
Existing institutions carry forward proven methods for coordination and knowledge sharing regarding agricultural disasters.	Number of technical meetings held by DRC CCU and others agricultural institutions.	Four times	CRS
Effective control of CMD is achieved through multiplication and distribution of CMD resistant varieties and promotion of improved management practices.	% of farmers that planted CMD resistant cassava cuttings	Four times	Agronomists from partners
	% of farmers who are implementing the package of improved agricultural techniques in their fields.	Four times	Agronomists from partners
Effective control of BXW is achieved through promotion of improved disease management techniques and through multiplication and distribution of wilt-escaping varieties.	% of farmers who planted BXW resistant banana stumps	Four times	Agronomists from partners
	% of farmers who are implementing the package of improved agricultural techniques in their fields.	Four times	Agronomists from partners

**Comment [M24]:** An important indicator would be the number of farmers and stakeholders trained in BXW recognition and control. Another indicator could be number of farmers assisted with substitution crops, e.g. cassava, maize, beans, and those supported to remove infected mats. There has to be reduced focus on dissemination of banana planting materials.

## VIII. BUDGET (See detailed Worksheet)

### Summarized Budget

#### IR 1. OS 2.

Cassava	1st Year	2 <sup>nd</sup> Year	Total
Sensitization and Training	\$ 10.000	\$30.000	\$ 40.000
Purchase of Cassava cuttings	\$ 18.000	\$6.000	\$ 24.000
Purchase of tools	\$ 18.000	\$6.000	\$ 24.000
Transport of cuttings	\$ 26.000	10.000	\$ 36 000
Distribution of cuttings	\$ 29.466	-	\$ 29.466
Multiplication of cuttings	\$ 72.000	\$24.000	\$ 96.000
<b>Total</b>	<b>\$173.466</b>	<b>\$76.000</b>	<b>\$249.466</b>

**IR 2. OS 2.**

Banana	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	Total
Sensitization and Training	\$ 4.475	\$ 13.425	\$ 17.900
Purchase of banana stumps	\$ 6.000	18.000	\$ 24.000
Purchase of tools	\$ 10.000	\$	\$ 10.000
Transport of banana stumps	\$ 3.750	11.250	\$ 15.000
Mechanical destruction of plants	\$ 34.500	\$ 11.500-	\$ 46.000
Multiplication of stumps	\$ 9.000	\$27.000	\$ 36.000
<b>Total</b>	<b>\$67.420</b>	<b>\$81.420</b>	<b>\$148.900</b>

Cassava & Banana	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	Total
Country conference	\$7.500	\$2.500	\$10.000
Office operating cost	\$5.000	\$15.000	\$20.000
Local travel & vehicle operation	\$9.250	\$27.750	\$37.000
<b>Total</b>	<b>\$21.750</b>	<b>\$45.250</b>	<b>\$67.000</b>

**Comment [M25]:** The budget lines for training is what needs to be drastically increased for effective BXW management. Th lines highlighted yellow are dealing with dissemination of planting material which needs to be drastically reduced or entirely eliminated. There should be no need to allocate large amounts for purchasing stumps. More preferable probably if allocations were to support provision of substitution crops e.g. maize, cassava etc. How will mechanical destruction of infected stools be organized ? this activity is taking a disproportionate budget which could be reallocated for preventive activities. I would suggest consider some more of the responses in the table inserted earlier on above. In conclusion : a large focus and proportion of the banana budget has to be on training and raising awareness on BXW and its management.

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Additional comment

- C3P in DR Congo needs to carefully determine the areas where the project will be implemented. The next thing will be to determine the phase of the epidemic (pre-epidemic, epidemic or post-epidemic). Specific responses need to be considered based on epidemic phase.
- The major focus has to be on training farmers/stakeholders to recognise disease and what to do to manage it. This is what will be most important for effective management of the disease. More funds have been proposed to support training of trainers through one workshop in-country as well as supporting training at community level. These funds will be with regional C3P office. More info on this from C3P COP.
- Provision of planting materials should consider substitution crops, rather than banana suckers. If banana suckers will be provided, which should take minimal focus, this work plan should show that the suckers will be provided as a package

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together with training farmers on what to do to avoid re-infection of replanted suckers.

- DRC faces unique challenges due to insecurity, identified as one of the risks in the workplan. The workplan could be improved by an indication of awareness of this risk and what will be done to ensure success of C3P BXW work while insecurity prevails.

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