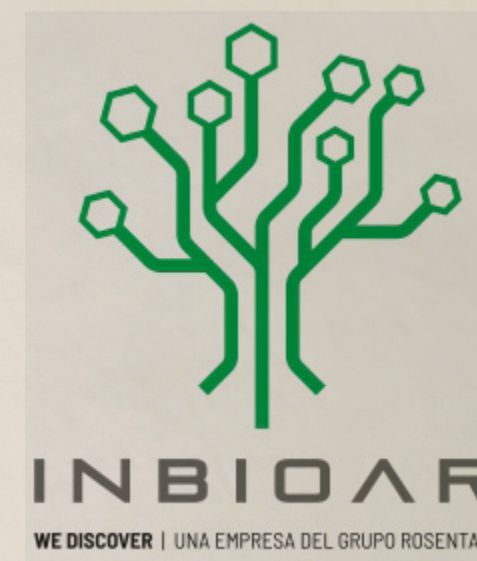




Dr. Gustavo M. Sosa
President and CEO
INBIOAR



Discovering Natural & Sustainable Agricultural Herbicides

Taking root around 12,000 years ago Agriculture has been one of the biggest contributors and supporters of society. Traditional hunter-gatherer lifestyles followed by humans since their evolution were swept aside in favor of permanent settlements and a reliable food supply, making farming and agriculture a vital part of our existence.

Today, the demands on farmers have grown exponentially – along with the size of farming operations, the sophistication of their tools, and the ever-changing global landscape. Moreover, the growing human population has exponentially increased the demand for food. Health and environmental awareness have given rise to the consumer demand for low-residue products, which go along with stricter restriction policies and environmental laws. All of this has created an unprecedented demand for products with novel modes of action, putting further pressure on farmers.

Enabling farmers to grow the safest and most high-quality crops, **INBIOAR** Argentina, a biotechnological research and development company created to develop natural products for the protection of crops, has revolutionized the crop care industry. Established in 2010 by President and CEO, **Gustavo Sosa**, this organization was started with the objective of identifying plants that possess the ability to produce natural herbicide molecules.

Since then, INBIOAR has grown to become a global brand working on the systematic development of searching, evaluating, and selecting plant extracts with a herbicidal effect. These plants are then

used to create natural products that protect the crops, and the planet from the negative effects of chemical herbicides, enabling farmers to grow chemical-free crops, and contributing to a healthier lifestyle for all.

A Natural Remedy to Crop Protection

Research has proven that one single plant has the ability to provide thousands of different compounds. By creating a library of extracts, the chances of finding novel active ingredients multiply. Working on this principle, INBIOAR has developed a bio-extract library that it utilizes to create novel crop protection products.

Built on the philosophy – weeds kill weeds, INBIOAR is best defined by its ability to transform weeds into a natural prototype of bio-herbicide. While the traditional way of using chemicals to treat weeds is known to leave a lot of unwanted and unhealthy chemical residue in the soil, the use of bio-herbicide has a much more beneficial effect. Not only does it eliminate the weeds within a few hours but it also leaves no harmful chemicals in the soil or on the crops whatsoever.

Since its inception, INBIOAR has been dedicated to searching for and developing new active ingredients for the agroindustry. By merging fieldwork and observation, laboratory experiments, and greenhouse trials, the company has developed a systematic process to search for, evaluate and select plant extracts with promising uses for crop protection.

“Our product is research,” shares Gustavo. “*The result of our work is natural agrochemicals for the crop protection industry. We have good results in a unique moment in the industry because bio-herbicides are very actively sought by many groups worldwide not only in the industry but also in the academy.*”

At the same time, INBIOAR keeps the farmer at the center of its focus. It is only when farmers are provided the right chemical tools, that they are able to comply with the environmental norms and meet the increasing demands of consumers, something that INBIOAR strives to accomplish.

Leading by Innovation

At INBIOAR, researchers are dedicated to identifying the potential of plant samples after which they are categorized as herbicides, antifungals, insecticides, or stimulants.

“We have developed a method to screen areas to find plants with abilities to produce bio-insecticides, bio-fungicides, or bioherbicides. We lower the risk to detect bio-active plants, screening only those areas with potential to find new molecules/plant extracts,” shares Gustavo.

Then, they obtain lead extracts to deeply study their chemical profiles and molecular compositions, to identify, modify and

apply the active compound structure.

