The Brazilian Program for Bio-inputs
enhancing biological inputs for a sustainable agriculture

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Trajectory of Brazilian Agriculture

**Expansion**
- Transformation of acidic and poor soils into fertile soil

**Competitiveness**
- "Tropicalization" of varieties and animals

**Sustainability**
- Development of a Sustainable Production Platform
  - Biological fixation
  - No-tillage system
  - Manure treatment
  - Pasture recovery
  - Planted forests

**Multifunctionality**
- Food – Fibers – Energy...
- Feed – Nutrition – Health...
- Environmental Services – Ecosystem Services...
- Biomass – Biomaterials – Green Chemistry...
- Biofactories – New Manufacturing Processes...
- Microbiome – Bioinputs – Bioprocesses...
- Culture – Tradition – Gastronomy – Tourism...

Science-based development
Plan for Adaptation and Low Carbon Emission in Agriculture

INTINTEGRATED STRATEGIES FOR PROPERTY RURAL MANAGEMENT

- Keep motivation for adoption and maintenance of SPS
- Encourage farmer environmental compliance
- Transfer of technologies, training, and technical assistance
- Encourage and support scientific research and technological development
- Strengthen mechanisms of recognition and appreciation
- Foster economic, financial and tax-related instruments
- Integrated data and information management system

NO-TILLAGE SYSTEM
INTEGRATED CROP-LIVESTOCK-FOREST SYSTEMS (ICLF)
MANURE TREATMENT
PASTURE RECOVERY
BIOLOGICAL N FIXATION
PLANTED FORESTS

INTEGRATED LANDSCAPE APPROACH (ILA)

FOSTER ADOPTION AND MAINTENANCE OF SUSTAINABLE SYSTEMS, PRACTICES, PRODUCTS AND PROCESSES

COMBINATION OF ADAPTATION AND MITIGATION STRATEGIES

CONCEPTUAL BASIS

Sustainable Systems, Products, Products and Processes
In this context, the **Brazilian National Program for Bio-inputs** aims to expand and strengthen the use of bio-inputs to promote the sustainable development of Brazilian agriculture.

Decree No. 10,375, of May 26, 2020
Over the past decades, the Brazilian academy (including research institutions and universities) has generated significant basic knowledge on biological pest control.

But, due to the detachment between academy and the incipient private sector on biological control at that time; and due to the low capacity of the academy to practice the "D" of the Research & Development framework.

Few technological solutions on biological control were developed in Brazil until the 2000s.
Some background

2006/2007... 2011... 2015

- Improvement on legislation for BCAs registration
- The creation of the Brazilian Association of Biological Control of Companies (ABCBio) in 2007

Very positive impacts:

- due ABCBio work with the federal agencies, bottlenecks related to the slow registration of biological products were solved (or partially minimized)
- and provide greater synergy between private companies and public R&D institutions in the generation of technological solutions
Main milestones

Registered biological products

- Regulador de crescimento 11.99%
- Bioacaricida 7.41%
- Feromônio 6.88%
- Agente Biológico de Controle 12.17%
- Biofumigicida 11.64%
- Bioinseticida 40.92%
- Bionematicida 8.11%
- Bioacaricida 0.88%

INC*

* Joint normative instructions (Agriculture, Environment and Health authorities)

1980

academy development

pioneer entrepreneurs

Business maturation

INC*

ABCBio

Business boom

Brazilian Program for Bio-inputs

Induction for the transition from chemistry to biology
Brazilian National Program for Bio-inputs

Strategic objectives

✓ Propose a **regulatory framework** that encourages the production and use of bioinputs;

✓ Foster **science, technology and innovation** to offer new technologies, products, processes, services, knowledge and information;

✓ Articulate **credit and promotion instruments** aimed at the development, production and use of bioinputs;

✓ Stimulate the generation and dissemination of knowledge and qualified information on the use of bioinputs, in order to stimulate the training and formation of **technical competence** in good practices for the use and application of bioinputs;

✓ Foster the **production of bio-inputs** in the country;

✓ Promote the **construction of policies, programs and plans in States and Municipalities** aimed at promoting the use of bioinputs.

