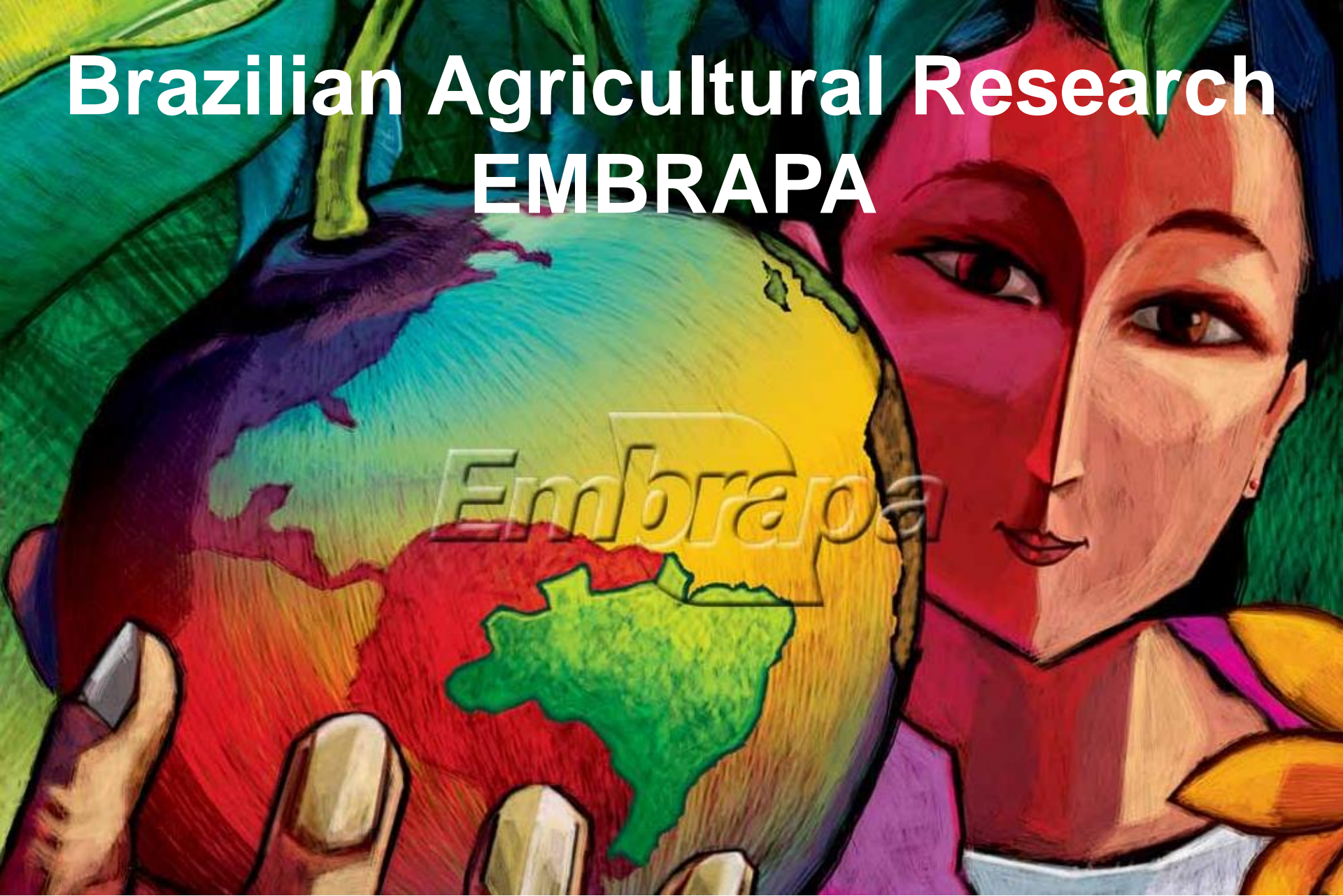


Brazilian Agricultural Research EMBRAPA



Ministério da
Agricultura, Pecuária
e Abastecimento



**FP6
ENDURE
International Conference**

Panel Discussion

**IPM The Global Challenge:
ENDURE Fosters International Collaboration**

***IPM in Brazil
Contributions for Collaboration***

**Pedro Braga ARCURI, PhD
EMBRAPA LabEx Europe Programme
Agropolis International
Montpellier, France**

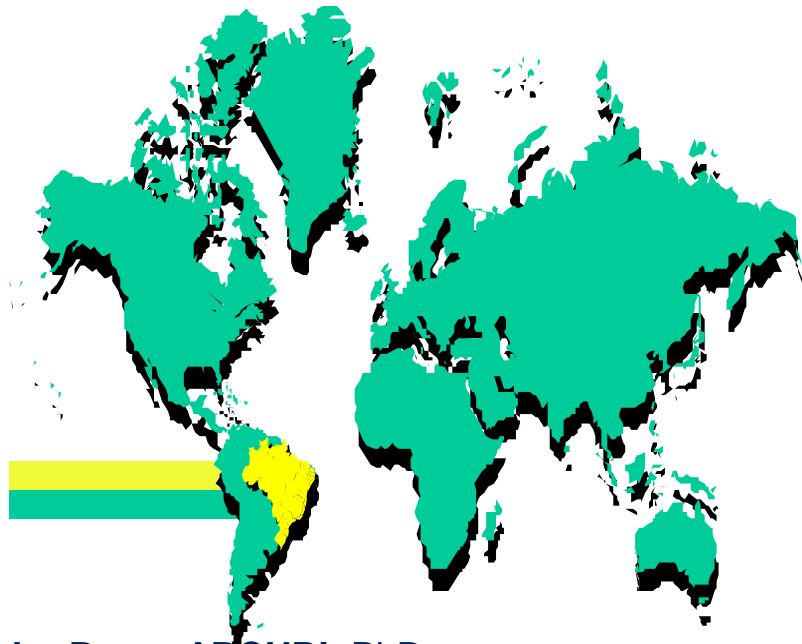


**Ministério da
Agricultura, Pecuária
e Abastecimento**



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

