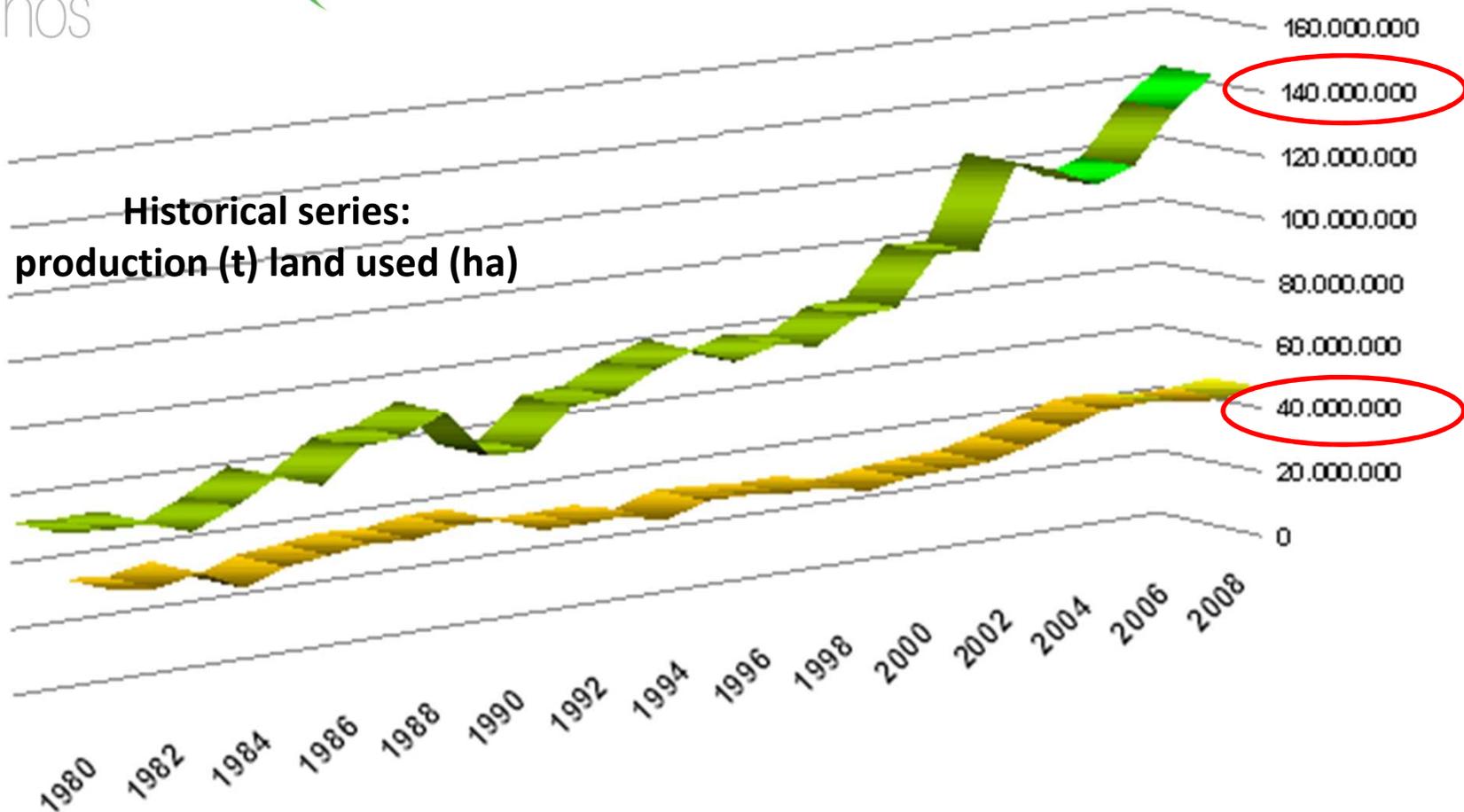




How biotechnology is making Brazilian agriculture more sustainable

**Adriana Brondani – PhD in Biological Sciences
Executive Director, Brazilian Council for Biotechnology Information (CIB)**

