

Integrated Pest and Disease Management In Major Agroecosystems



PROJECT-PE1 - Annual Report 2004

System – wide Programme on Integrated Pest Management



CONTENTS

SUMMARY (260 kb)

CASSAVA ENTOMOLOGY (1069 kb; 973 kb; 759 kb; 790 kb; 1152 kb)

- Activity 1. Arthropod taxonomic activities on CIAT commodity crops
- Activity 2. Chrysopidae species associated with arthropod pests of cassava (*Manihot esculenta* Crantz)
- Activity 3. Laboratory studies on the biology of *Ceraeochrysa claveri* (Neuroptera: Chrysopidae) feeding on two prey hosts
- Activity 4. Intrinsic rate of increase of Biotype “B” *Bemisia tabaci* on two African cassava genotypes MNg 2 and MNg 11
- Activity 5. Studies on the biology and behavior of biotype “B” of *Bemisia tabaci* on a wild *Manihot* sp, *M. flabellifolia*
- Activity 6. Determining the plant metabolites involved in whitefly (*Aleurotrachelus socialis*) resistant cassava varieties, MEcu 64, MEcu 72 and MPer 334
- Activity 7. The identification and evaluation of homopteran species as possible vectors of cassava Frogskin Disease (CFSD).
- Activity 8. Methodologies developed for laboratory rearing of *Scaphytopious marginelineatus* (Stal) and *Empoasca bispinata* Davidson & Delong on cassava
- Activity 9. The biology and morphology of *Scaphytopius* (Convelinus) *marginelineatus* feeding on cassava leaves
- Activity 10. Transmission of cassava frogskin disease; evaluation of homopteran species as vectors
- Activity 11. Field evaluation and identification of homopteran species as possible vectors of Cassava Frogskin Disease
- Activity 12. Testing of transgenic cassava (Africa genotype TMS 60444) plants displaying indications of resistance to the cassava hornworm, *Erinnyis ello*
- Activity 13. Toxicity of *Jatropha gossypifolia* leaf extracts on three Lepidoptera species
- Activity 14. Publications, book chapters, posters, conferences, training and consultancies

Evaluating the Impact of Biotechnology on Biodiversity: Effect of Transgenic Maize on Non-Target Soil Organisms (492 kb; 1044 kb)

- Activity 1. Response of Non-Target Soil Arthropods to Chlorpyrifos in Colombian Maize
- Activity 2. Effect of transgenic cotton [Bollgard® Bt CryIA(c)] on Non-Target Soil Arthropods in the Cauca Valley of Colombia
- Activity 3. Taxonomy of the Springtails (Collembola) Associated with Cotton and Maize of the Cauca Valley, Colombia
- Activity 4. Publications, posters, conferences, training and consultancies

SOIL PESTS – CASSAVA AND OTHER CROPS (685 kb)

- Activity 1. Identification of key pest species in three regions of Antioquia (Colombia)
- Activity 2. Development time studies on key pest species under controlled conditions
- Activity 3. Search for natural enemies of in Northern and Eastern Antioquia
- Activity 4. Search for natural enemies of Whitegrubs in the Colombian departments of Cauca, Quindío, Risaralda, and Cundinamarca
- Activity 5. Search for entomopathogenic nematodes in Colombia and Panama: First description of *Steinernema kraussei* as native entomopathogenic nematode in Colombia
- Activity 6. Efficiency of entomopathogenic nematodes for whitegrubs control under laboratory conditions
- Activity 7. Infection and mortality rate of *S. scarabaei* vs. *Phyllophaga* sp.
- Activity 8. Preliminary studies on pathogenicity of entomopathogenic fungi against *Phyllophaga menetriesi*
- Activity 9. Preliminary studies on pathogenicity of *Bacillus popilliae* against *Phyllophaga menetriesi*

- Activity 10. Control of *Cyrtomenus bergi* using entomopathogenic nematodes
- Activity 11. Evaluation of two strains of entomopathogenic nematodes as natural enemies of *Cyrtomenus bergi* under greenhouse conditions
- Activity 12. Behavior of *Cyrtomenus bergi* as response to the presence of entomopathogenic fungi by means of radiography
- Activity 13. Production of *Galleria mellonella* within 44 days for studies with entomopathogens
- Activity 14. Publications, Conferences, Workshops, Training, Students

BEAN ENTOMOLOGY (271 kb)

- Activity 1. Developing germplasm with resistance to pests: Bruchids, pod weevil, leafhopper, and *Thrips palmi*
- Activity 2. Publications, book chapters, workshops, conferences and training

FORAGE ENTOMOLOGY (303 kb)

- Activity 1. Screening *Brachiaria* genotypes for spittlebug resistance
- Activity 2. Field screening of *Brachiaria* accessions and hybrids for resistance to four spittlebug species
- Activity 3. Identify host mechanisms for spittlebug resistance in *Brachiaria*
- Activity 4. Publications, Workshop and Conferences, Awards

AFRICA: BEAN ENTOMOLOGY (81 kb)

