

# Institute of Agricultural Research for Development (IRAD)

## Regional Biological control & Applied Microbiological Laboratory

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# *Mission & Strategy*

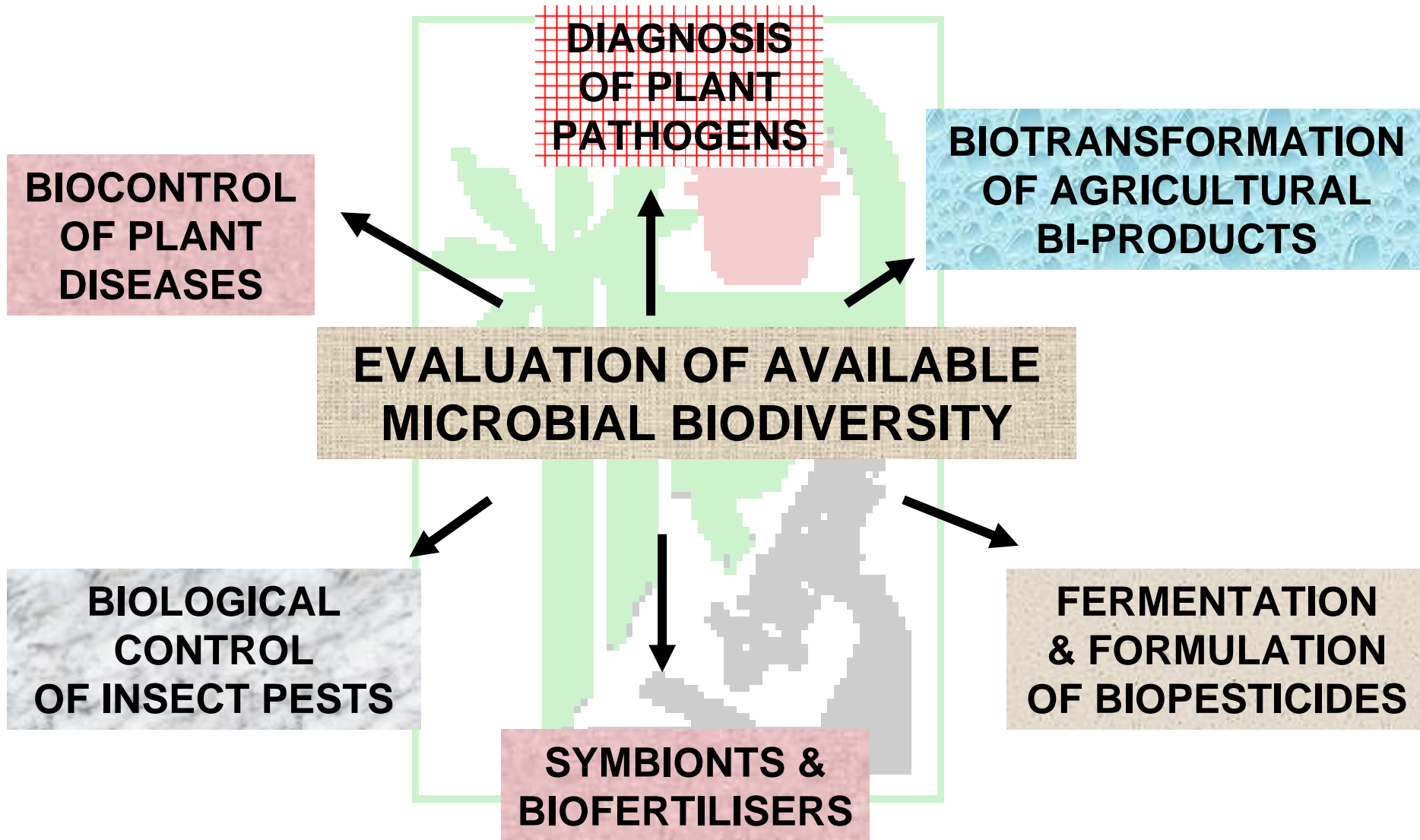
- ❑ Assess the natural microbial biodiversity available in Central Africa & promote the use of beneficial microorganisms to develop sustainable pest management & low-cost biological fertilisers.
- ❑ Assess the interactions between chemical pesticides & beneficial microorganisms, evaluate their impact on ecosystems when used by growers.

❑ Develop effective IPM techniques with beneficial microorganisms in Central & Western Africa: with a view to enhancing Good Agricultural Practice (GAP).