Agriculture Overview



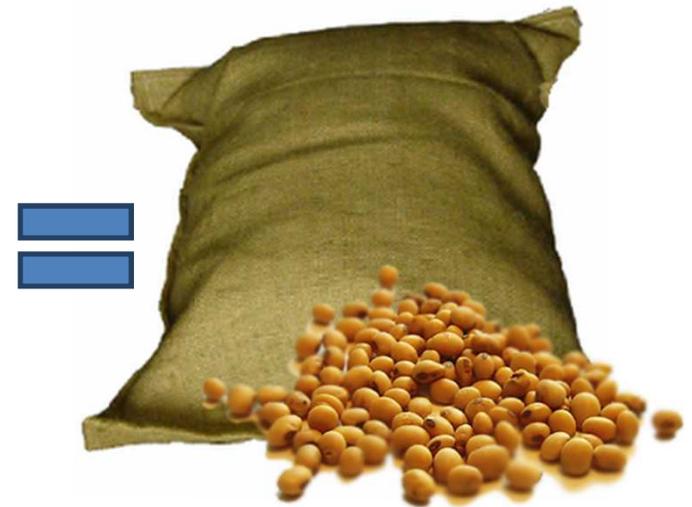
- Over the last 20 years Brazil have increased agriculture production by 176%, however; its land used increased only by 37%
- That means that we have saved 53 million hectares through productivity

Agriculture Overview

Land needed to produce 1 bushel of soybeans

•• 2006 2011

240m²



How will we reach it?

Research

Crop Protection

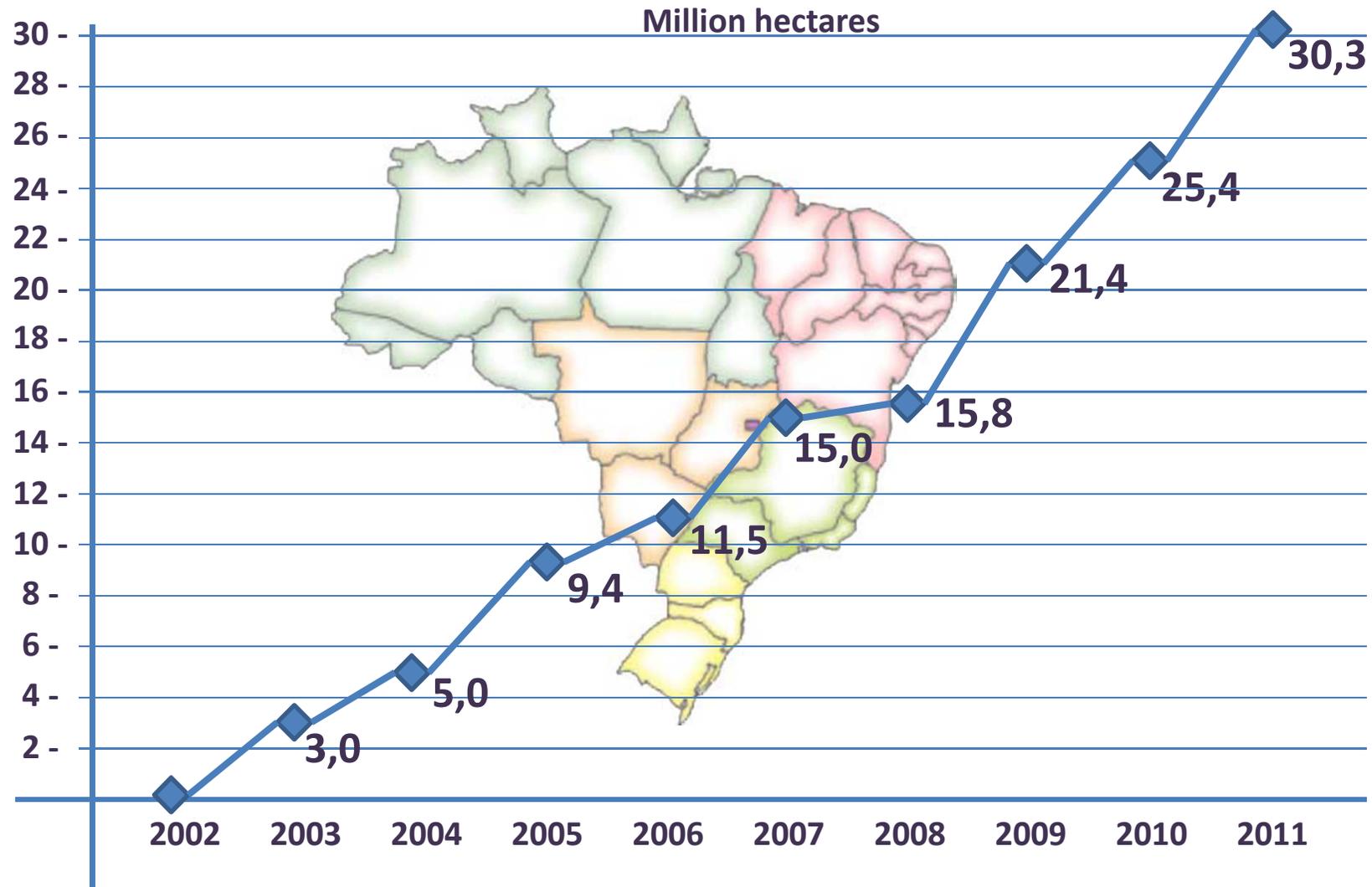
Qualified farmers

Biotechnology

Management

Mechanization

Biotechnology Adoption



Regulatory Framework

1995 - 2004

8974/95 law – Biosafety Law

- Each GMO should be analyzed separately

Environment law

- All GMOs are potentially pollute the environment

2004

TRF (Regional Federal Court)

