FP6
ENDURE
International Conference

Panel Discussion

IPM The Global Challenge:
ENDURE Fosters International Collaboration

IPM in Brazil
Contributions for Collaboration

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IPM in Brazil
Contributions for Collaboration

Part I – Brief Background
EMBRAPA’s structure
Global Agricultural R&D Cooperation
Brazil’s Expectatives to global ARD
Priority to Networking

Part II – Objective Suggestions
Three immediate interests
*Optimize already existing partnerships
*Incomplete list of research themes
*Governance mechanisms
Operational Features

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Brazilian Agricultural Research Corporation –
EMBRAPA - A Public Organization

Embrapa Network for R,D&I

- 41 Research Centres and Services Units
- 3 Virtual Laboratories Abroad (Labex)
- Offices for Technology Transfer:
  - 14 in Brazil and 2 abroad (Africa and Venezuela)

North
- Embrapa Acre
- Embrapa Amazon
- Embrapa Western Amazon
- Embrapa Eastern Amazon
- Embrapa Rondônia
- Embrapa Roraima

Northeast
- Embrapa Mid-North
- Embrapa Tropical Semi-Arid
- Embrapa Coastal Tablelands
- Embrapa Goat and Sheep
- Embrapa Cassava & Tropical Fruits
- Embrapa Cotton
- Embrapa Tropical Agroindustry

Mid-West
- Embrapa Agrienergy
- Embrapa Western Region Agriculture and Livestock
- Embrapa Rice & Beans
- Embrapa Coffee
- Embrapa Cerrados
- Embrapa Beef Cattle
- Embrapa Vegetables
- Embrapa Technological Information
- Embrapa Pantanal
- Embrapa Genetic Resources & Biotechnology
- Embrapa Technology Transfer

Southeast
- Embrapa Agribiology
- Embrapa Food Technology
- Embrapa Dairy Cattle
- Embrapa Agriculture Informatics
- Embrapa Agricultural Instrumentation
- Embrapa Environment
- Embrapa Maize & Sorghum
- Embrapa Satellite Monitoring
- Embrapa Cattle-Southeast
- Embrapa Soils

South
- Embrapa Temperate Agriculture
- Embrapa Forestry
- Embrapa South Animal Husbandry & Sheep
- Embrapa Soybean
- Embrapa Swine and Poultry
- Embrapa Wheat
- Embrapa Grape & Wine

Embrapa International

2500 Researchers
6500 Staff
10200 employees

Notes:
- Embrapa's innovation has 15 patents per million population in 2017
- Innovation activities have almost doubled since 2007
- Based on country data for 2017. Some new country regions are shaded where the criteria is judged likely to be met.
Agricultural R&D System in Brazil

• Ministry of Agriculture, Livestock & Food Supply (MAPA)
  ✓ Brazilian Agricultural Research Corporation (EMBRAPA)
  ✓ Several MAPA’s National Laboratories

• + 17 State-based Public Organizations of Agricultural Research

• + Public Research Institutes, Science & Technology Ministry

• + Public Universities

• + Private Universities

• + Private Companies

~ 5500 researchers in Agriculture
Global Agricultural R&D Cooperation

➢ Hot Topic for Brazil and other Latin American countries
  • Agronomy
    ✓ Ecological intensification
  • Biotechs
    ✓ Omics sciences + Bioinformatics + Plant Breeding
  • Livestock
    ✓ Efficiency of ruminant digestive systems
    ✓ Decreased ecological footprint (pigs, poultry)
    ✓ Bioinformatics and modeling of zoonoses
      ➢ Brucelosis, Tuberculosis, FMD, Blue tongue virus(es)
  ➢ Food Safety
Brazil’s Expectatives to global ARD
(as presented @ FP7’s KBBE InfoDay, Brussels, Set/2010)

• Opportunities
   Act jointly with other countries and institutions
   Actions through already existing institutions
   Promote more and better integration
    ✓ International Fora

• Gaps
   Discussions needed
     Proposition, reviewing, advocating Rules, Legislation
      » National Rights (Biodiversity, knowledge)
      » Intelectual Property
Priority to Networking

- Trustability
- Stimulate multidisciplinary approaches
  - Agricultural projects
    - include social sciences and humanities
- Gender dimension
- Foster capacity building
  - Allow execution of integrated research projects
    - Assays performed in both hemispheres
    - Standardized methodologies, different ecological conditions
    - Complementary research teams
Part II