- Activity 1. Bean IPM Promotion in eastern, central and southern Africa

VIROLOGY (457 kb)

- Activity 1. Resistance for cassava frogskin disease is widespread in cassava germplasm.
- Activity 2. The association a reolike virus in *Manihot esculenta* affected with cassava frogskin disease

CASSAVA AND TROPICAL FRUIT PATHOLOGY (1171 kb; 1483 kb)

- Activity 1. DNA sequence analysis of specific regions of phytoplasma, *Glomerella*, *Sphaceloma*, *Ralstonia*, *Phytophthora*, *Pythium*, and cassava.
- Activity 2. Sample collection and isolation of the bacterium *Ralstonia solanacearum* obtained from plantain, its conservation, identification by PCR, DNA sequencing, and determination of races, biovars, and pathogenicity
- Activity 3. DNA sequence analysis of *Ralstonia solanacearum* obtained from banana, *Heliconia* sp., eggplant, potato, tomato, tobacco, and Indian shot (*Canna indica* L.)
- Activity 4. Isolation of *Fusarium oxysporum* f. sp. *cubense*, causal agent of Panama disease of banana, and evaluating its pathogenicity
- Activity 5. DNA sequence analysis of the 16S rRNA region of phytoplasmas obtained from oil palm, insect vectors, and weeds in Casanare, Colombia
- Activity 6. Collecting oomycetes and bacteria from oil palm, and evaluating their pathogenicity
- Activity 7. DNA sequence analysis of the ITS region of oomycete species obtained from oil palm
- Activity 8. Detecting phytoplasmas in cassava affected by frogskin disease (FSD), using nested PCR
- Activity 9. Identifying phytoplasmas by sequencing PCR products
- Activity 10. Designing specific primers for high-specificity detection of a phytoplasma associated with frogskin disease (FSD) of cassava
- Activity 11. Detecting phytoplasmas by electron microscopy
- Activity 12. The detection and molecular characterization of a phytoplasma associated with Machorreo of Lulo (*Solanum quitoense*) in Colombia
- Activity 13. Evaluating the effects of various control practices on the incidence and severity of *Phytophthora* root rots under field conditions in Quindío, Colombia

- Activity 14. Developing and validating sustainable methods of preventing and controlling FSD and SED
- Activity 15. Greenhouse and on-farm evaluations of the effects of amendments, cover crops, organic fertilizer, and green manure on *Ralstonia solanacearum*, with practices based on chemicals included as controls
- Activity 16. Evaluating the resistance of banana FHIA 17 to *Ralstonia solanacearum*
- Activity 17. Diagnosing plant diseases and technical assistance
- Activity 18. Training researchers from Latin America, the Caribbean, and Africa on managing cassava diseases and research technology

TROPICAL FORAGE PATHOLOGY (410 kb)

- Activity 1. Antifungal proteins in tropical forages
- Activity 2. Association of bacteria with *Brachiaria* genotypes
- Activity 3. Publications, book chapters, conferences and workshops

BEAN PATHOLOGY (357 kb)

- Activity 1. Characterizing and monitoring pathogen and insect diversity
- Activity 2. A specific molecular assay for Detecting and Differentiating *Xanthomonas campestris* pv. *phaseoli* and *Xanthomonas campestris* pv. *phaseoli* var. *fuscans*
- Activity 3. Pathogenic characterization of *Colletotrichum lindemuthianum* isolates from different regions of Colombia
- Activity 4. Developing integrated pest management components
- Activity 5. In vitro inhibition of *Colletotrichum lindemuthianum* by three potential biocontrol bacterial species (*Paenibacillus polymixa*, *Bacillus subtilis* and *Gluconobacter* spp.)
- Activity 6. Integrated Soil Fertility/Pest & Disease Management approaches to address root-rot problems in common beans
- Activity 7. Publications, book chapters, workshops

RICE PATHOLOGY (216 kb)

- Activity 1. Blast (*Pyricularia grisea*) and sheath blight (*Rhizoctonia solani*) diseases on rice
- Activity 2. Selection of rice blast resistance sources to different genetic lineages of the blast pathogen. Development of a blast nursery with potential sources of resistance
- Activity 3. Identification of molecular markers associated with the durable blast resistance genes in the commercial rice cultivar Oryzica Llanos 5
- Activity 4. Identification of Resistant Lines to *Rhizoctonia solani* (Sheath Blight) and Development of an Evaluating Methodology
- Activity 5. Characterization of the Genetic Structure of the Fungus *Rhizoctonia solani* Causal Agent of the Sheath Blight Disease of Rice

AFRICA: BEAN PATHOLOGY (662 kb)

- Activity 1. Characterization and distribution of *Pythium* spp associated with bean root rot in East Africa
- Activity 2. Developing integrated pest management components of root rots

The Systemwide Tropical Whitefly IPM Program (1041 kb; 1293 kb; 1521 kb)

- Activity 1. Coordination
- Activity 2. Technical Report: Mesoamerica
- Activity 3. Developing integrated pest management components
- Activity 4. Identification of genomic regions responsible for conferring resistance to whitefly in cassava