❑ Serve as a platform for encouraging research & development of microbial organisms by exchanging of information, biological material & expertise between countries in Central & Western Africa



# *action plan*



# Equipments



**Vortex**



**Autoclaves**



**Shaker & Weighing balance**



**Laminar flow hood**



**Water distillation system**



**Trinocular stereo microscope**



**Mycoharvester**

# Results

An extensive fungal endophyte collection: including more than 300 isolates taken from cocoa.

More than 500 characterized isolates of *Trichoderma* spp.

Discovery of biological control agents (*Trichoderma* spp) effective against black pod (*P.megakarya*) of cocoa (*T.cacao*) & *P.myriotillum* on cocoyam (*Xanthosoma sagitifolium*).



Developed the first formulation of the biological control agent *T.asperellum* against *P.megakarya* in cocoa

Discovered antagonistic potential of isolates of *Beauveria sp* on corn stem borers (*Busseola fusca*).



# *Scientific Potential*

5 Technicians

**RESEARCHERS**

**National staff**

4 Phytopathologists

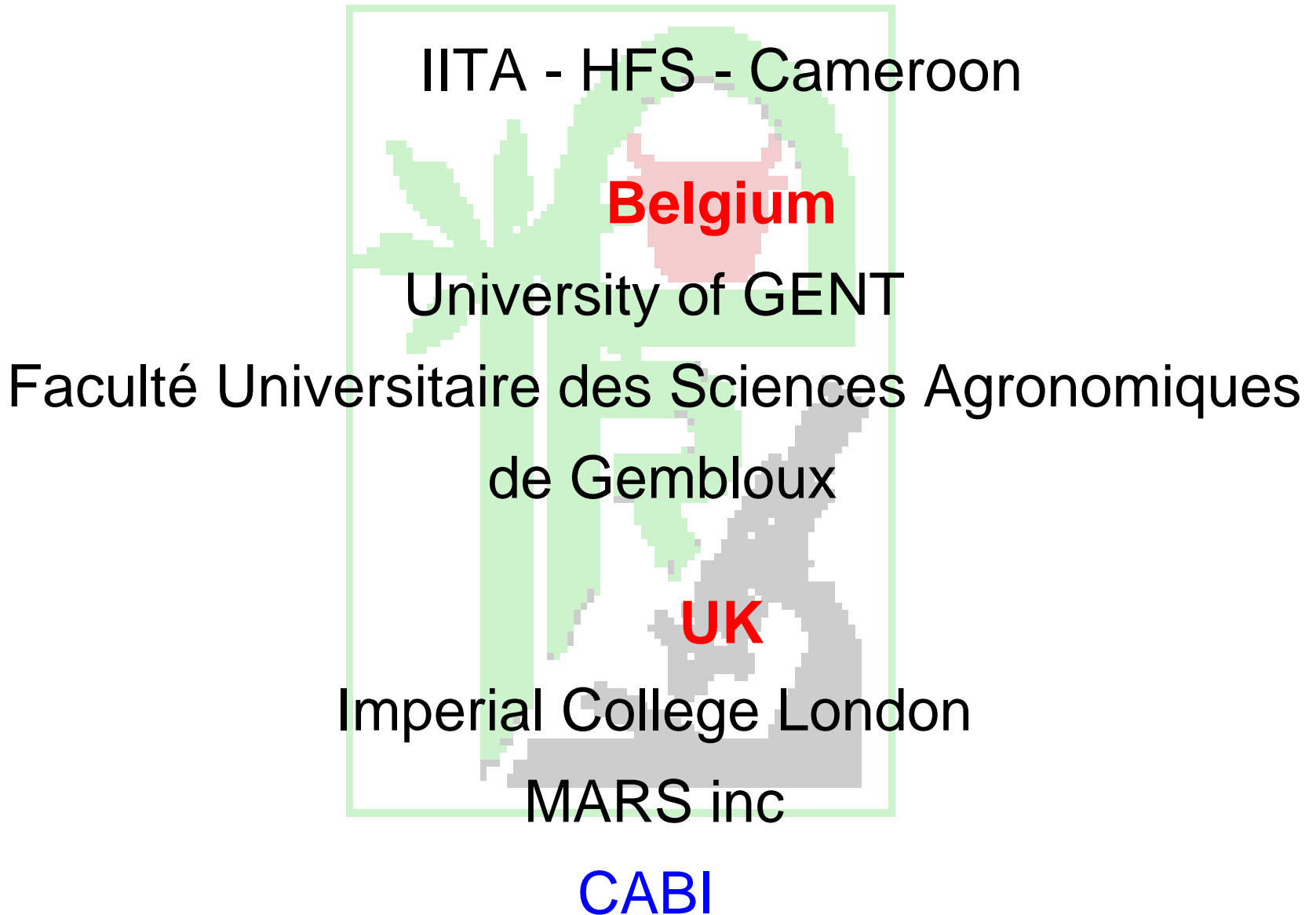
Roots&tubers, fruts trees, vegetables, perenial crops

