

BRAZILIAN YEARBOOK OF
**TECHNOLOGY
IN PLANT
NUTRITION**

2020



abisolo 

Associação Brasileira das Indústrias de Tecnologia em Nutrição Vegetal



The Brazilian Market
of Technology in
Plant Nutrition



Introduction

The construction of information on the Brazilian Market for Plant Nutrition Technology by Abisolo began in 2014. At that time, the available information was dispersed and often lacked statistical rigor, fundamental for the generation of quality information that allows good decision-making by industry executives and stakeholders with interest in the segment.

We implemented the first “National Survey” with companies in the sector in 2015. Since then, with each edition, we try to consolidate the parameters and adjust the methodology not only to increase the index of confidence of information, but also to capture in the research the great transformations that the sector goes through.

We understand that “Market Intelligence” is a process of “continuous improvement”. It does not seem possible in a single study to capture all relevant information, with high accuracy, since in addition to parameters, methodology and statistical rigor, the quality of the result depends on the effective participation of companies in the provision of information – a foundation that we seek to improve every day.

And in addition to the expected results in this edition of the research we made a wide review of the database, the questionnaire to be applied to industries and the platforms for checking the final content.

For the safe interpretation of the content it is important to take into account that some information from the “National Survey 2020” was consolidated through extrapolation method, based on internationally accepted statistical rules and that some information is not extrapolated, since the total universe is not reflected in the sampling. Be aware of the observations contained in each topic.

Have a good read and if you want to make any criticism scans or suggestions, please contact us through our communication channels.

Abisolo Team

PART 1

Special Fertilizers

The first relevant parameter for the analysis of the research content is the understanding of which product segments are framed as “Special Fertilizers” and which were the object of analysis. Learn about the settings:

Special Fertilizers: are those products that present in their formulation some additional characteristic that differentiate them from conventional fertilizers, promoting better performance, stability, efficiency or ease of handling. They can be minerals or organics, solids or fluids and used in the most diverse types of application: via soil, foliar, fertigation, hydroponics or seed.

For organics are in this group the products that bring other benefits besides the supply of nutrients, including biofertilizers.

In the case of Mineral Fertilizers, those that in addition to providing nutrients are formulated with additives, complexing agents or chelating agents are considered “special”; those that are 100% water soluble; and controlled release.

Organic Fertilizers: These are products of a fundamentally organic nature, obtained by physical, chemical, physicochemical or biochemical process, natural or controlled, from raw materials of industrial, urban or rural origin, vegetable or animal, enriched or not of mineral nutrients;

According to their characteristics and mode of obtaining, organic fertilizers can be classified into: Simple, Mixed, Compounds, Organomineral and Biofertilizer.

As for the origin of the raw materials used in their production (except for Biofertilizers) they are classified as:

Class “A”: product that uses, in its production, raw material generated in extractive activities, agricultural, industrial, agro-industrial and commercial, including those of mineral, vegetable, animal, industrial and agro-industrial waste water treatment system with authorized use by the Environmental Agency, fruit, vegetable and food residues generated in pre and post-consumption, segregated in the generating source and collected by differentiated collection, all free from dumping or sanitary contaminants, resulting in a product of safe use in agriculture; Waste from public urban cleaning and solid waste management services can be used as raw material for the production of Organic Fertilizer Class “A”, provided that these services include segregation at the generating source and the differentiated collection of waste in at least three fractions: organic waste, recyclable waste and tailings, avoiding any type of sanitary contamination.

Class “B”: product you use, in its production, any quantities of organic raw materials generated in urban, industrial and agro-industrial activities, including the organic fraction of municipal solid waste from conventional collection, sludge generated in sewage treatment plants, industrial and agro-industrial sludge generated in wastewater treatment systems containing any amount of dumps or sanitary contaminants, all with their use authorized by the Environmental Agency, resulting in a product of safe use in agriculture.

As for their physical nature, they can be solid or fluid, and can be used for application via: Soil, Leaf, Fertigation, Hydroponics and Seed.

Organomineral Fertilizers: They are products of a fundamentally organic nature, obtained by physical, chemical, chemical or biochemical process, natural or controlled, from raw materials of industrial, urban or rural origin, plant or animal, in which mineral nutrient sources are added, contributing to the improvement of the chemical, physical and biological characteristics of the soil, in addition to the supply of nutrients to plants.

Biofertilizers: Products containing an active ingredient or organic agent, free of agrochemicals substances, capable of acting, directly or indirectly, on all or part of the cultivated plants, increasing their productivity, without taking into account their hormonal or stimulating value, subdivided into the following groups:

a) Amino Acid biofertilizer: Product obtained by fermentation or hydrolysis of natural organic materials;

b) Biofertilizer of Humic Substances: Product obtained by decomposition and solubilization of organic materials and subsequent oxidation and polymerization, formed basically by humic acids, acids fulvic and humines;

c) Biofertilizer of Algae extracts or processed algae: Product obtained by extraction and processing of algae;

d) Biofertilizer of Plant Extracts: product obtained by extraction of soluble organic compounds from the fermentation or processing of organic materials, free of biological contamination;

e) Composite Biofertilizer: Product obtained by mixing two or more biofertilizers of groups of amino acids, humic substances, algae extracts, plant extracts and other approved organic principles or agents;

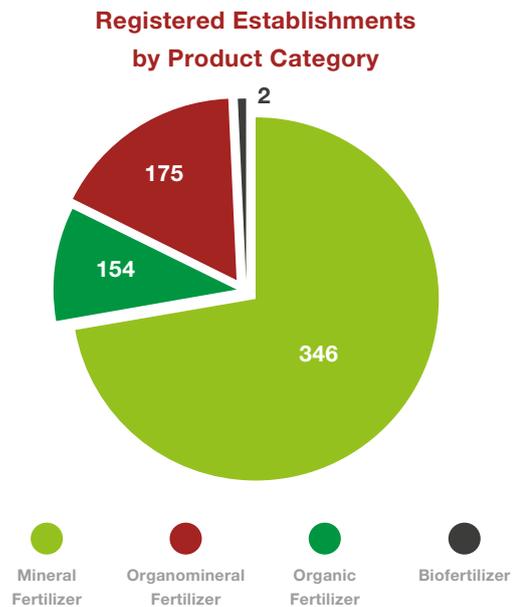
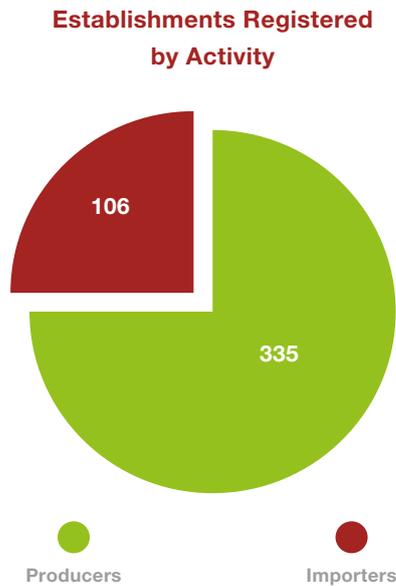
PART 2

