

The reduction of greenhouse gases and the increase in productivity as a driving force to achieve sustainable agriculture.

ARGENTINA, CHILE, COLOMBIA, SPAIN, URUGUAY, BRAZIL



Webstory



Technological solution

The generation of greenhouse gases by agriculture accelerates climate change, increasing temperatures and decreasing precipitation, which in turn has an effect on agriculture itself.



Technological description

In this project, we have found a way to genetically improve inoculants without using genetically modified microbes. The goals pursued are the obtaining of spontaneous mutations and new microbial isolates that improve the productivity, nutritional quality, and environmental quality of the main crops.



Impacts and results

The sequencing and genomic analysis of the 18 main inoculants used in Latin America and the Caribbean demonstrated that the majority of these bio-inputs can be potential emitters of nitrous oxide.

Genetic variability was obtained for some of the responsible clusters in certain microorganisms, leading to the identification of 7 inoculants that reduce nitrous oxide emissions in crops.

It was confirmed that these strategies do not have negative economic impact; in fact, some of these microbes also improve the nitrogen content in soybean plants.

Crop productivity was improved through various mechanisms in microorganisms, including increased herbicide tolerance, greater nutrient availability, and increased pathogen tolerance.



- 20 %

N2O emissions in broadacre crops



- 3 %

Nitrogen fertilization cost in broadacre crops



- 60 %

Glyphosate residues in soil



+ 5 %

Productivity in broadacre crops



+ 6

Countries engaged in genetic improvement



+ 8

Supported doctoral theses



+ 50

Glyphosate-tolerant strains obtained



+ 20

Peer-reviewed publications

MAIN DONORS



PARTICIPATING ORGANIZATIONS