Pedro Braga ARCURI, PhD
EMBRAPA LabEx Europe Programme
Agropolis International
Montpellier, France

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 Amapá
- Embrapa Western Amazon
- Embrapa Eastern Amazon
- 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

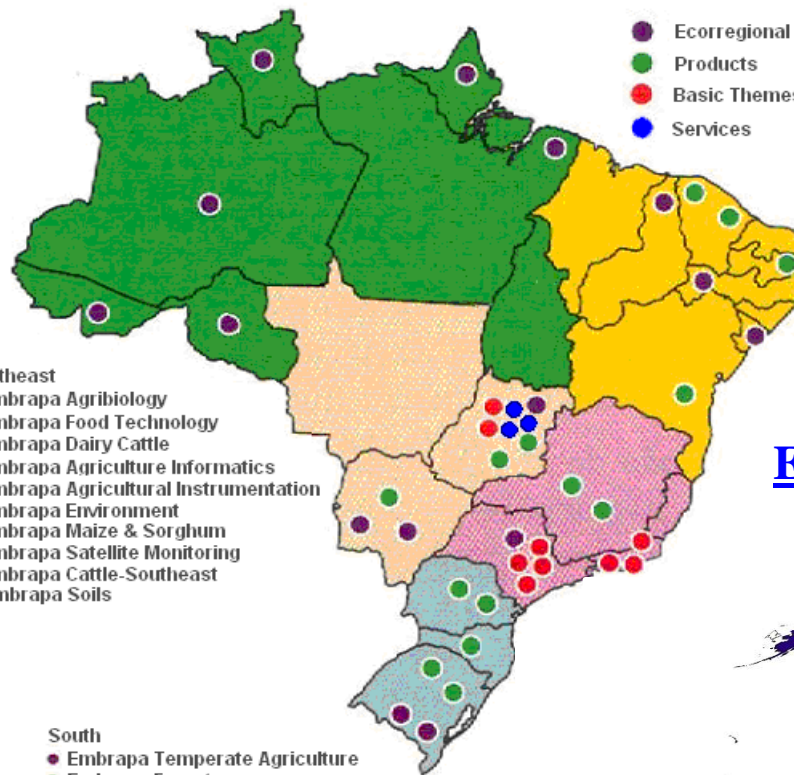
- Embrapa Agrienergy
- Embrapa Western Region Agriculture and Livestock
- Embrapa Rice & Beans
- Embrapa Coffee
- Embrapa Cerrados
- Embrapa Beef Cattle
- Embrapa Vegetables
- Embrapa Technological Information
- Embrapa Pantanal
- Embrapa Genetic Resources & Biotechnology
- Embrapa Technology Transfer