4 Microbiologists

3 Entomologists

5 University Lecturers

# International collaboration



**France**

EBCL ARS – CIRAD

**USA**

USDA ARS/ MARS inc

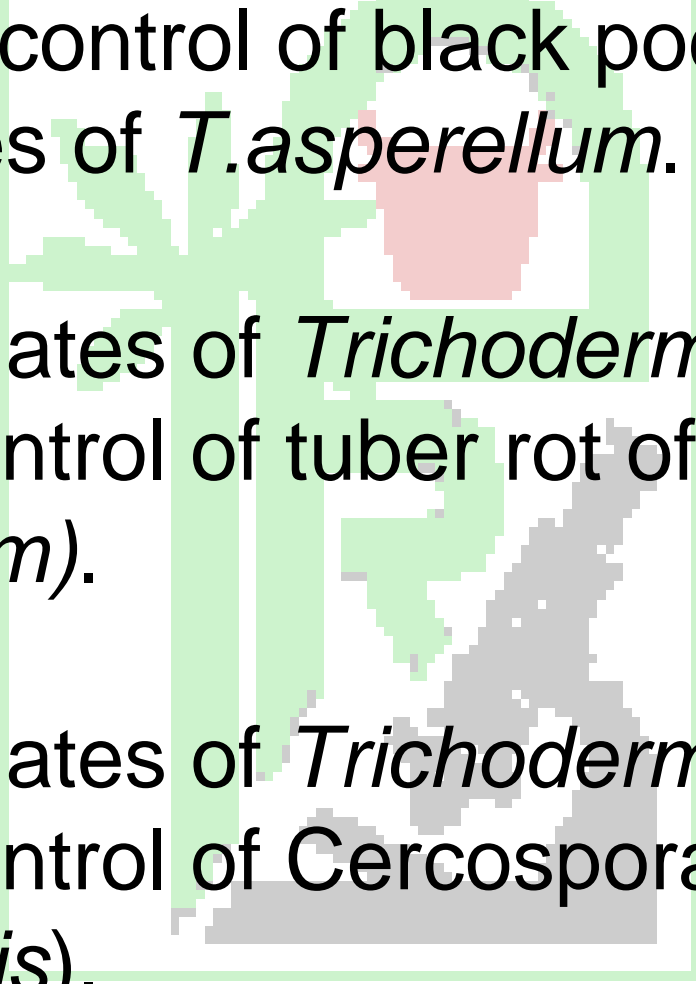
**Associated National Agricultural Research  
Organizations in Africa**

**CRIN** (Cocoa Research Institute of Nigeria).

**CRIG** (Cocoa Research Institute of Ghana).

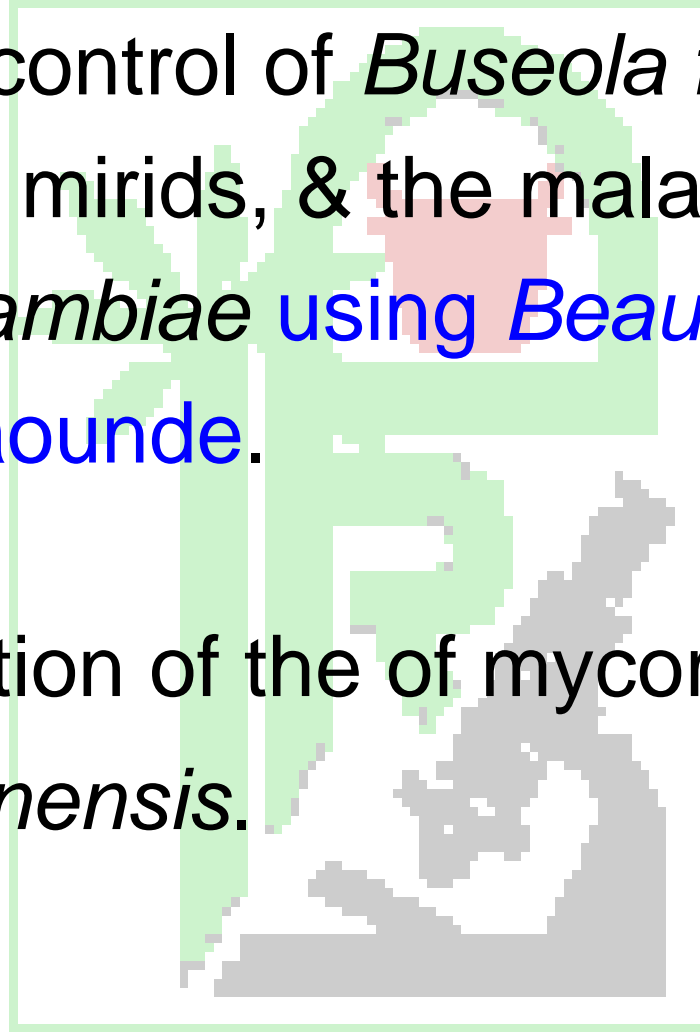
**CNRA** (Centre National de Recherche  
Agronomique- Cote d'Ivoire).

