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Brazilâ??s biologicals at inflection point: Marcelo de Godoy Oliveiraâ??s vision for high-science, high quality bioeconomy

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In an exclusive Agrospectrum interview, Marcelo de Godoy Oliveira, President of ABINBIO, explains that Brazilâ??s more than 30 per cent bioinputs surge is driven by pest pressure, chemical resistance, fertilizer dependence, and rapid scientific advances. He stresses that strict MAPAâ??industry oversight is essential to prevent a â??wild westâ• of substandard products as the sector scales.

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Brazilâ??s biodiversity, combined with strong publicâ??private R&D and emerging IP frameworks in gene editing, positions the country for global leadership. Marcelo highlights that biologicals in Brazil already deliver >90 per cent positive ROI in monitored applications and are fast becoming core to decarbonisation strategies. Looking ahead to 2035, he predicts only companies with deep science, industrial scale, and elite agronomic support will survive in a rapidly maturing market.

Market Dynamics & Inflection Point

Brazilâ??s bioinputs market is growing 30 per cent + annually even as global agrichem slows. What is the real inflection pointâ??scientific breakthroughs, fertiliser volatility, climate pressures, or structural shifts in Brazilâ??s agri-economy ?

The growth in bio-input use in Brazil is associated with four fundamental factors.

The first factor relates to the significant increase in pest and disease incidence in agricultural systems. Being a tropical climate country, Brazil develops high-intensity agriculture, characterized by so-called "green bridges," which offer constant food supply for the accelerated proliferation of pests. Consequently, there is an increase in the number of pesticide applications in crops.

This scenario leads to the second factor: the development of pest and disease resistance to chemical pesticides, resulting from continuous and repeated exposure to these products. Faced with this, rural producers begin seeking complementary management tools, such as biodefensives, to achieve greater efficacy in controlling phytopathogenic agents.

The third factor is related to the country's high dependence on fertilizer imports, combined with the high prices charged for these inputs. This situation encourages producers to seek alternatives that increase the utilization of nutrients already present in the soil or enhance the efficiency of applied fertilizers, allowing, in some cases, dose reduction. An example is the use of phosphorus solubilizers to reduce the need for phosphate fertilization.

Finally, the fourth and, in my opinion, most important factor refers to the advancement of scientific research and development of microbiological technologies, as well as the modernization of manufacturing facilities dedicated to the sector. Brazilian industries have distinguished themselves through high production capacity, elevated technological level, and experienced professionals in manufacturing both pesticides and other microbiological inputs.

The combination of these factors makes Brazil stand out globally in adoption, technological development, and business investment in the bio-inputs segment.

Quality, Oversight & â??Wild Westâ?• Risk

With 400+ manufacturers and thousands of on-farm biofactories, how is ABINBIO working with MAPA to ensure enforceable quality standards and avoid a fragmented â??wild westâ?• of inconsistent products?

Our work with the Federal Government aims to raise awareness about the importance of maintaining rigorous rules for bio-input production, preventing the entry or manufacture of low-quality products in the country. Brazil is a global reference in the microbiological segment applied to agribusiness, and therefore requires legislation that safeguards product quality and continuously stimulates technological development, guaranteeing effective and safe tools so that our main partnerâ??the rural producerâ??achieves increasing success in their activity.

Additionally, there is a determining factor for company competitiveness in the market: people. Producers will always prioritize technologies that deliver proven results and add intelligence to their operation. Therefore, companies that do not invest in high-performance professionals will hardly remain competitive in the long term, and this investment, while essential, requires resources.

Finally, we have reinforced to the Federal Government that the national bio-inputs industry is a true diamond in the making becoming an important source of income for countless Brazilian families. The sector has been generating a significant number of jobs, contributing directly to the country's social development.

R&D Leadership & Microbiome Advantage

Brazilâ??s biodiversity gives it a strong edge in nitrogen-fixing, phosphate-solubilising and pest-suppressive microbes. What R&D platforms, publicâ??private models, or IP frameworks can convert this into true global competitive advantage ?

Yes, our biodiversity favors us extraordinarily. Brazil has different biomes that function as true open-air collections, providing numerous discoveries of microbiological actives that stand out in performance when processed through our advanced bioprocesses, formulations, quality standards, and high industrial capacity. Additionally, we have highly qualified public institutions that support the identification and study of these new actives, such as Embrapa, globally recognized as a reference in the bio-inputs segment.

Regarding intellectual property protection, we are working together with the government and advancing in the use of gene editing and genetic engineering techniques. When associated with microorganism functions and our formulations, these technologies make products patentable, creating an important level of protection. However, biopiracy is still a reality and will continue to be combated by both industry and Brazilian regulatory agencies.

Biologicals vs Chemicals: Real Economics

Growers report variable field results. What does the real economic equation look likeâ??yield stability, input substitution and ROIâ??when biologicals complement or replace synthetics at scale ?