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

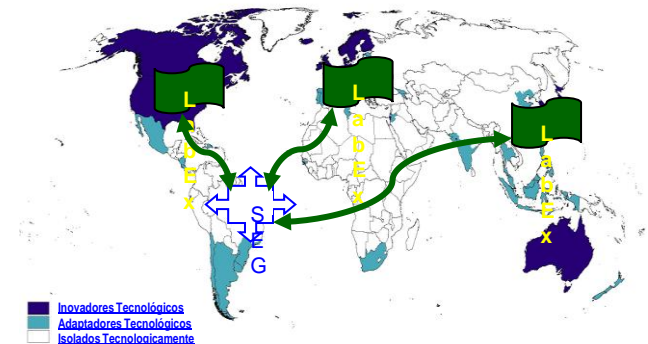
- Embrapa Temperate Agriculture
- Embrapa Forestry
- Embrapa South Animal Husbandry & Sheep
- Embrapa Soybean
- Embrapa Swine and Poultry
- Embrapa Wheat
- Embrapa Grape & Wine



- Ecorregional
- Products
- Basic Themes
- Services

2500 Researchers
6500 Staff
10200 employees

Embrapa International



Notes:
Technology innovators have 10 patents or more per million population in 1997.
Technology adapters have high-tech exports of at least 2 percent of GDP in 1997.
Based on country data for 1997. Some sub-country regions are shaded where the criteria are judged likely to be met.

Center for International Development, 2000

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
 - Brucellosis, 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)
 - » Intellectual 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

