

ARGENTINA, BRAZIL, COLOMBIA, COSTA RICA, UNITED STATES, HONDURAS,
DOMINICAN REPUBLIC, VENEZUELA



Webstory



The technology is a regional platform with four integrated elements. The first is a citrus germplasm bank introduced and multiplied under biosafety conditions, holding events obtained through transgenesis and gene editing (CRISPR-Cas9), with *in vitro* micropropagation to scale up plants. The second is a harmonized set of molecular diagnostic protocols based on qPCR (quantitative polymerase chain reaction), LAMP (loop-mediated isothermal amplification), and CRISPR-Cas12. The third is a BAM/biomod multi-model architecture that combines biotic, abiotic, and movement factors and runs mechanistic and machine learning models in ensemble to produce risk maps and early warnings. The fourth is a field mobile application with assisted symptom recognition that works offline. The reference sector is citrus farming, dominated by family agriculture.

The project expects to introduce at least 10 biotechnological materials under biosafety conditions from a base of up to 20 events, to multiply and characterize between 10 and 15 with confirmed genetic identity, and to complete HLB performance evaluation for between 6 and 10, classified as materials of lower susceptibility, tolerant, or showing no difference from the control. Multi-omic characterization (transcriptome and epigenome) should yield standardised databases, reproducible pipelines, and validated molecular signatures. Three harmonized molecular protocols are anticipated, with limit of detection, sensitivity, specificity, repeatability, and interlaboratory agreement established; a regional model repository and a risk dashboard with warnings; and a mobile application released in official stores. Two multifunctional experimental nodes will sustain field validation and training, and results will be published in an open-access repository.



- 50 %

Expected reduction in monitoring cost



3

Expected harmonized and validated protocols



10

Expected genotypes
evaluated and
validated



- 30 %

Reduction in disease progression in pilot areas

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