- Decided that a specific law overlaps a general law

Environment law

Environment law

2005

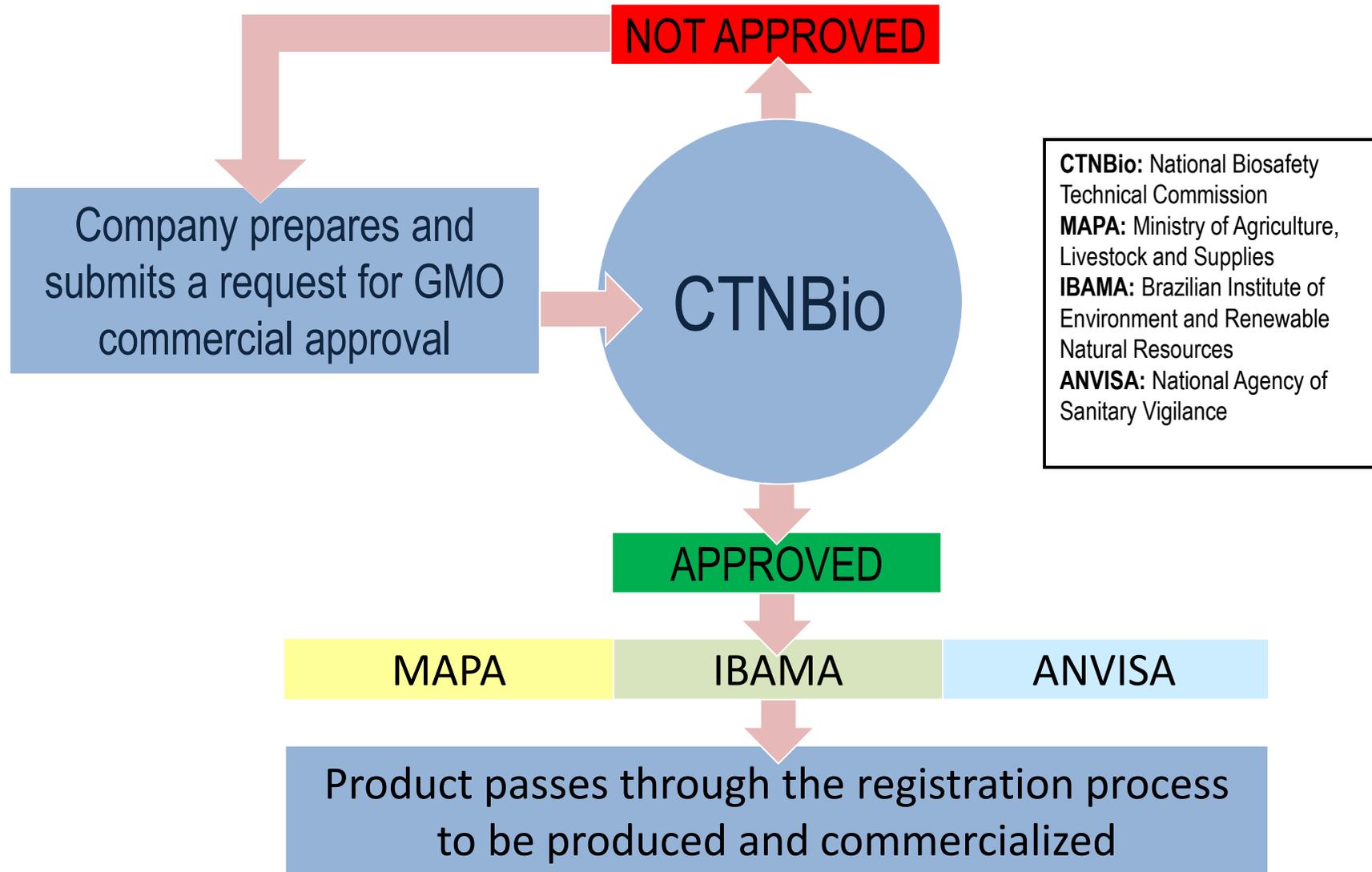
11.105/05 law – New Biosafety Law

- Harmonized our Regulatory Framework
- Establishes safety standards and mechanisms for activities with GMOs