Brazilian National Program for Bio-inputs

**Thematic axes**

**Crop production**
- Biological control of Pest and diseases
- Fertilizer and growth promotion
- Weed control

**Animal production**
- Animal Health
- Animal Feed & nutrition
- Aquaculture
- Parasites control

**Post harvest**
- post-harvest of plant products
- processing animal and plant products

In 2017, in an initial approximation, the total area under biocontrol of pests and plant diseases in Brazil was greater than 33 million ha.

A data update shows that the area treated was more than 50,000,000 ha in 2020.
Market Sizing in Brazil  Biodefensives x Chemicals

Bi R$ - *Farm Gate Price*

Key factors for market growth

- ✔ Strong growth in consumer market demand for biological products for pest control and inoculants, due to the challenge of large-scale agricultural production under tropical conditions.

- ✔ Emergence of companies investing in biodefensives in their portfolio as business diversification, search for competitiveness.

- ✔ Requirement (market and government) for a transition to more sustainable agriculture, promoting investment in new technologies with a focus on bioeconomy.

*Crops considered: Soybean, Sugarcane, Corn, Cotton, Eucalyptus, HF (apple, grape, potato and tomato).*

Source: Blink Projetos Estratégicos
Market Sizing in Brazil

MARKET EVOLUTION – TOTAL CROP PROTECTION vs. BIOLOGICAL PRODUCTS
TOTAL CPP
Indications in %. Basis in Turnover (USD mi).

TOTAL CPP MARKET

BIOLOGICAL PRODUCTS

BIONEMATICIDES  INOCULANTS
Bioinsecticides  Biofungicides

Fungicides  Insecticides  Herbicides  Seed Treatments  Others

BIOLOGICAL IMPORTANCE

Other Segments  Biological Products
Market Sizing in Brazil  Biodefensives by crop

Biodefensives Market Value | Bi R$ - Farm Gate Price

2019 | 2020 | 2021 | 2030
---|---|---|---
0.93 | 1.26 | 2.27 | 9.09
0.02 | 0.21 | 0.27 | 0.24
0.58 (60%) | 0.80 (59%) | 0.50 (22%) | 1.32 (15%)
0.10 | 0.06 | 0.00 | 0.05
0.02 (2%) | 0.01 (1%) | 0.02 | 0.05
0.27 (20%) | 0.30 (13%) | 0.02 | 0.05
0.00 | 0.01 | 0.02 | 0.02
0.00 (0%) | 0.00 (0%) | 0.00 (1%) | 0.00 (1%)

Source: Blink Projetos Estratégicos
Registered biological products

567 produtos

- Bioinseticida 40.92%
- Biofúngica 11.64%
- Biobactericida 0.88%
- Bionematicida 8.11%
- Agente Biológico de Controle 12.17%
- Feromônio 6.88%
- Regulador de crescimento 11.99%

Source: https://indicadores.agricultura.gov.br/agrofit/index.htm
Of more than 1,137 pests and pathogens registered in Brazil, only 86 have registered biological control (~8%).
Final Remarks

Opportunities and Challenges

✓ Brazilian agriculture has been building a solid trajectory in the use of bio-inputs (biopesticides and inoculants);

✓ The longevity and consistent growth of biocontrol in agriculture depends on the **efficacy, safety** and **environmental performance** of bio-inputs;

✓ **Innovation** is a key-factor for bio-input market. A thriving “innovation ecosystem” is developing, with the emergence or strengthening of innovative companies in Brazil;

✓ To be effective, the policy must create a **favorable environment** for the promotion of the sector, as well as for technological innovation in bio-inputs;
Final Remarks

Opportunities and Challenges

✓ The Brazilian National Program for Bio-inputs can promote synergy between private companies and public R&D institutions in the generation of technological solutions to Brazilian farms;

✓ THE BIG CHALLENGE: construction of a regulatory framework that encourages the production and use of bioinputs, induces industry innovation and bring legal certainty for entrepreneurs and investors.
Fertilizer
Pesticide
Additive
Fuel
Energy

Bioenergy
Biofuel
Bioinoculant
Biopesticide
Biofertilizer

NDC do Brasil

route to bioeconomy
Thank you

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