The Special Fertilizer Industry

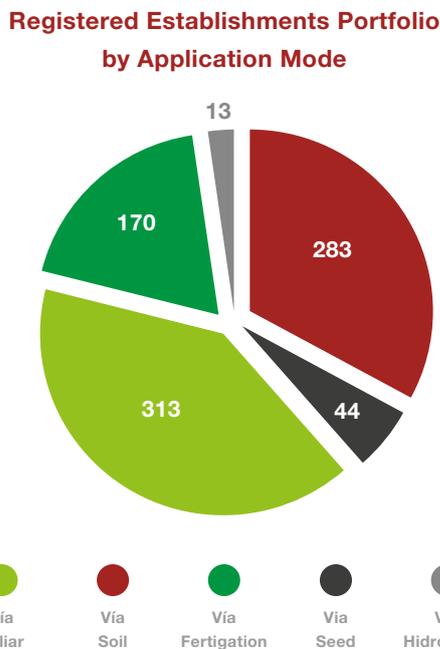
One of the great discussions among the players in the Special Fertilizers market is about the number of companies that work effectively in this product segment.

Until very recently, the registration information of companies in the Ministry of Agriculture, Livestock and Supply was not systematized, which made it very difficult to correctly identify the participating companies.

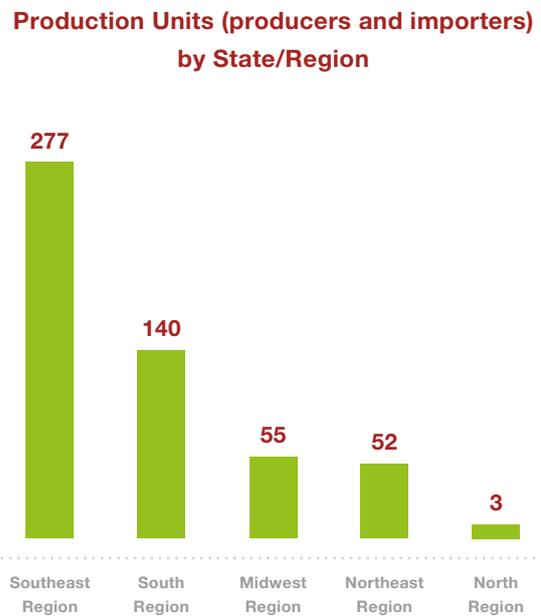
In 2019 this information was systematized and became available by the Ministry of Agriculture, which made it possible to obtain more consistent information. It is important to highlight that the database was criticized in order to eliminate inactive companies and to confirm whether active companies have, in fact, product records framed in the Special Fertilizers segment. The following are the active companies by establishment type, category, and physical characteristic of products:



Note: The same company can act in different product categories



Note: The same company can have products for more than one application mode



Note: The total number of production units and importers is higher than that of registered establishments because here were considered the subsidiaries, subsidiaries and companies of the same economic group, with active registration in the Special Fertilizers segment.

Production Units by State (Producers and Importers):

STATE	AL	BA	CE	DF	ES	GO	MA	MG	MS	MT	PA	PE	PI	PR	RJ	RN	RS	SC	SE	SP	TO
AMOUNT	4	18	4	1	6	21	3	47	9	24	3	11	1	67	5	4	45	28	6	219	1

Note: The total number of production units and importers is higher than that of registered establishments because here were considered the subsidiaries, subsidiaries and companies of the same economic group, with active registration in the Special Fertilizers segment.

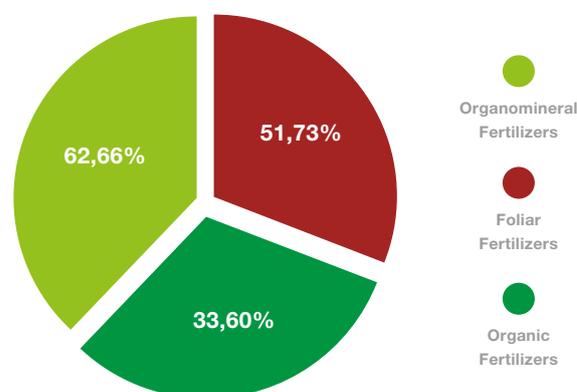
Total: 527

PART 3

The National Survey 2020 and its Results

The “National Survey 2020” had the participation of companies that own 50.58% of the Brazilian special fertilizer market, which generated a very consistent sampling for the construction of the information of this edition. See in the table below the representativeness of companies in each product segment.

Market Share of Companies Responding to the National Survey 2020



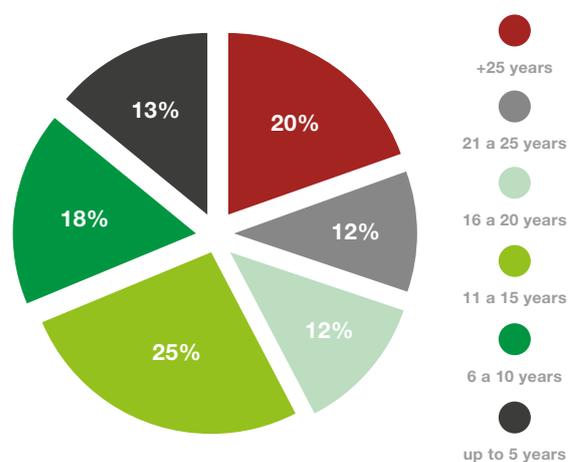
Location of Companies

Most of the companies that responded to the survey are based in the South-Central region of Brazil. See below for location.

STATE	SP	MG	PR	RS	ES	MT	BA	GO	PE	RJ	SC
%	55%	12%	12%	8%	4%	4%	1%	1%	1%	1%	1%

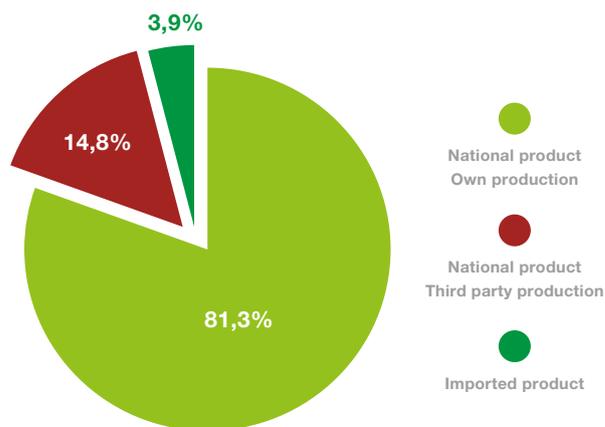
Business Uptime

The "National Survey 2020" identified that the Special Fertilizers segment is still in the process of consolidation. See the uptime of the company's respondents to the survey.