We have a rigorous performance monitoring system, advanced quality control, well-defined technical positioning, and differentiated follow-up conducted by our field specialists. As a consequence, more than 90 per cent of our technology applications show positive results. This level of efficiency is reflected in a high repurchase rate, since ultimately, we manage to generate excellent return on investment for the producer.

As for the substitution or combined use of chemical and biological products, this depends greatly on the segment. A clear example is the use of biological nematicides, which has been growing for several years and, in many cases, already replaces the use of conventional pesticides.

I believe that in the near future, bio-inputs will replace chemicals in other segments as well. However, it is important to understand that our main objective is to support rural producers in their mission to produce more food for the world. And for this, the combination of chemical and biological toolsâ??when well positioned and integratedâ??makes all the difference.

Brazil as a Global Bioinputs Powerhouse

Foreign firms are validating products under Brazilâ??s tropical stress conditions. Can Brazil become a global exporter of biological technologies? What capabilitiesâ??regulatory strength, manufacturing, consortium scienceâ??must improve ?

We are exporting, each year, a greater volume of microbiological technologies to various international markets. I believe that soon Brazil will globally lead this segment, as large foreign companies have been seeking to establish strategic partnerships with us. This movement is only possible thanks to the high quality of our products, the large industrial capacity installed in the country, consistent investments in international registrations, and the development of strong regulatory expertise by our teams, who work closely with regulatory agencies in other countries.

I have no doubt that the global bio-inputs market will be largely led by major Brazilian players in the coming years.

Fast-Tracking vs Environmental Risk

Brazilâ??s fast regulatory approvals accelerate innovation but raise biosafety concerns. Do rapid pathways risk blind spots, especially for microbial consortia and next-gen metabolic boosters ?

The rapid approval of biodefensives in Brazil is only possible due to the excellent work developed by our regulatory agencies (MAPA, Anvisa, and IBAMA). Our legislation is strict and requires, in addition to efficacy tests, various toxicological and ecotoxicological tests, thus generating low environmental risk when the product is approved by these agencies.

Soil Carbon, ESG & Bioeconomy Transition

With tighter MRL norms and carbon-linked premiums emerging, will biologicals become central to Brazilâ??s ESG and decarbonisation strategy ? What policy tools could speed this transition ?

Undoubtedly, bio-inputs play a critical role in decarbonization mechanisms, as they act directly in reducing GHG emissions associated with the use of energy-intensive inputs and increasing the biogeochemical efficiency of production systems. Growth-promoting microorganisms, solubilizers, biological nitrogen fixers, and biocontrol agents contribute to reducing COâ??, Nâ??O, and CHâ?? emissions, while favoring carbon sequestration processes in soil through increased microbial biomass, enhanced aggregate stability, formation of humic substances, and improved nutrient cycling dynamics.

For these impacts to be fully integrated into decarbonization policies, strengthening the regulatory and methodological framework is essential. Priority needs include:

Enhancement of MRV (Measurement, Reporting, and Verification) protocols

Inclusion of specific methodologies to quantify GHG reductions and removals resulting from bio-input application, with standardized parameters according to GHG Protocol, ISO 14064, ISO 14067, and LCA (Life Cycle Assessment) methodologies.

Harmonization of certification rules

Creation of regulatory flows that enable official recognition of these gains in instruments such as voluntary carbon markets and regulated programs (e.g., methodologies analogous to RenovaBio, REDD+, and Carbon Farming frameworks).

Integration with government agencies and technical institutions

Establishment of guidelines for credit monetization, including definitions of baseline, additionality, emission factors, permanence, and reversal risks, providing legal certainty to the industrial sector and producers.

Official recognition of biotechnological pathways

Formalization of emission reduction routes via nutrient solubilization, biological fixation, energy-intensive pest biocontrol, and root biostimulation processes, ensuring eligibility in carbon markets.

The consolidation of these elements will allow bio-input use to be robustly incorporated into mitigation policies, increasing national industry competitiveness and positioning Brazil as a scientific, regulatory, and commercial leader in the global carbon market associated with agricultural biotechnology.

The 2035 Horizon

By 2035, what will separate leaders from laggards in Brazilâ??s bioinputs industryâ??strain IP, digital agronomy, consortium formulations, farmer extension networks, or something else?

There is no doubt that in the coming years, the national industry will undergo an intense differentiation process, in which only the most structured companies will remain competitive. This movement will be driven by the launch of truly disruptive technologies, the high production capacity of our industries, and the qualification of technical service offered to producers. Increasingly, rural producers will demand highly skilled professionalsâ??well-compensated and up-to-date agronomists who bring not just products, but applied scientific knowledge to all areas of their business.

These factors will be decisive in separating the wheat from the chaff, resulting in a competitive market, but one of higher quality and with fewer competitors. Although many wish to enter the bio-inputs sector, few have investment capacity, operational robustness, and technical preparation to maintain and grow, especially given the challenges faced in recent years. In other words, by 2035, only truly strong and technically prepared players will survive.

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