# Some research in progress

- ❖ Biological control of black pod: *P.megakarya* using isolates of *T.asperellum*.
  - ❖ Use of isolates of *Trichoderma sp* for biological control of tuber rot of cocoyam (*P.myriotillum*).
  - ❖ Use of isolates of *Trichoderma sp* for biological control of *Cercospora* in citrus fruits (*P.angolensis*).
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# Some research in progress

- ❖ Biological control of *Buseola fusca* (corn stem borer), cocoa mirids, & the malaria vector *Anopheles gambiae* using *Beauveria bassiana* isolated in Yaounde.
- ❖ Determination of the of mycorrhizal status of *Irvingia gabonensis*.



# *Diagnostic requirements & priorities*

## **Capacity building**

**Training on techniques used in plant pathogen diagnosis**

- Basics steps** (field data collection, symptoms description & interpretation of their occurring circumstances)
- Lab techniques for plant pathogen diagnosis**
  - Biological methods** ( Koch postulate)
  - Serological methods** (ELISA)
  - Molecular methods** (PCR, RT-PCR)

# *Diagnostic requirements & priorities*

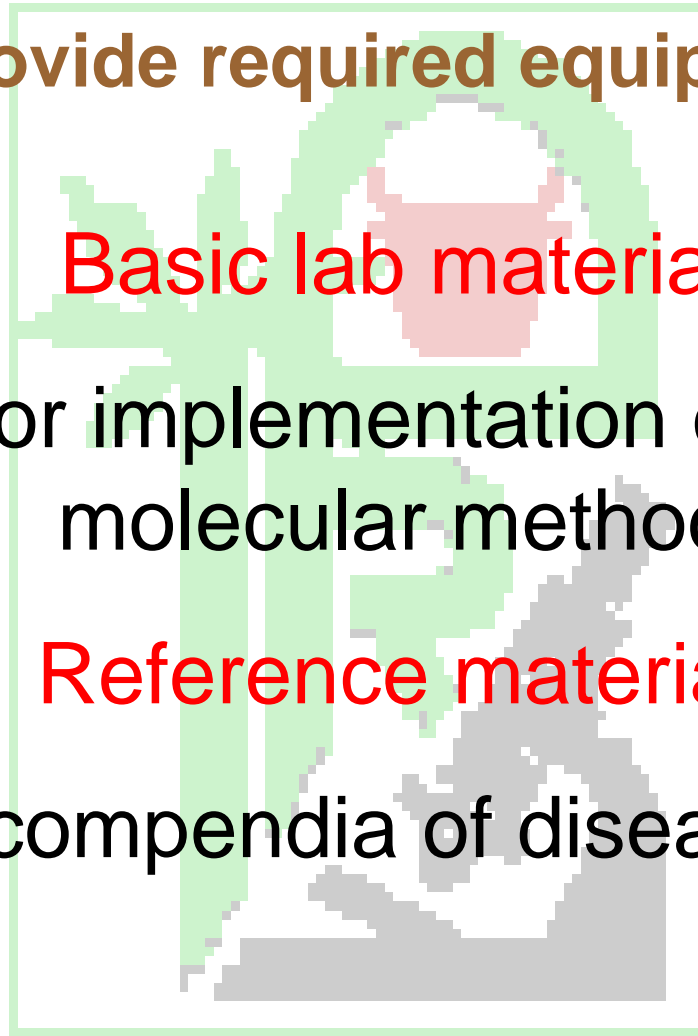
**Provide required equipments**

**Basic lab materials**

Especially for implementation of serological & molecular methods

**Reference materials**

(compendia of diseases).





# ***Priorities***

Perennial crops (all fruit trees)

Legums & vegetables (tomato, potato etc...)

Annual crops (banana, cassava, cereal ...)