Billing by Origin of Products

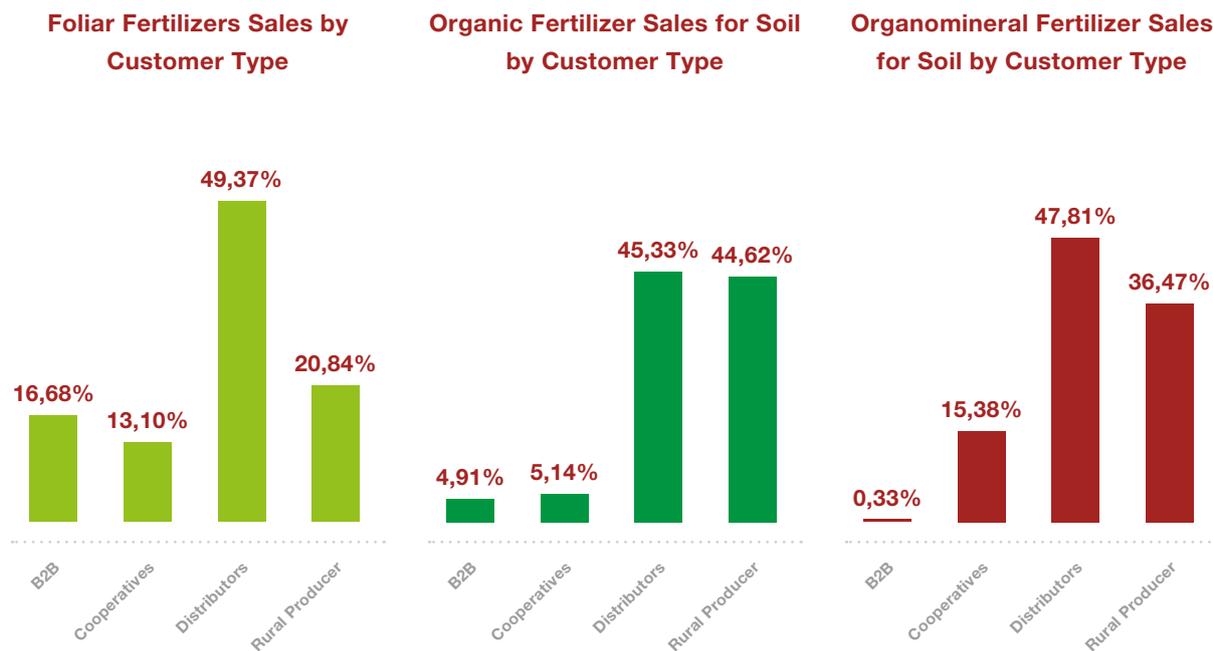
In 2019, considering all segments represented by Abisolo, it is estimated that 81.3% of revenue stemmed from locally manufactured products. In this survey we also capture sales from third-party production. See in the following graphic the proportion of national products, imported and manufactured by third parties in the billing of the companies that are respondents to the "National Survey 2020".



Note: The above result considers, in addition to special fertilizers soil conditioners and substrates for plants.

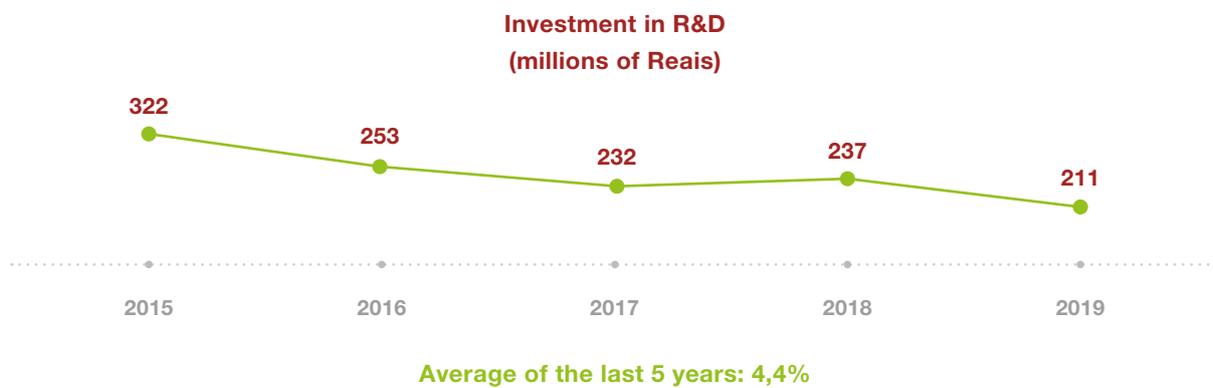
Billing by Customer Type

The distribution segment of agricultural inputs goes through an important consolidation process, either due to the search for economy of scale or as a result of changes in the strategies of farmers or industries. The following is the distribution mix of companies in the Special Fertilizers segment.



Investment in Research & Development

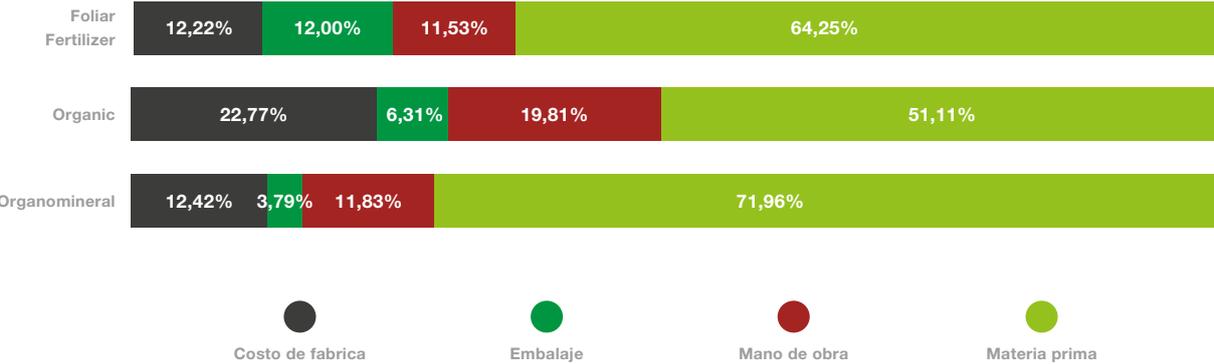
The Plant Nutrition Technology sector has invested in the last five years, on average, 4.4 of the revenues in Research & Development. Despite having the lowest historical value in 2019, the sector is among the most invested in the development of new technologies and products.



Note: The previous result covers all companies in the segments represented by Abisolo.