Objective Suggestions to beyond ENDURE
Three immediate interests

1/3 Optimize already existing partnerships
- INRA + CIRAD +
- BBSRC (Rothamstead Research Institute)
- WUR
- Other
  - Spain
  - Germany
  - Italy
- Being able to contribute to expand ENDURE
  - LabEx Programme, others
EMBRAPA’s Current International Approach
(one example: The LabEx Programme)

www.agropolis.fr/labex
Three immediate interests

• 2/3 An incomplete list of research themes, for later refinement on common interest with the ENDURE network
  – Meetings to happen in the near future
    • Specific themes
    • Designing research proposals
      – Focused
      – Calls already identified
      – symmetrical collaboration
        » Au pair financing
        » Mobility + capacity building + project(s) operational costs
Suggestions for International Collaboration (1)

• Sustainable Intensification
• Development of integrated production systems
  • Grains + fruits
  • fibers, wood, oil plants, nuts, etc
• Development of agroforestry systems
  • Integrated crop-livestock-forest
  • Based on sustainable intensification principles
• Identification and characterization
  • Natural enemies for weeds control
    • Pathogens
    • Pest insects
    • Other weeds (allelopathy)
• Organic matter use
  • Controlling pests
  • Stimulation of natural enemies, antagonisms
• Pests ecology
  • Specially semiochemicals
Agribusiness Sustainable Intensification

No-tillage practices, N2 biological fixation
Integrated Crop-Livestock Intensive Systems

Perennial crop, for example, coconut, palm oil, eucalyptus, fruits, etc

Cross bred Holstein X Zebu, heat tolerant

Improved African Brachiaria grass + potential: N2 fixing + P releasing microbes
Suggestions for International Collaboration (2)

• Mitigating risks for exogenous pests
  • International wood trade
  • Developpement of contingency plans
• IPM for planted forests
  • Biological control using parasitoids and pathogens
• IPM for zero residues
  • Apple
  • Grapes
  • Peaches
  • Strawberry
• Pesticides selectivity
  • Natural enemies preservation
• Biofumigation for pest control
Suggestions for International Collaboration (3)

• Control for invasive exotic weeds
  • Classical biocontrol strategies

• Development of *massal* production techniques of natural enemies’

• Modelling
  • Biocontrol agents’ performance
  • Environmental risks analyses
  • Biological risks analyses

• Rationalizing the use of synthetic chemicals

• Development of phytoprotectors
  • From co or byproducts
  • From solid residues, efluents
  • From biodiversity
Suggestions for International Colaboration (4)

• IPM for OGM cultures
• Development of tools for decision making concerning IPM
  • Specially related to pests sampling + monitoring
• Forage pests studies
  • Ecology
  • Semiochemicals
  • Modelling
  • Control strategies
Suggestions for International Collaboration (5)

• Techniques for pests monitoring
  • Decision making
  • Precision Agriculture

• IPM for extensive plantation areas
  • Grains
  • Perennials
    • Fruits
    • Oil species (Palms, specially)
Three immediate interests (Cont.)

- 2/3 An incomplete list of research themes, for later refinement on common interest with the ENDURE network
  - Meetings to happen in the near future
    - Specific themes
    - Designing research proposals
      - Focused
      - Calls already identified
      - Symmetrical collaboration
        » Au pair financing
        » Mobility + capacity building + project(s) operational costs
Brazilian Capacity Building, CAPES data

301 scholarships Agric Sci

495 Biol Sci
# BR Scholarships in EU and USA

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Three immediate interests

- 3/3 Governance mechanisms for international research networks
  - ENDURE governance experience
    - Promote and / or improve Brazilian research consortia
    - Diffuse mechanisms for technology transfer
    - Adapt training tools to Tropical conditions
      - Brazil + South America
      - Africa
  - Be part of the ENDURE information centre
Operational features

• R&D Dept. (DPD)
  – Integration & Articulation Coordination (CIA/DPD)
  – EMBRAPA’s Management system (SEG)

• LabEx Programme
  – Prospection (Antenna)
  – Helps promoting articulation
    • « Steward »
EMBRAPA’s Current International Approach
(one example: The LabEx Programme)

www.agropolis.fr/labex
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Thank You!
Merci de Votre Attention
Grato pela Atenção