The robustness of this method has allowed the INBIOAR researchers to move to other regions around the world, and find new bio-diversity of molecules and plant extracts with unique abilities in the crop protection industry. Not to mention, this methodology is a closely guarded proprietary process known only to INBIOAR associates, keeping them one step ahead of the competition.

A research and development organization by design, INBIOAR does not believe in mass-producing its novel products. Instead, they work closely with global organizations enabling them to transform their abilities. Due to its proven success in the field, today INBIOAR creates natural agrochemical prototypes for some of the biggest crop companies in the world.

Having developed valuable expertise in agricultural research and technology transfers around the world, INBIOAR develops its natural active ingredients into commercial products, with its industrial partners. This allows them to offer need-based solutions and services to companies interested in natural products for the crop protection market.

All the plants collected by INBIOAR are as per the legislation of each country considering international compliances like the Nagoya Protocol. Due to their

ground-breaking contributions to uplift the agriculture industry, INBIOAR also possesses a patent with the USDA.

Currently operating only out of Argentina, the company has established its subsidiaries in Chile, Paraguay, and the USA. They then plan to expand into India, Africa, and Australia, studying more plants and creating bio-herbicides worldwide.

An Innovative Collection

After completing his Forest Engineering from the National University of Santiago del Estero and acquiring a Ph. D. in biochemistry from the National University of Rosario, Gustavo began his entrepreneurial journey in biological sciences and agriculture technology. After his postdoctoral studies at the Ohio State University, he spearheaded various companies in Argentina with the support of investors from the US and Argentina.

Gustavo observed early on in life that under most trees, there was no plant growth whatsoever. A process known commonly as allelopathy is a biological phenomenon by which an organism produces one or more biochemicals that influence the germination, growth, survival, and reproduction of other organisms. These biochemicals are known as allelochemicals and can have beneficial or detrimental effects on the target organisms and the community.

Over time, Gustavo started wondering, “*what if we use the chemicals to help the crops against weeds? We learned that weeds (and many other*

species) produce chemicals that kill different plant species.” Soon he set out to collect hundreds of plants to extract them for their unique biochemicals which resulted in the establishment of INBIOAR in 2010.

Within the organization, a team of motivated and talented individuals works in tandem to create the next generation of natural herbicides. “*We are always thinking about the next step while we live in the present,*” states Gustavo.

“I like to think of INBIAOR as a painting where many painters make different parts of the art. When you see the paint, you cannot distinguish your lines but the whole painting is a masterpiece. I like to think of this idea because we have investors, scientists, and outstanding global consultants at the scientific and financial levels. World-class professionals make us a better team. I am leading INBIOAR but for sure I am doing that thanks to my colleagues and now friends. INBIOAR is them and all of us together.”

In addition, Gustavo teaches plant biochemistry at the University of El Salvador, and he has been a tutor of MS. and Ph. D. students. He is a consultant and mentor of technological startups.

Driving the Change

Aimed at uplifting the farming community and the health of the public, the agriculture-technology industry has made massive progress since it first came on the scene. The world has been turning to natural products for a while now and Covid-19 accelerated that transformation even more. Lucky for us, forward-thinking companies like INBIOAR have spent their entire existence identifying and creating natural crop solutions with this very objective. Catering to the industry requirements, INBIOAR leads the change towards environmentally friendly agriculture.

Today, INBIOAR has further increased the number of tests it conducts worldwide, strengthening its portfolio even more and proving to the world the efficacy of natural plant-based herbicides. Additionally, by partnering with various government establishments, INBIOAR remains committed to educating and training farmers, further ushering in the change to safe and sustainable farming.

Modern methods such as data collection and data mining also play a key function in the overall ecosystem at INBIOAR. “*We are living in a revolution in agriculture today where the “old” agriculture is open to new technologies with many applications to better understand the crops, innovative technologies in the crop protection industry, the smart use of water, the new crop varieties,*

all of it is mining data,” says Gustavo.

Over the centuries, as farmers have adopted more technology in their pursuit of greater yields and healthier crops, one thing remains clear – that we are just at the brink of disruptive innovation in agriculture. Research and technology companies like INBIOAR remain poised for this change, with a global scale-up plan in the works over the next few years. “*We think of INBIOAR as a global company,*” states Gustavo.

“We plan to repeat our projects in different regions, collecting different plant species and obtaining unique biodiversity of natural molecules, expecting to find new mechanisms to control pests.”

As consumers demand a cleaner harvest from the growers, governments change their regulations to ensure minimum damage to the planet and technology seeps into the agriculture sector, for INBIOAR, the best is truly yet to come.