



Biologicals crop protection in Brazilian agriculture

The global demand expansion trend for sustainable food stuff pushes upward the adoption rate for biological based raw material. Within the crop protection segment, the demand for biologicals has significantly increase above market average, and remains with an upward trend to continue so in the next years. This text aims to highlight the risks and opportunities related to bio-based crop protection products.

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ArenaAgri® is an agro-industrial strategy and planning consulting firm, specialized in crop protection technologies for the Brazilian market.

Merieux NutriSciences® one of the world's largest laboratories is dedicated to protect consumer's health by offering solutions in chemical analysis and studies to a wide range of industries, including food sector, water and environment, agrochemicals, and crop protection.

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Biological Crop Protection in the Brazilian agriculture

Introduction

The global trend of increasing demand for food stuff produced in a sustainable manner has as a natural consequence the growth of bio-inputs. As a definition, bio-inputs (or biological products) are part of a group of products that are originate from biological agents and/or from substances obtained from plant extracts. Bio-pesticides, bio-fertilizers and seed inoculants are part of this group.

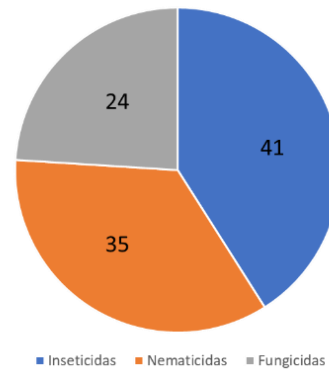
This article focuses in Bio-pesticides which are tools used to control pests and diseases using microorganisms (e.g. parasitoids such as viruses, fungi and bacteria) or macro organisms (e.g. natural enemies or predators). This type of control fits into the concept of sustainable agricultural production as it can potentially reduce the use of traditional chemicals while helping to preserve the environment. In addition, they also reduce the exposure of agricultural professionals and consumers to potentially hazard chemicals. Bio-pesticides are very important tools in the management of pests and diseases in the Brazilian tropical environment.

Some movements of international companies established in the Brazilian market have been accelerating the growth of biologicals, such as the inauguration of Koppert in Brazil in 2011, the purchase of the company AgraQuest in 2012 by Bayer Crop Science, the entry of Lallemand through the acquisition of Farroupilha Laboratory in 2016, the arrival of the Australian AgBitech in Brazil in the same year and the recent acquisition of Valagro by Syngenta in 2020. Other traditional chemical companies are gradually adding bio-based products to their portfolio and working on developing this market in Brazil.

Within a crop protection market estimated at USD 12.4 billion, the bio-pesticide segment stood out for its high growth rates. According to information from Spark, the Brazilian market already represents more than USD 200 million, with an increase of approximately 34% in relation to the 2018/19 harvest. The cultivation of soybeans is the largest market for biologicals products

comprising 59% of demand. The soybeans area treated with biologicals already exceeds 11 million hectares. Sugarcane, a traditional market in the use of biological control, accounts for 27% of sales. Also, according to the study released by the Spark, biological products are divided in importance and indication as follow: insecticides, with 41% participation, nematicides (35%) and fungicides (24%), with specific products for nematodes already reaching an area more than 5 million hectares.

Indication share of Brazilian biologicals (%)



Opportunities

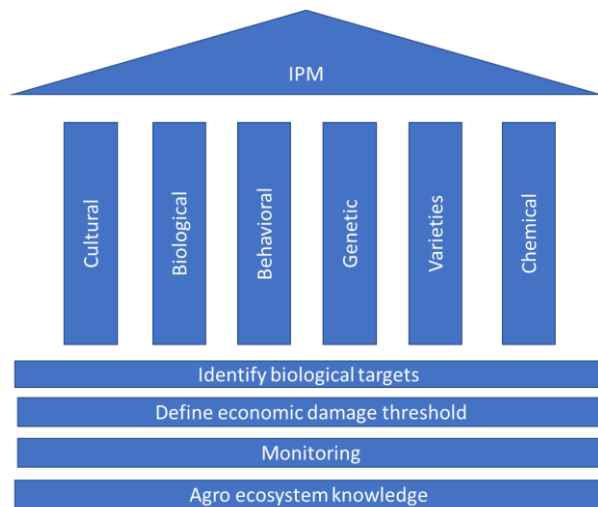


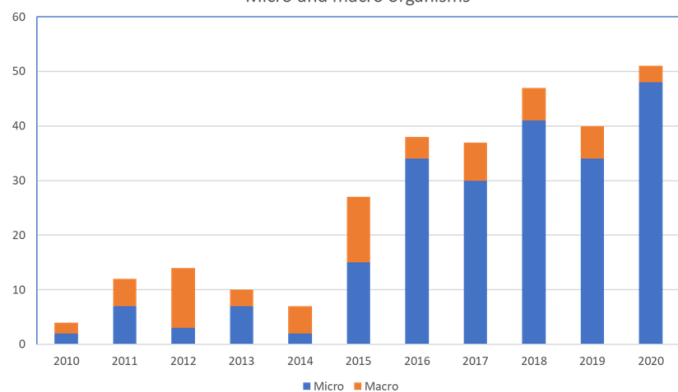
Figure 1 Foundation of IPM (source Arena)

immense opportunity for those in this market.

Another opportunity lies in the fact that, although registration rules are still below what is necessary, the regulatory environment for biological products is more friendly than traditional chemical pesticides, and the number of new registrations has increased significantly in the last 5 years.

The basis for sustainable pest and disease control is Integrated Pest Management (IPM), whose foundation presupposes the rational use of all forms of control available to the farmer, as shown in Figure 1. It shows the holistic approach to monitoring and the various types of pest and disease controls available to the farmer. The dissemination of Integrated Pest Management techniques on several agricultural fronts represents an

Biological Products registered in Brazil from 2010 to 2020
Micro and macro organisms



Source: Ministry of Agriculture (MAPA); September 2020

Main Challenges:

Despite being a rapidly growing segment, some challenges are already beginning to be felt by biological companies. The companies' product portfolio is similar and little differentiated. Below, some of the main organisms used in the Brazilian market:

Parasitoids: *Beauveria bassiana*, *Metarhizium anisopliae*, *Trichoderma harzianum*, *Trichoderma asperellum*; *Bacillus subtilis*, *Bacillus amiloliquefaciens*, *Bacillus firmus*; *Baculovirus*, etc.

Predators: *Trichogramma galloi*, *Trichogramma pretiosum*, *Cotesia flavipes*, several predator mites, etc.

This market remains open for new players and we expect a future process of selection and consolidation. Our assumptions say that companies with greater innovation power as new solutions, innovative formulations, shelf-life, customer centricity and access to the market will remain active and thrive on it.

A growing market that offers opportunities and challenges to companies willing to play on it.

Brazil, with its large territorial extension, presents logistical challenges related to transport and storage. In addition to traditional logistical challenges, some biological products are sensitive requiring cold chambers for their storage or have a shelf life that is too short, requiring quick use. Solutions and technologies related to the monitoring of the quality of biological products and the extension of their validity are still unaddressed opportunities in this market.

With an area of over 50 million hectares of cultivated area in tropical conditions and two crops per year, the potential for organic products is indisputable. Some factors are fundamental to a company's success: clearly defining its core business, having expertise in the organic market and guaranteeing access to the market. The combination of critical factors for success in the organic market can establish a new competitive level for these products. If you need to better understand the alternatives that the market offers, look for an ArenaAgri consultant.

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