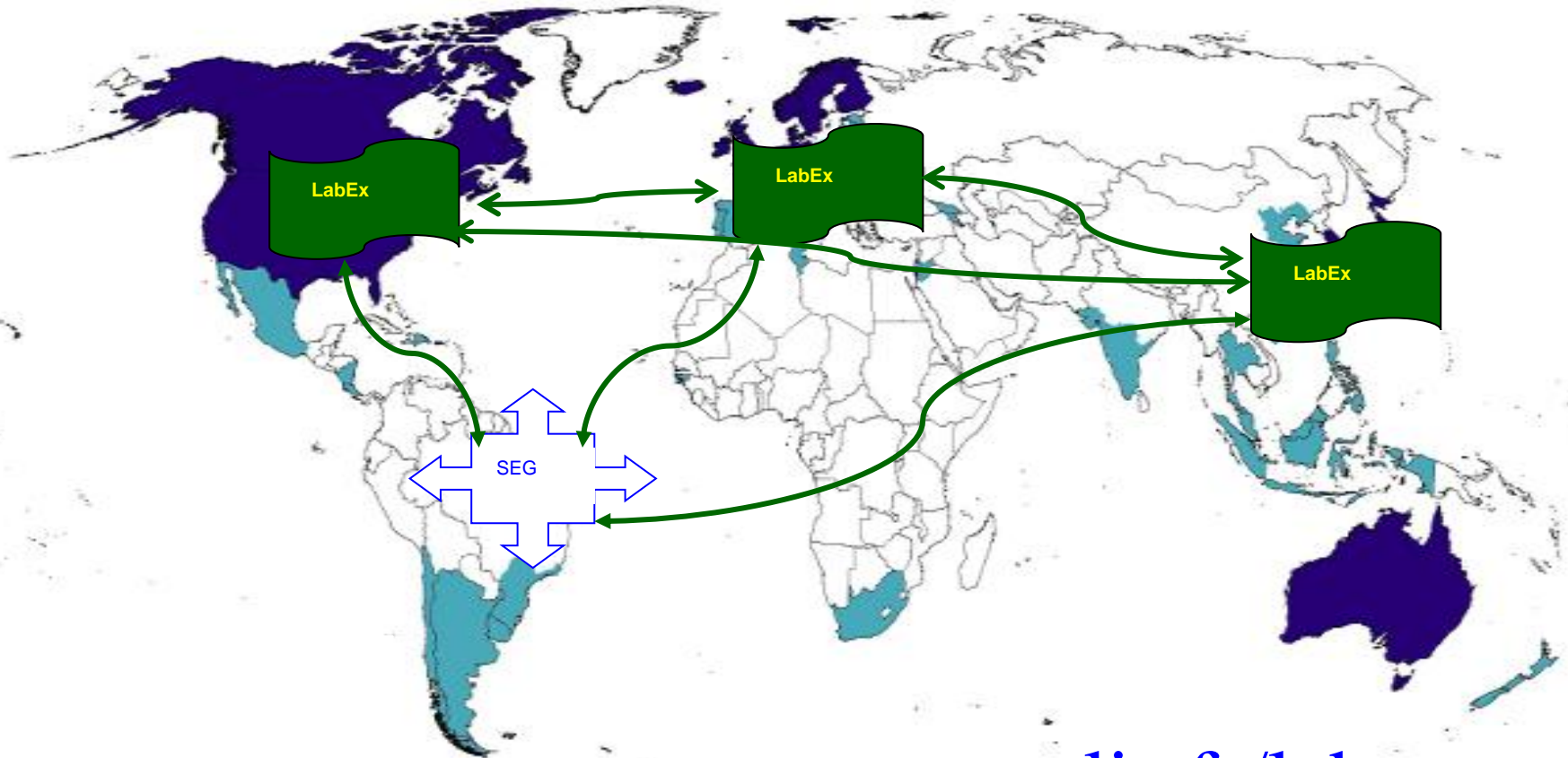
Objective Suggestions to beyond ENDURE

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

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Center for International Development, 2000

Embrapa

Agricultura, Pecuária
e Abastecimento

BRASIL
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GOVERNO FEDERAL

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 Colaboration (1)

- Sustainable Intennsification
- Developpment of integrated production systems
 - Grains + fruits
 - fibers, wood, oil plants, nuts, etc
- Developpment 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 (allellopathy)
- Organic matter use
 - Controlling pests
 - Stimulation of natural enemies, antagonisms
- Pests ecology
 - Specially semiochemicals