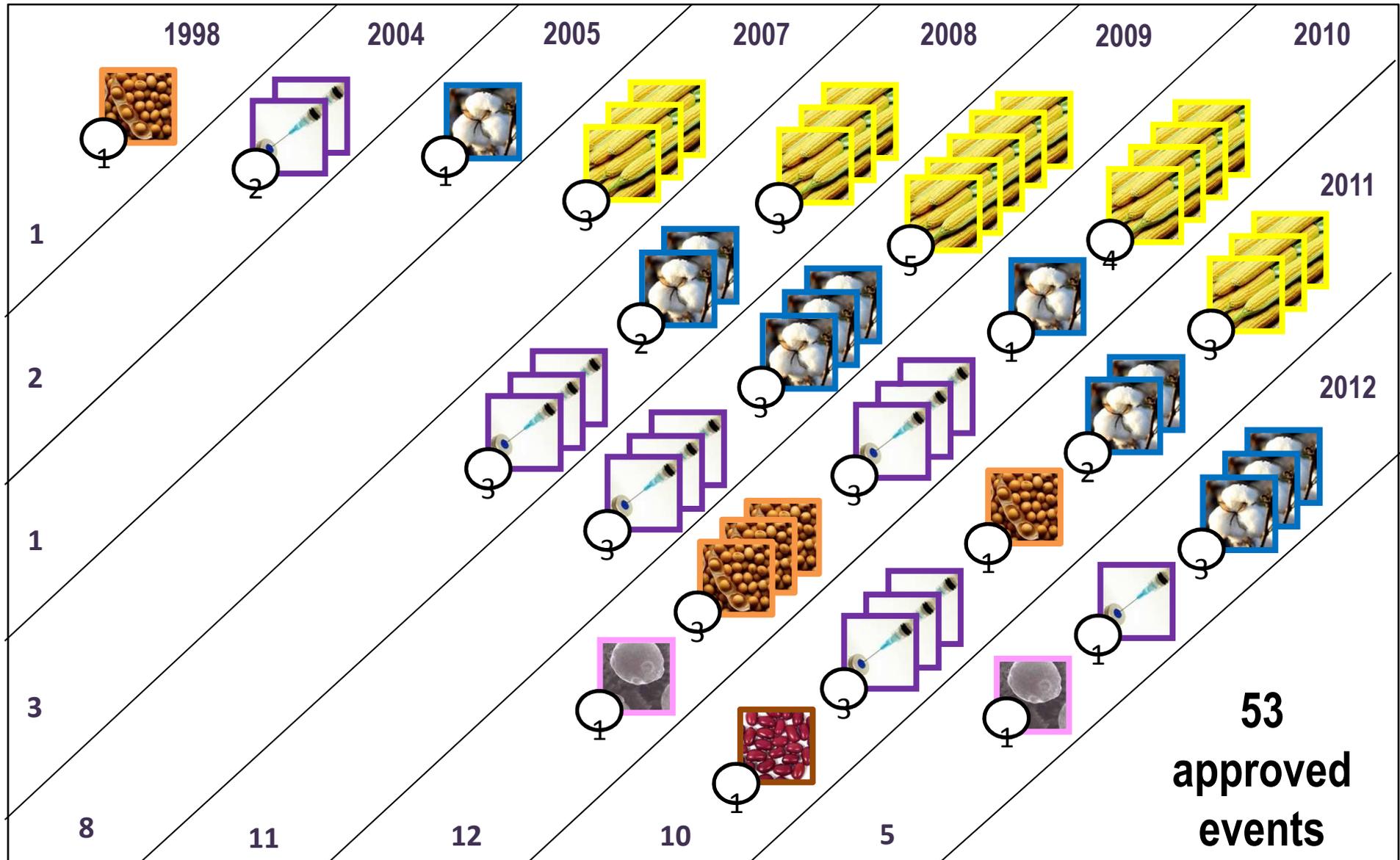


Regulatory Framework

Since 1995 CTNBio is responsible for GMOs approvals in Brazil
In 2005 CTNBio obtained legitimacy to legislate on GMOs



CTNBio Approvals



Environmental Benefits

Benefits in the next 10 years, considering GMOs approved in Brazil until 2010/11 harvest



1,2 billion liters of diesel will be saved,
enough to fuel 465 thousand cars



22 millions of trees
will be preserved



134 billions liters of water will be reduced. That's
enough to provide water to 3 million people