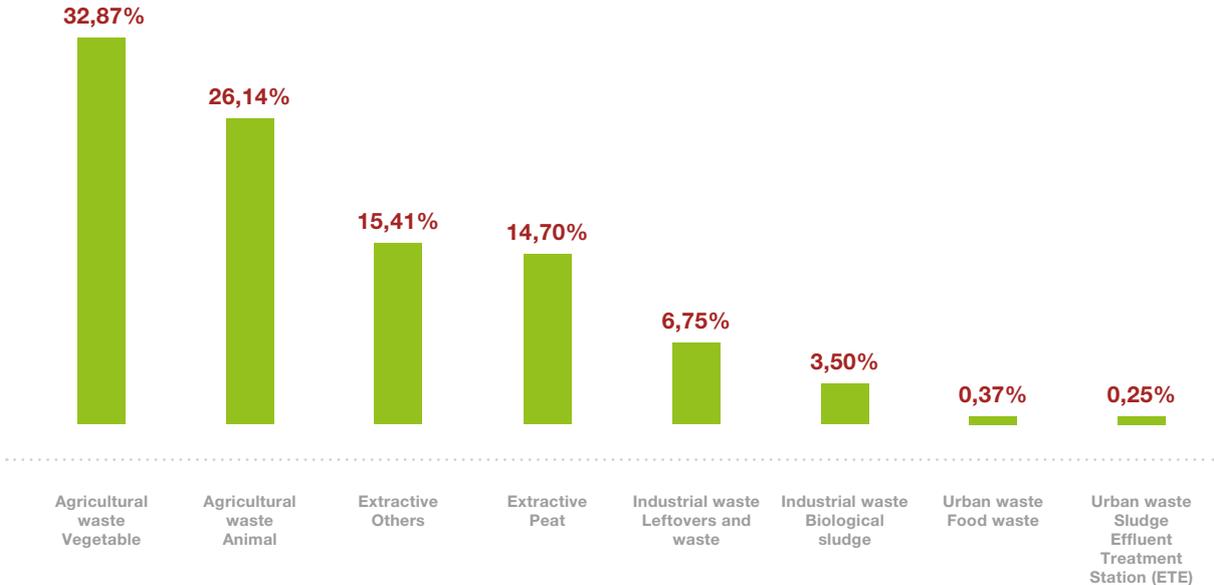
Variation in Product Costs

The National Survey captured that 72% of the companies surveyed had, in 2019, an average increase in production costs of 5.67%. On average, across all surveyed sectors, raw materials remain the main component of product cost. Consult the chart to see the description of the average cost.



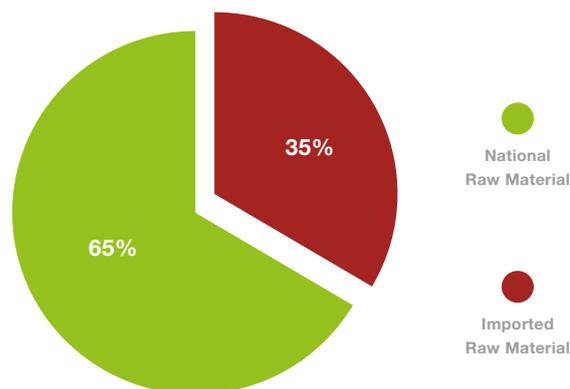
Origin of Raw Materials

Organic Fertilizers, Organomineral and Composted Soil Conditioners are part of the important process of using solid waste, generated in various productive sectors. Learn below the origin of raw materials for the manufacture of these fertilizers and conditioners.



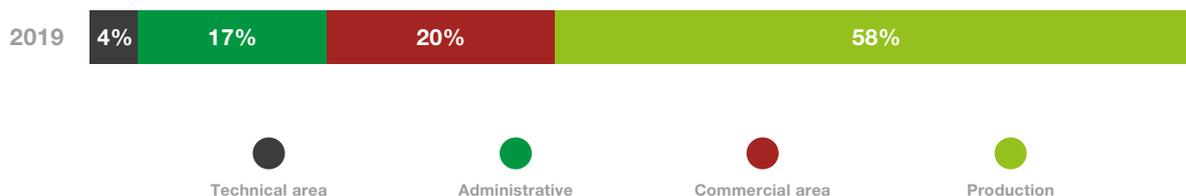
ORIGIN OF RAW MATERIALS FOR MINERAL FERTILIZERS AND ORGANOMINERALS (MINERAL PARCEL)

- The manufacture of Mineral Fertilizers and Organomineral Fertilizers (mineral plot) requires the import of much of its raw materials and additives. See the following graphic the origin of the component raw materials of these products.



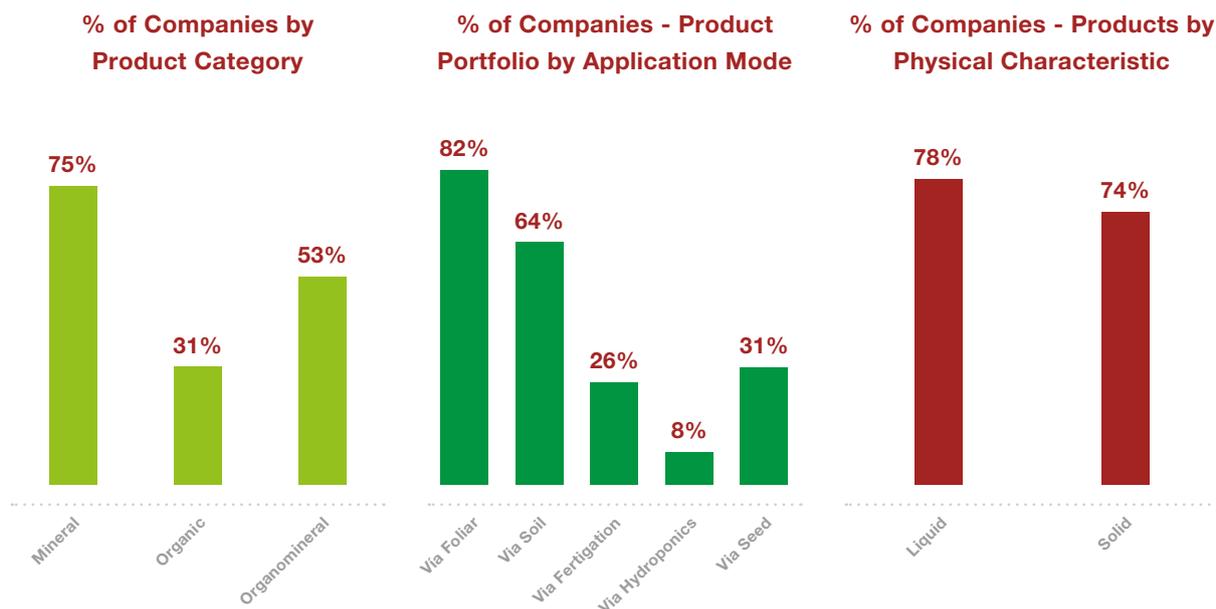
Job Creation

The National Survey revealed that the responding companies employed 17,807 people in 2019. See the following chart for distribution by sectors of activity.