Agribusiness Sustainable Intensification



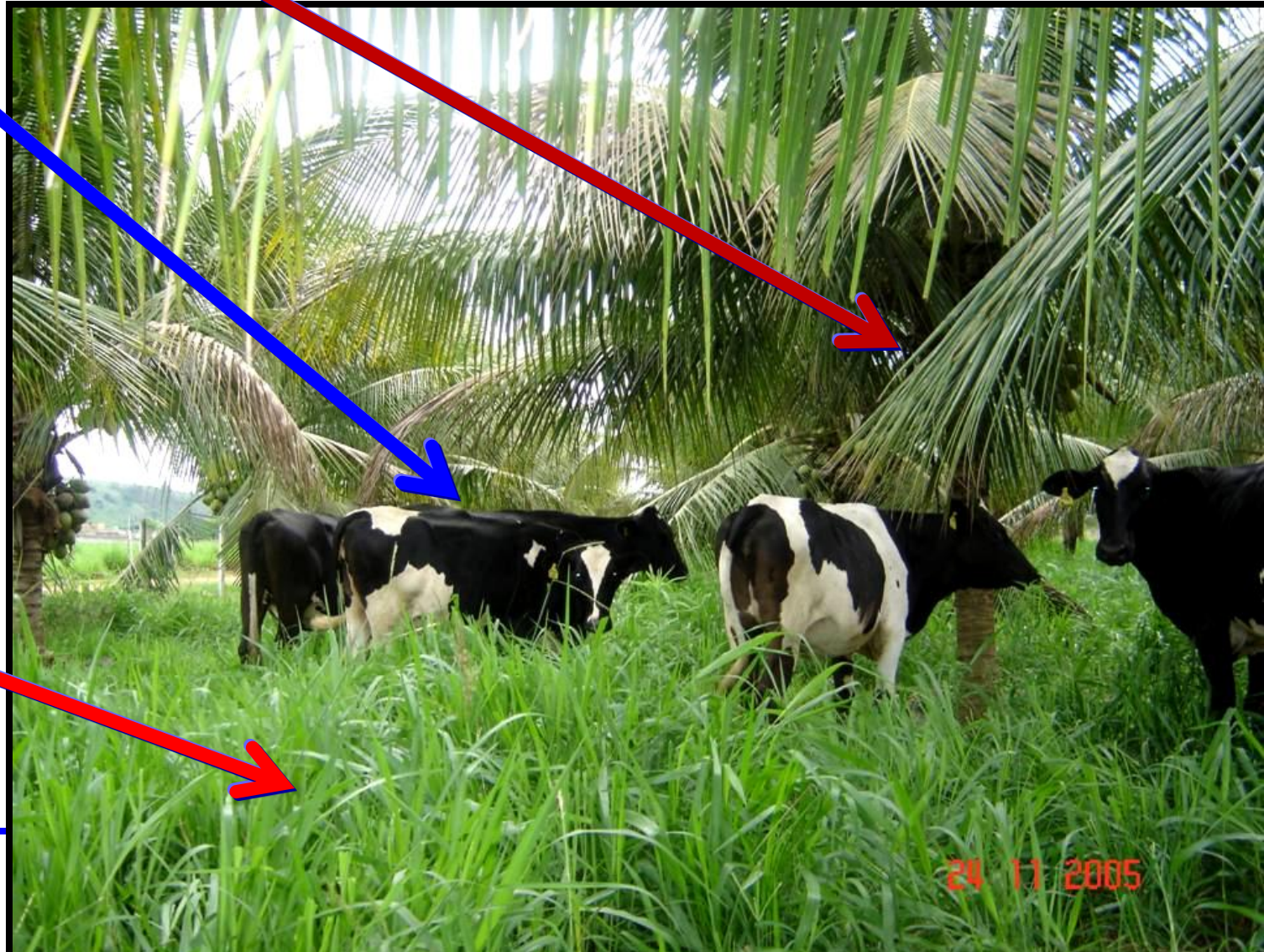
No-tillage practices, N₂ biological fixation

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 Colaboration (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 Colaboration (3)

- Control for invasive exotic weeds
 - Classical biocontrol strategies
- Developpment of **massal** production techniquesnatural enemies'
- Modelling
 - Biocontrol agensts' performance
 - Environmental risks analyses
 - Biological risks analyses
- Rationalizing the use of synthetic chemicals
- Developpment of phytoprotectors
 - From co or byproducts
 - From solid residues, effluents
 - From biodiversity

Suggestions for International Colaboration (4)

- IPM for OGM cultures
- Developpment of tools for decision making concerning IPM
 - Specially related to pests sampling + monitoring
- Forage pests studies
 - Ecology
 - Semiochemicals
 - Modelling
 - Control strategies