3 millions of tons of CO₂ will not be thrown in the
atmosphere



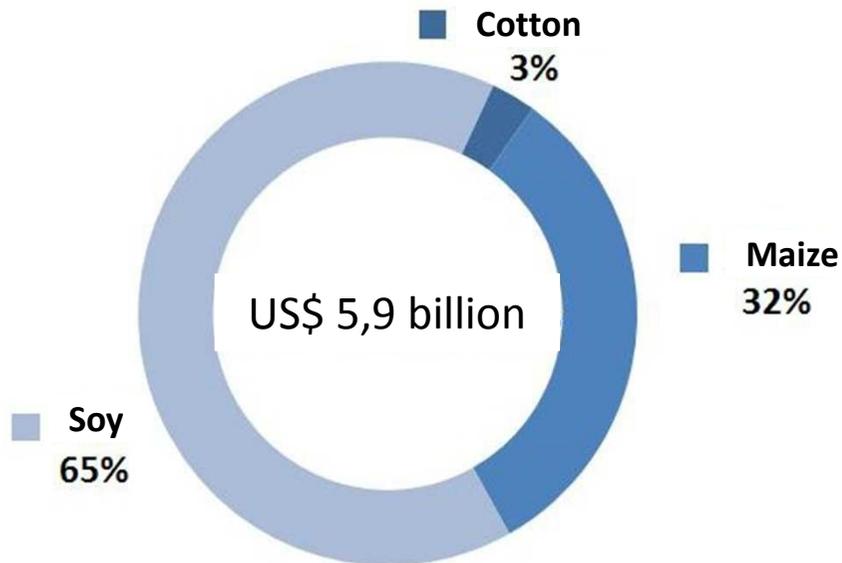
197 thousand tons of chemical products
reduced

Social Economical Benefits

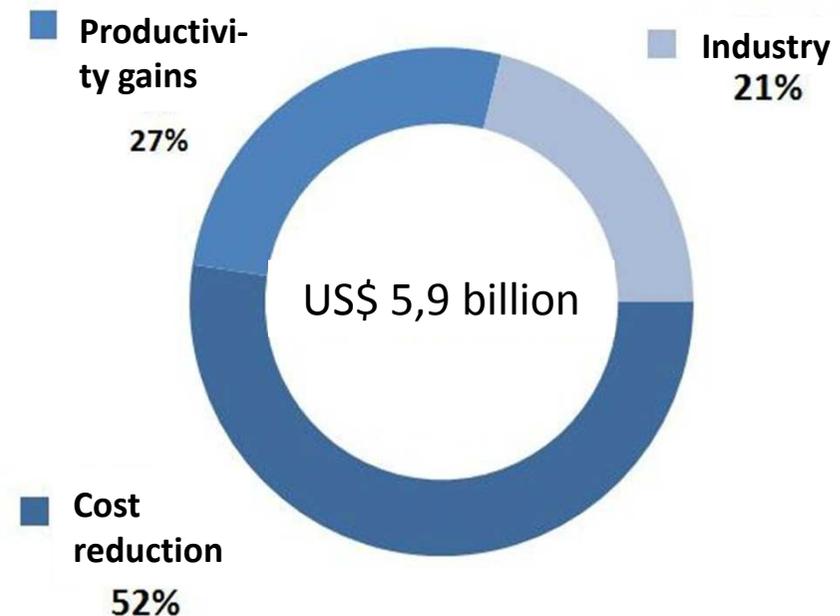
On the last 14 harvests, it generated \$ 5,9 billion by the adoption of biotechnology, before leaving the farm