The Segments of the Companies' Operations

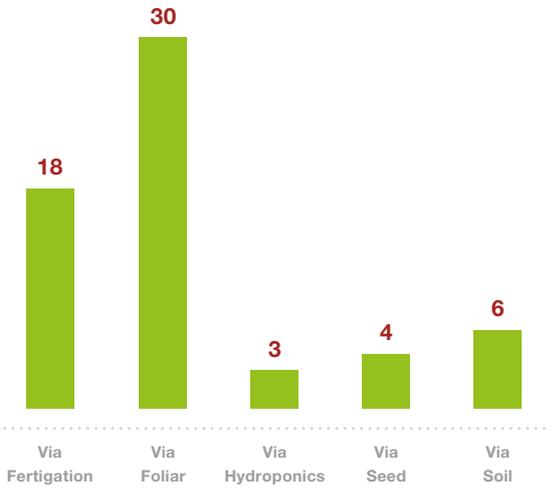
Most survey respondents operate in more than one product category. See the chart below the percentage of companies by category, by mode of application and by physical characteristic of the products.



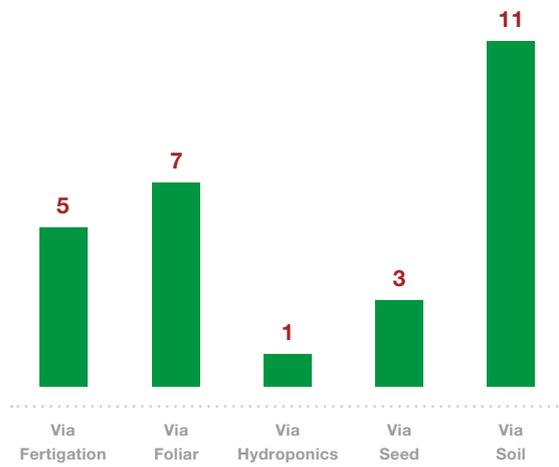
Product Portfolio

The companies that survey respondents have a very diverse product portfolio. In the following charts you can evaluate the average quantity of these companies' products by product category and by application mode.

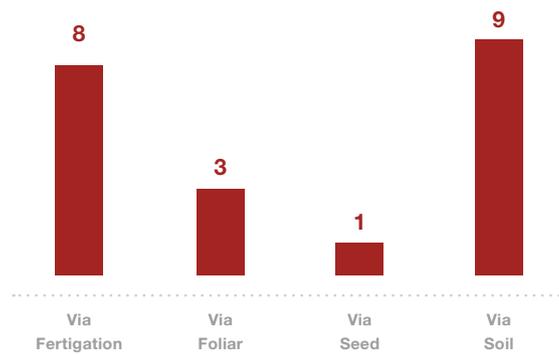
Average Mineral Products by Application Mode



Average of Organomineral Products by Application Mode



Average Organic Products by Application Mode

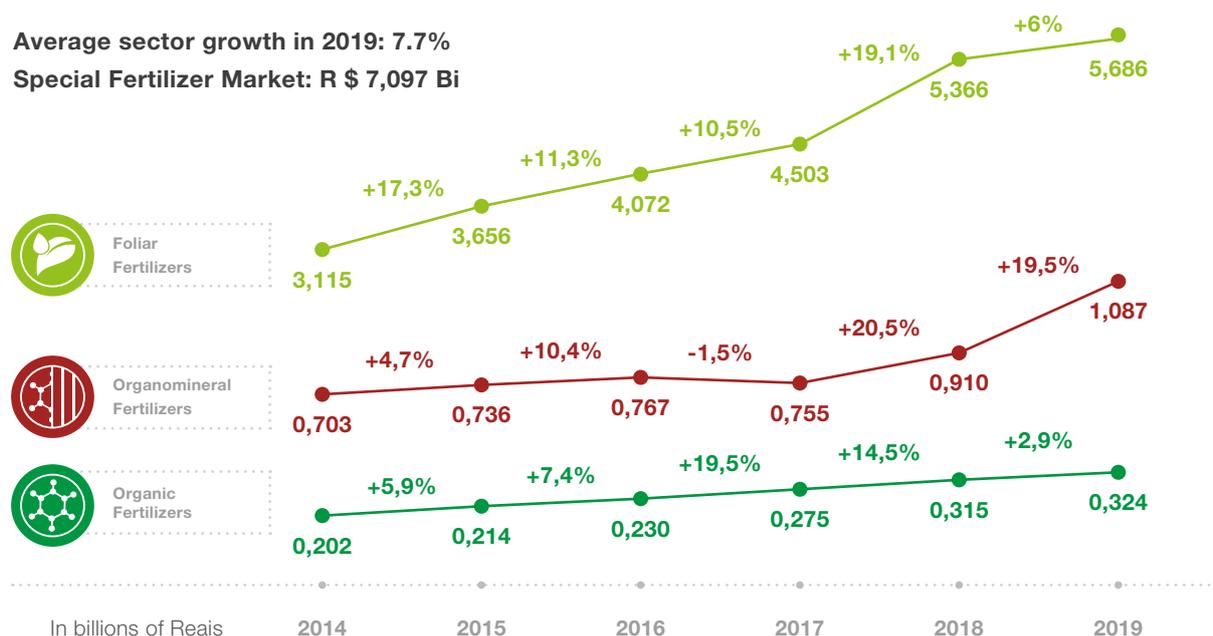


The Evolution of the Brazilian Market of Special Fertilizers in 2019

The Special Fertilizers market in 2019 is estimated at R\$ 7,098 Billion and showed an average growth of 7.7% compared to 2018. The highest growth was recorded in the category of Organomineral Fertilizers with 19.5% growth compared to 2018, followed by Foliar Fertilizers – 6% and Organic Fertilizers – 2.9%.

The various product segments had different behaviors, impacted by fundamentals as diverse as increased adoption rate, exchange rate with impact on production costs, increased freight costs, postponement of the acquisition of supplies grain producers in the last months of the year (awaiting the definition of understandings between the U.S. and China), among others. And even though the sector was impacted by conjuncture issues outside its control, it once again showed higher than average growth in other segments of agricultural insums.

Average sector growth in 2019: 7.7%
Special Fertilizer Market: R \$ 7,097 Bi



From 2015 to 2019:
Foliar: +55% | Organomineral: +47% | Organic: 51%

SALES BY STATE - The State of São Paulo appears as the largest consumer of Foliar Fertilizers and Organomineral Fertilizers for Soil, accounting for 25% of sales. Goiás is the largest consumer of Organic Fertilizers for Soil accounting for 42% of the revenues of this industry. In the chart below you can compare consumption by state in each segment in 2019.

