

Bioinputs in integrated crop management: field evidence on soil, environmental impact, carbon footprint and yield

ARGENTINA, COLOMBIA, URUGUAY



Webstory



Technological solution

Adoption of biologicals is held back by limited knowledge of how to use them, variable efficacy and a lack of evidence on their continued use. The project will generate evidence that is comparable across countries, using shared protocols and measurement methods, and make it available in a module of the Hemispheric Bioinputs Platform (PHB, by its Spanish acronym) with courses, a digital library, a virtual assistant and a directory of experts. Hands-on workshops and field days, with an emphasis on youth and women, will bring the results to farmers.



Technological description

The technology consists of integrated crop management programs that incorporate biopesticides and biofertilizers based on fungi, bacteria, microalgae and insect frass, available in each country and quality-checked batch by batch. They will be tested on brassicas in Colombia, grapevine and tomato in Argentina, and soybean and wheat in Uruguay. In three plots per crop, conventional management will be compared with bioinput-based management, which lowers nitrogen or phosphorus fertilizer rates and chemical insecticide use. At 0, 18 and 36 months, the project will measure the Environmental Impact Quotient (EIQ), soil quality and microbiome, carbon footprint, yield and costs.



Impacts and results

Compared to the initial context of high dependence on agrochemicals and uncertainty, the project is expected to empirically demonstrate that the use of biologicals can reduce the need for synthetic fertilizers by up to 50% and lower application costs, while increasing crop yields by up to 20%. Environmentally, improvements in soil quality and a measurable reduction in carbon footprint are expected. In terms of capacity building, the information gap will be addressed by training at least 2,500 direct beneficiaries and 5,000 indirect beneficiaries (producers, technicians, and academia) through the PHB platform and extension activities. By transforming research into accessible evidence, resistance to change will be reduced, facilitating the large-scale adoption of biologicals and positioning the region toward carbon-neutral agriculture.



+ 12
Workshop



~ 50
Technical digital documents



9
Evaluated plots



5
Crops assessed



2
Scientific articles



3
Comparative measurements per plot



~ 2500
Expected direct beneficiaries



8
Quality-verified bioinputs to be field-tested

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