Direct benefits from biotechnology adoption in Brazil, from 1996/97 – 2009/10

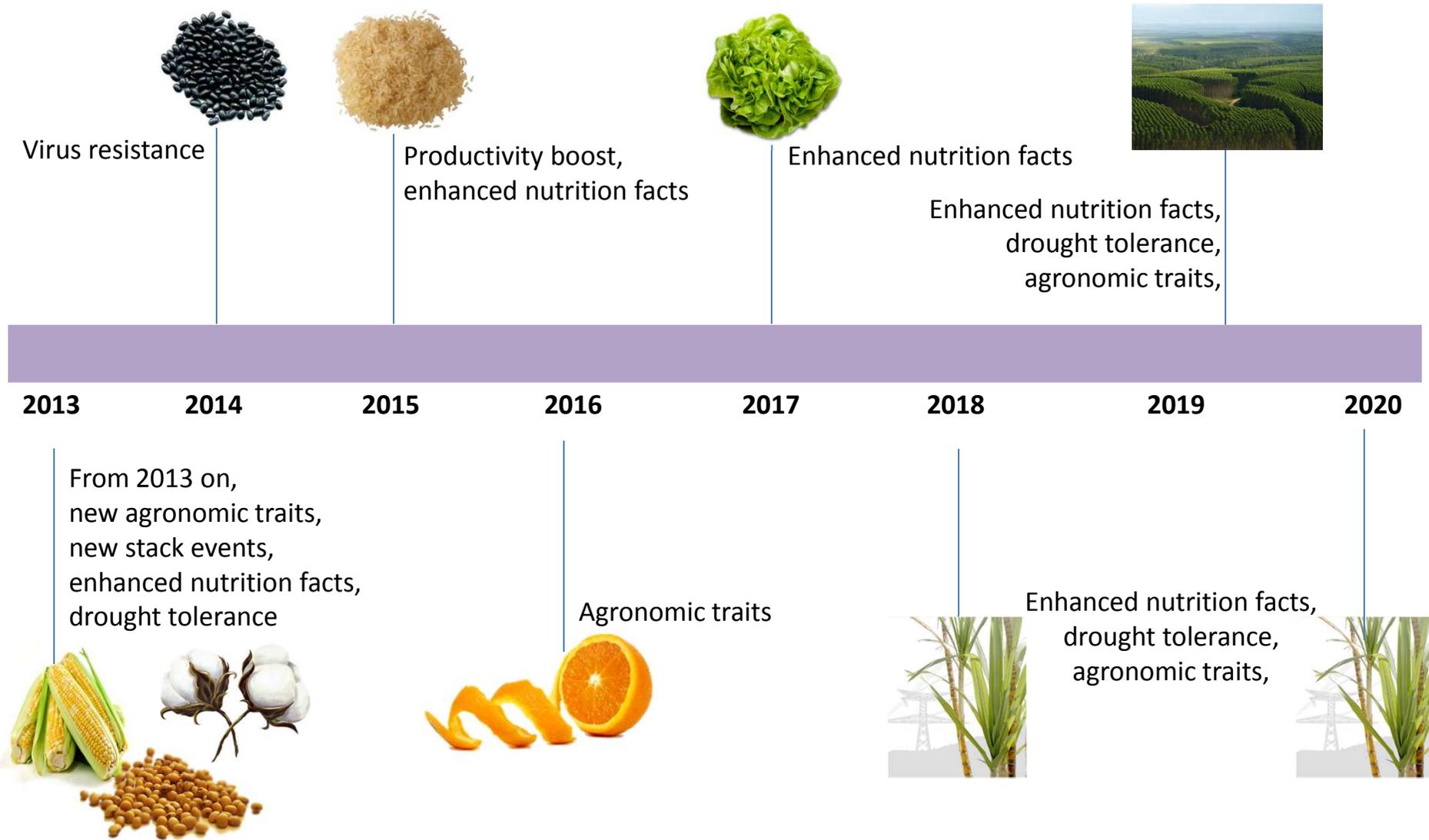
- Economical benefit, by crop



- Economical benefit, by segment

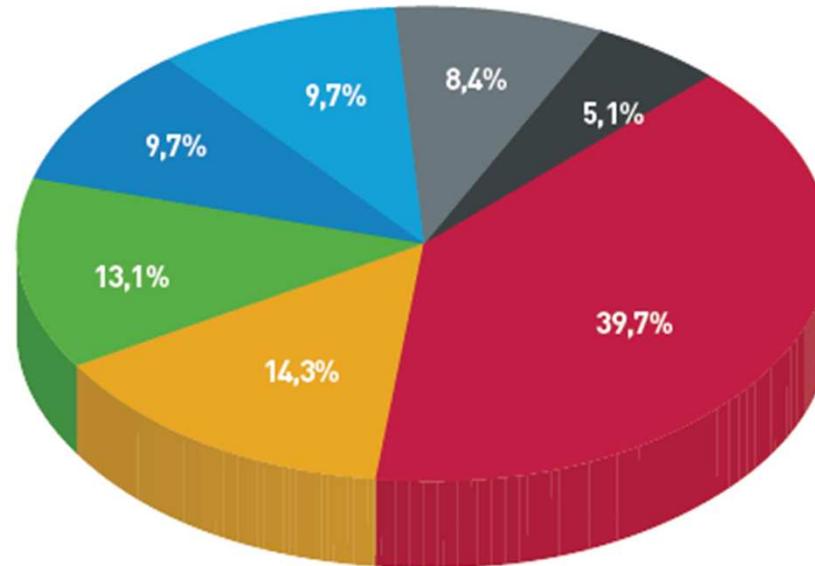


Research and Perspectives



Brazilian Biotech Companies

GRAPH 2 **Biotechnology companies by area of activity.**

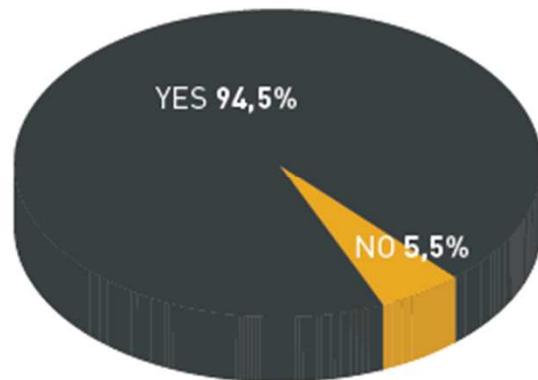


■ HUMAN HEALTH ■ REAGENTS ■ ENVIRONMENT ■ BIOENERGY
■ ANIMAL HEALTH ■ AGRICULTURE ■ OTHER SECTORS

Source: BRBIOTEC Brasil / Cebrap, "Brazil Biotech Map 2011" (n=237).