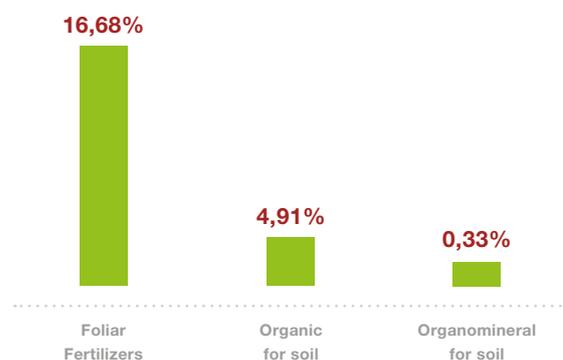
STATE	SP	MT	MG	PR	GO	RS	BA	MS	ES	PE	other states
FOLIAR FERTILIZER	25%	16%	12%	10%	7%	7%	6%	5%	1%	2%	8%
ORGANIC FOR SOIL	33%	0%	14%	3%	42%	2%	1%	0%	3%	0%	1%
ORGANOMINERAL FOR SOIL	25%	4%	23%	19%	9%	3%	5%	5%	4%	0%	3%

SALES BY CULTURE - The soybean crop continues to be the largest consumer of Foliar Fertilizers and Organomineral Fertilizers for Soil. Coffee appears as the largest consumer of Organic Fertilizers for Soil. See in the following table the consumption of Special Fertilizers by culture, in 2019.

CULTURE	soy	corn	sugar cane	coffee	fruits	cotton	citrus	vegetables	other	beans	ornamental	rice	pasture	reforestation
FOLIAR FERTILIZER	49,6%	9,2%	8,4%	8,2%	4,5%	4,3%	4,3%	3,8%	3,6%	1,8%	0,9%	0,7%	0,7%	0,1%
ORGANIC FOR SOIL	7,4%	2,9%	7,5%	29,4%	6,2%	0%	3,7%	7,0%	28,9%	0,1%	4,9%	0,2%	1,3%	0,4%
ORGANOMINERAL FOR SOIL	30,2%	14,7%	12,0%	21,6%	3,0%	1,1%	4,1%	6,3%	1,3%	1,3%	1,1%	1,0%	1,2%	1,2%

B2B SALES - The “National Survey 2020” also identified the value of sales of “finished products” among companies in the sector. See the chart below for the Percentage of B2B sales in each product category.

B2B Sales by Category

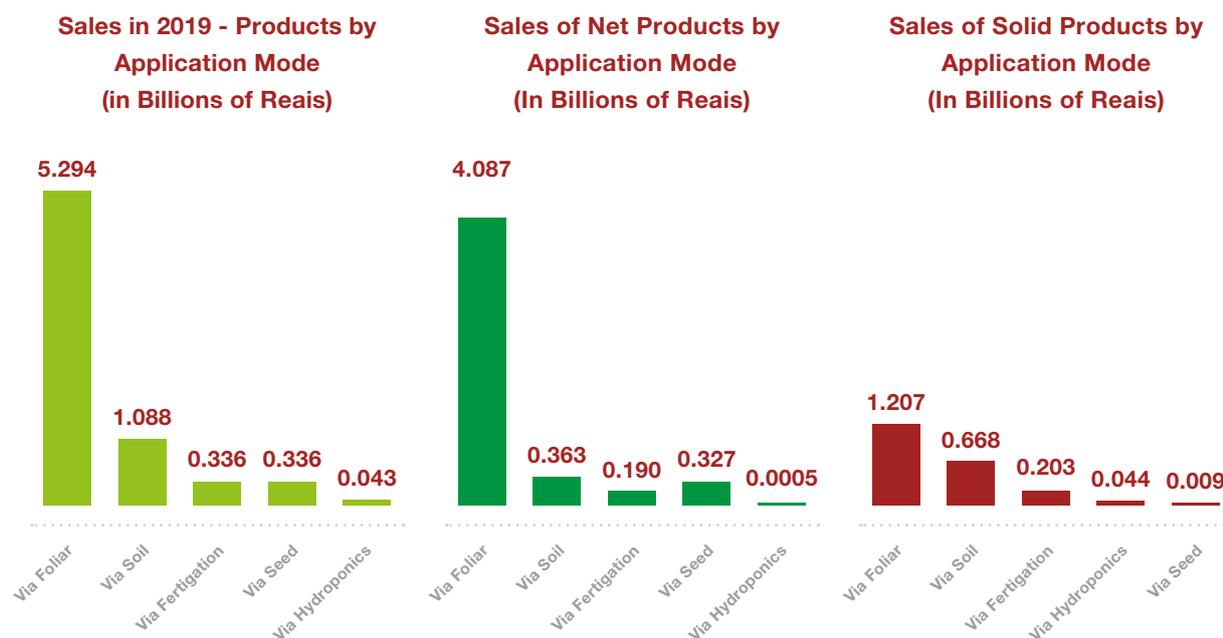


New Market Information Capture format

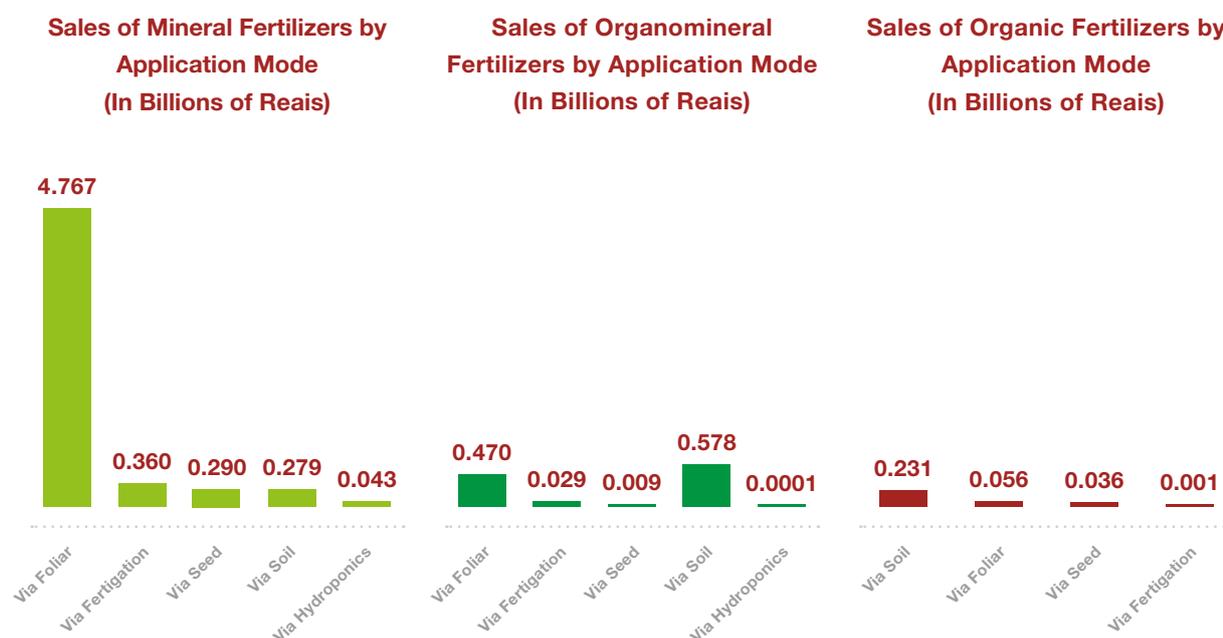
It is quite common in our segment to have a single product registered for more than one application form (Ex: Product “X” registered for application Via Foliar, Via Fertigation and Via Hydroponics, in the same registry). Until the last edition, our survey guided respondents to report the sales value of the product in the most important segment. For this reason, the sales of fertilizers for application via seed, via fertigation and hydroponics have been consolidated over the years in the Foliar Fertilization segment.