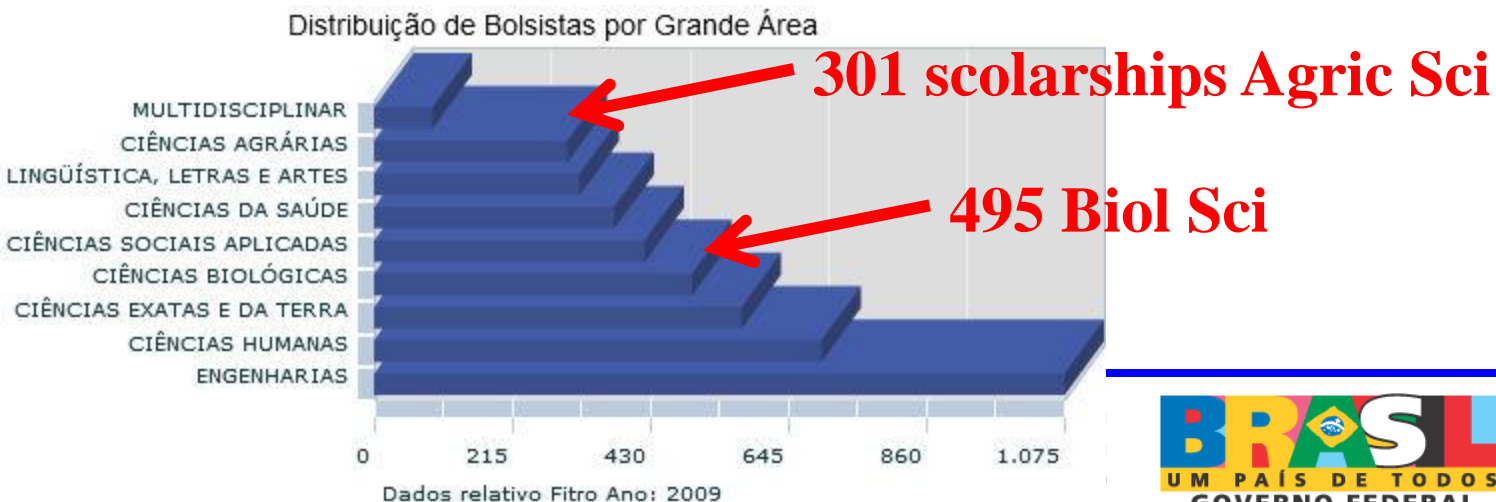
Suggestions for International Colaboration (5)

- 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



BR Scholarships in EU and USA

Country	Undergd Sandw	MSc Sandw	PhD Full	Phd Sandw	Post Doc	Total
Austria	0	0	0	2	1	4
Belgium	0	0	6	19	10	35
Checz Rep.	0	0	0	1	0	1
Dannemark	0	0	2	4	3	10
Finland	0	0	1	1	3	5
France	695	0	76	387	136	1.310
Germany	168	0	106	123	50	451
Greece	0	0	1	0	1	2
Italy	0	0	6	68	28	108
Netherlands	0	0	14	37	24	75
Norway	0	0	0	3	0	3
Polony	0	0	1	0	0	1
Portugal	1	0	28	264	101	407
Spain	2	0	34	177	118	336
Sweden	0	0	1	7	5	13
Switzerland	0	0	3	10	6	19
United Kingdom	0	0	101	110	69	285
TOTALS EU	866	0	380	1213	571	1755
TOTALS USA	195	2	231	3	207	959