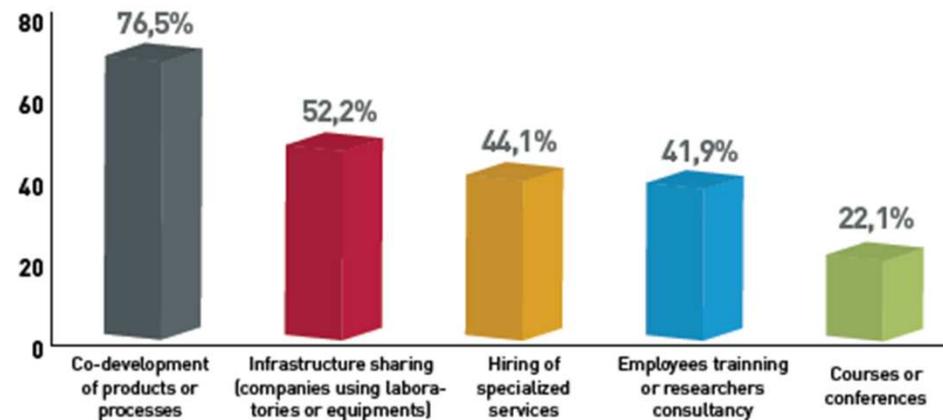
Brazilian Biotech Companies

GRAPH 11 Does the company has a relationship with universities or research intitutes?



Source: BRBIOTEC Brasil/Cebrap, "Brazil Biotech Map 2011". (n=145).

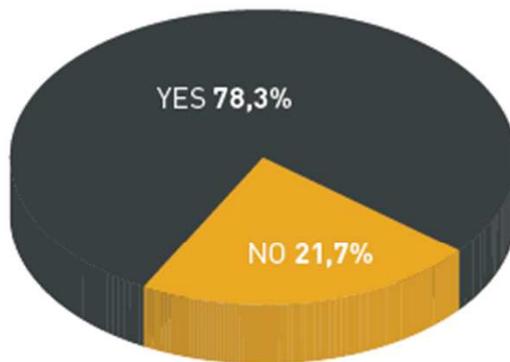
GRAPH 12 What is the aim of this partnership?



Source: BRBIOTEC Brasil/Cebrap, "Brazil Biotech Map 2011". (n= 136).

Brazilian Biotech Companies

GRAPH 13 Does the firm use public resources for R&D&I?

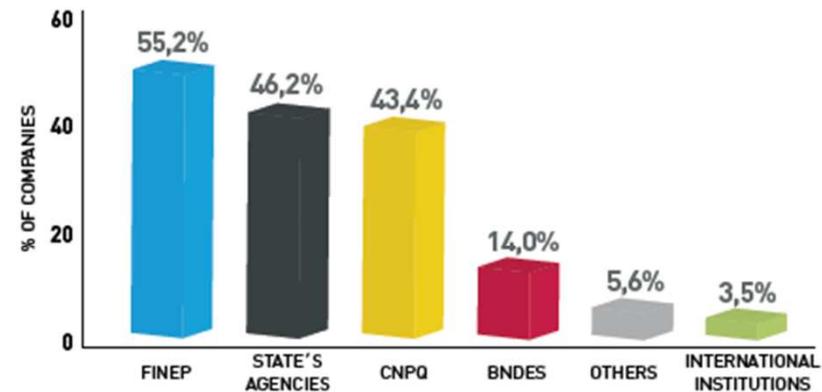


Source: BRBIOTEC Brasil/Cebrap, "Brazil Biotech Map 2011". (n= 143).