Based on the improvements implemented in the “National Survey 2020”, understanding the importance of monitoring the evolution of products in their various categories, physical characteristics and application method, respondents were instructed to report sales considering the highest possible segmentation. In this way, the data that were previously consolidated in the group “Foliar Fertilizers” according to their effective category, physical characteristics and mode of application began to be presented. And this will be the new format for the construction of data in the next editions of the National Survey. See below how billing in 2019 is distributed in this new format.

PRODUCTS, BY APPLICATION MODE:



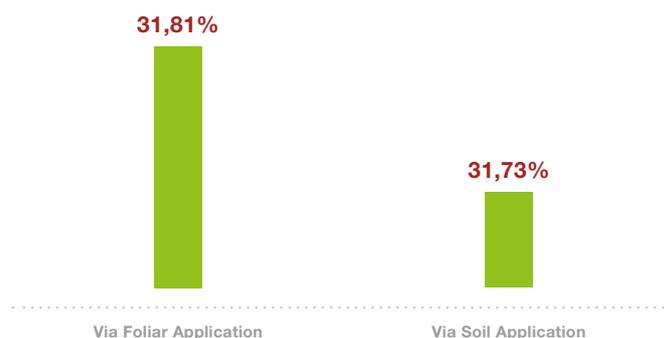
PRODUCTS BY CATEGORY



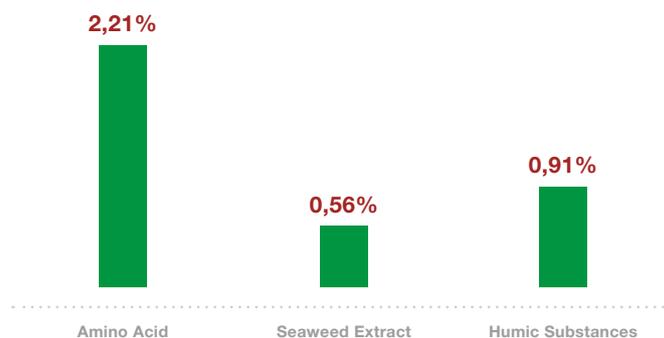
Sales of Products Containing Additives

In this edition of “Pesquisa Nacional 2020” we ask participating companies to indicate the percentage of their billing with Algae Extracts, Amino Acids and Humic and products containing any of these active ingredients. In the case of a product containing more than one of these active ingredients, participants were instructed to indicate the value in the predominant ingredient group. See in the table below the importance of these product segments in the billing of the Special Fertilizer industries.

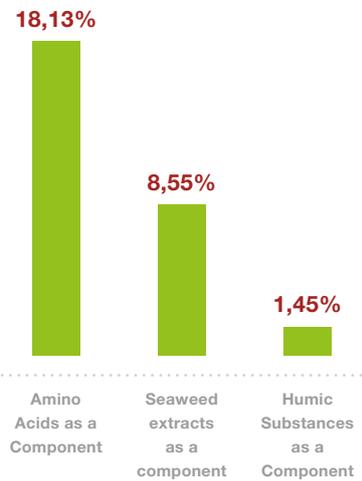
Percentage of Sales with Products Containing Amino Acids, Algae Extracts and Pure Humic Substances or as Components of the Formulation



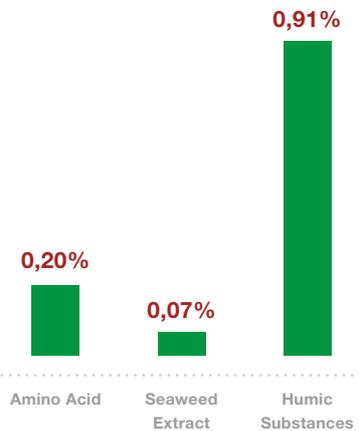
Product Sales for Application Via Sheet Containing Pure Additive



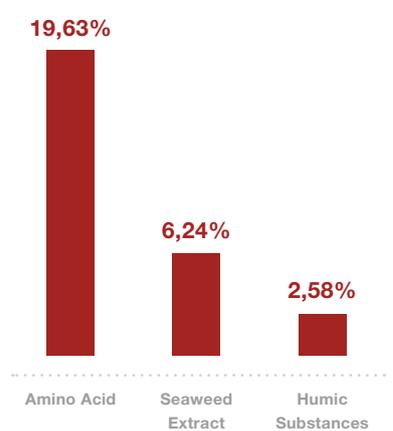
Sale of Product for Application via Sheet Containing Additive as a Component of The Formulation



Product Sales for Application Via Soil That Contains Pure Additive



Sale of Product for Application via Soil That Contains Additive as a Formulation Component



Growth Expectation in 2020

The 2020 National Survey began at the end of February/20 and was expected to end on April 30. In this interval we were impacted by the covid-19 pandemic, which had consequently the adoption of isolation protocols by companies in the sector. In practice, with professionals working in a home office regime and with restricted access to certain information that the research aimed to capture, we had to extend the process until the beginning of June.

One of the questions posed to the companies that answered the survey was about the expectation of growth for the year 2020 and it was answered. However, as the response date of the companies happened at different times – before the pandemic and during, we understand that expressing the answers without any consideration could lead us to report inaccurate information.

We can say that the vast majority of the companies responding, even if under the impact of the pandemic reported optimism and stated that the year should be growth, especially considering the development of agriculture as a whole, and particularly the increasing adoption of technologies in the sector by farmers.