Three immediate interests

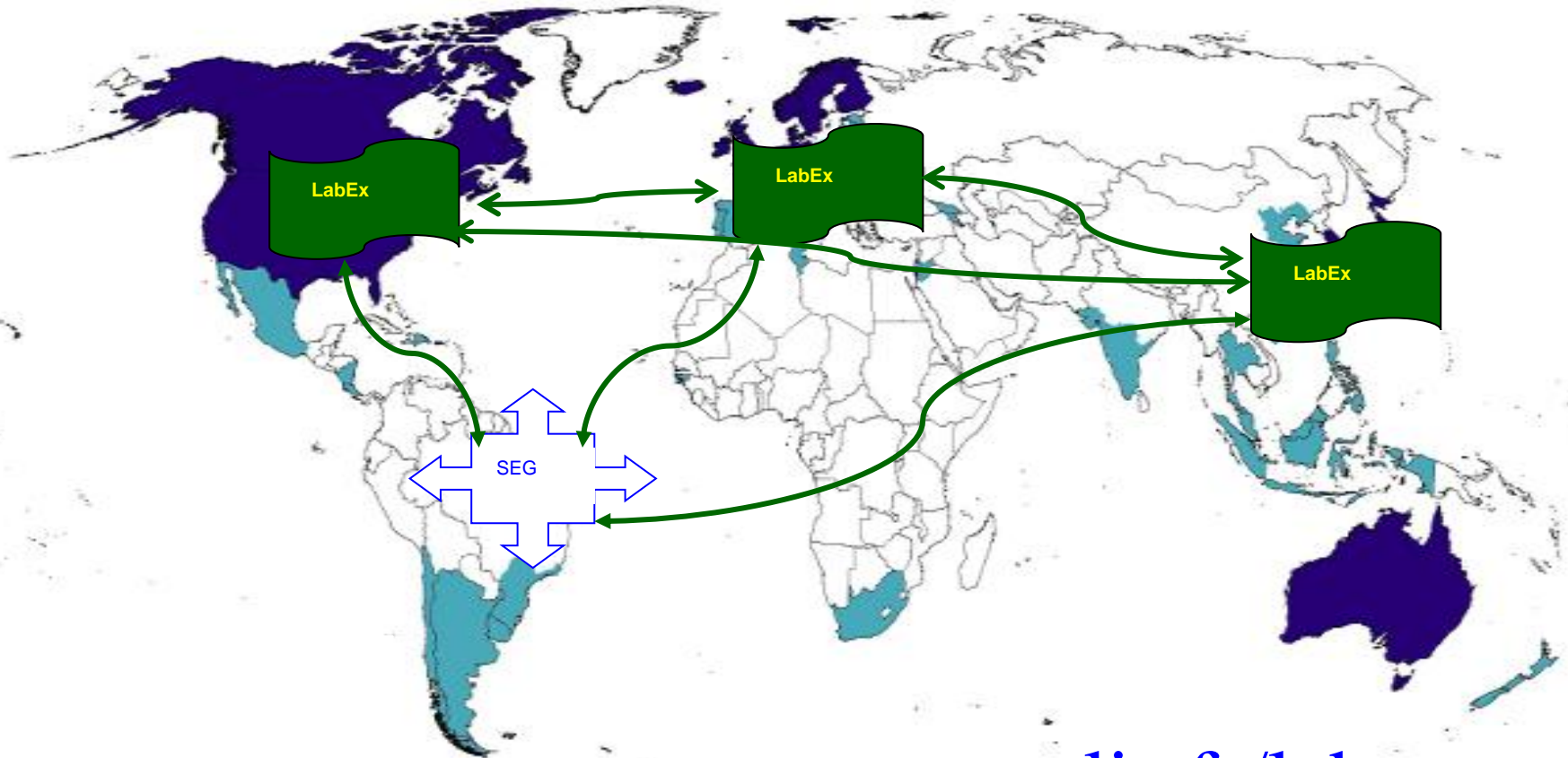
- 3/3 Governance mechanisms for international research networks
 - ENDURE governance experience
 - Promote and / or improve Brazilian research consortia
 - Difuse mechanisms for technology transfer
 - Adapt training tools to Tropical conditions
 - Brazil + South America
 - Africa
 - Be part of the ENDURE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

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Thank You!
Merci de Votre Attention
Grato pela Atenção

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