²²Financiadora de estudos e projetos (Finep).

²³Fundação de Amparo à Pesquisa do Estado de São Paulo (Fapesp) e Fundação de Amparo à Pesquisa do Estado de Minas Gerais (Fapemig).

GRAPH 14 Companies (%) that use public funding per institution

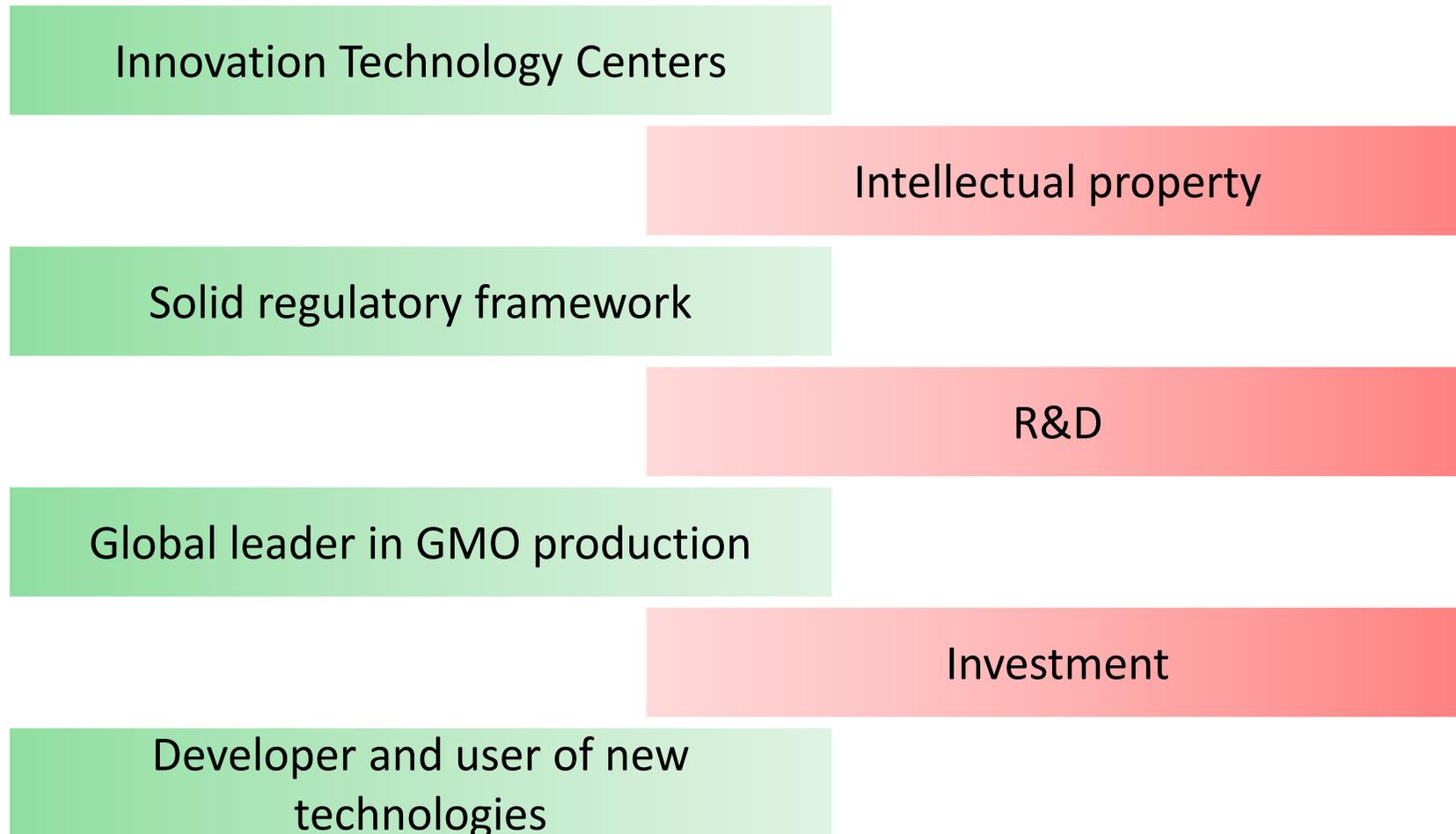


Source: BRBIOTEC Brasil/Cebrap, "Brazil Biotech Map 2011". (n=143).



Brazilian Biotech Scenario

Opportunities x Challenges





Thank You

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