PART 4

The Plant Substrate Market

The Plant Substrate industry has played a key role in increasing farmers' adoption of high-value genetics. From the rationalization of seed expenditure per planted area – made possible from the seedling production system, farmers began to have access to cultivars with greater genetic potential and this resulted in great advances in productivity and quality of production.

The great advance in the adoption of the seedling production system from stabilized substrates free of pathogens harmful to plants occurred in the early 1990s mainly in lettuce, industrial tomato and fresh market crops, tobacco and forestry. At that time, the flower segment was already a user of this technology.

Since then, the benefits of seedling production have become increasingly evident and many other crops have come to be grown from this system.

See the table for the estimation of the adoption of the seedling production system, by crop:

% of the area planted from the Production of Seedlings

CULTURE	(%)
LETTUCE	95%
EUCALYPTUS	100%
FLOWERS	100%
MELON	80%
SWEET PEPPER	100%
PINUS	95%
TOBACCO	100%
SEASONINGS AND CONDIMENTS	80%
TOMATO INDUSTRY	100%
TOMATO FRESH MARKET	100%
COFFEE	35%
CITRUS	85%
HYDROPONIC CULTIVATION (VESSELS)	100%
SUGARCANE	5%

The industries of the sector have prioritized their investments in Research and Development in the areas of health and stability of the product and in the aggregation of ingredients that allow the obtaining of physiologically active seedlings, able to better withstand the stress caused in the transplantation of seedlings to the definitive cultivation area. Another area that also receives attention and investments is raw materials to produce substrates. Today it is possible to develop substrates from raw materials from various origins, providing products that meet the most diverse levels of technology adopted by farmers.

See the table below for the main raw materials used by the sector.

(%) Row Material

ROW MATERIAL	(%)
COMPOUNDED PINE BARK	41%
COCONUT PELL	34%
SPHAGNUM PEAT	25%

The distribution system of substrates for plants is quite different in relation to other insums for agricultural production, especially due to the direct action of industries with seedling production companies. See in the chart below the distribution mix of the products of this industry.

% of Industry Sales

TYPES OF CUSTOMERS	(%)
NURSERIES/SEEDLING PRODUCERS	49%
RESALES AND COOPERATIVES	51%

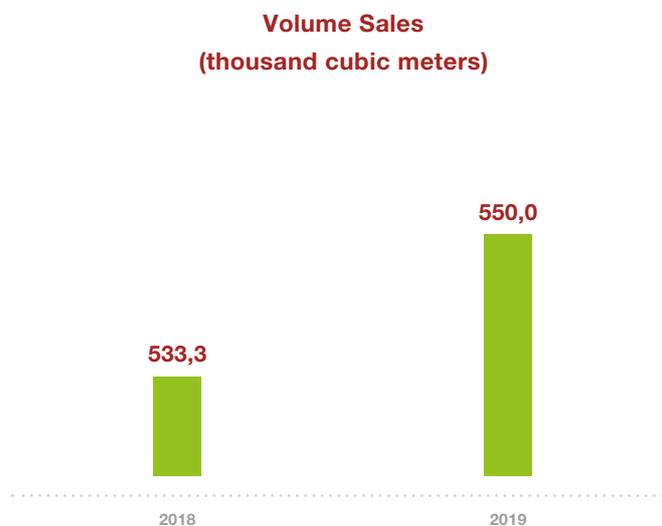
The sector is composed of producing and importing companies. See in the table below the number of establishments registered in MAPA, per activity.



Most of the producing industries and importing companies are located in the states of São Paulo, Rio Grande do Sul, Paraná and Santa Catarina. See the table below for the location of industries/importers.

STATE	Amount
SÃO PAULO	24
RIO GRANDE DO SUL	5
MINAS GERAIS	2
PARANÁ	6
SANTA CATARINA	6
RIO DE JANEIRO	1
PARÁ	1

It is estimated that the total volume of substrates for plants commercialized in Brazil in 2019 showed a growth of 3% compared to the previous year. See the chart below for the evolution in relation to 2018.



The Evolution of the Billing of the Substrate Sector for Plants

The revenue of the substrate sector for plants in Brazil in 2019 is estimated at R\$ 220 Million, showing a growth of 7% compared to the previous year.

PART 5 Soil Conditioners

The National Survey 2020 included only soil conditioners that fit the definitions and classes described below:

Soil Conditioners: Product that promotes the improvement of physical, physical-chemical properties or biological activity of the soil, and can recover degraded or unbalanced soils nutritionally;

I - CLASS A: a product that uses raw material of plant, animal or agroindustry processing, where sodium (Na⁺), heavy metals, elements or synthetic organic compounds potentially toxic are not used in the process;

II - CLASS B: product that in its manufacture uses raw material from the processing of industrial activity or agroindustry where sodium (Na⁺), heavy metals, elements or synthetic organic compounds potentially toxic are used in the process;

III - CLASS C: product that in its manufacture uses any amount of raw material from household waste, resulting in a product of safe use in agriculture;

IV - CLASS D: product that in its manufacture uses any amount of raw material from the treatment of sanitary dumps, resulting in a product of safe use in agriculture;

The Companies of Setor

The Ministry of Agriculture, Livestock and Supply 45 (forty-five) Producing and Importing Establishments of Soil Conditioners are registered with the Ministry of Agriculture, Livestock and Supply. See the chart below, by activity.



Most of the establishments are headquartered in the states of São Paulo and Paraná. See the table below for companies by state.

STATE	SP	PR	SC	RS	MG	GO	RN	CE
AMOUNT	19	12	4	3	4	1	1	1

The Billing of the Soil Conditioners Sector

It is estimated that in 2019 the revenue of the sector was R\$ 90.7 Million.

In general, the companies that operate in this product segment also act in the production of Organic Fertilizers for Solid Soil, since the raw materials and production processes of the two segments are practically the same, differentiating only the minimum quality standards recommended in the legislation.

Starting next year we will consider reporting the information of the two segments in a single report, presenting, if possible, new information.

PART 6

Thanks and Final Considerations

We appreciate the contribution of all those involved in this Market Intelligence project, starting with the Deliberative Council of Abisolo, which supported all the proposed changes, understanding that this new format is the beginning of the construction of new and better information.

Here is our recognition for the commitment of the entire Abisolo Team, which contributed each one with its expertise to the consolidation of the research, to Spark, in particular to Tamy de Paula, who coordinated the project and was careful to understand all the nuances that surround our sector and to review all the points of doubt to be able to deliver the best possible result and especially to the companies that were willing to respond to the research – associated and unassociated. Without them this work would never be possible.

And finally, we want to invite all companies in the sector that did not participate in this year's edition of the National Survey to participate in the next edition. Only with the massive participation of companies in the sector will we be able to build increasingly relevant and reliable information, which will enable the making of increasingly assertive decisions.

We reiterate that all criticisms and suggestions about this work will be very welcome.

Thank you, everyone.

Abisolo team.



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