INSTITUTO NACIONAL DE TECNOLOGÍA AGROPECUARIA, ARGENTINA

Subtropical bananas: homegrown clones and living soil for a more competitive chain

The Southern Cone imports most of the bananas it eats. Four countries are testing twelve lines bred over two decades, paired with management that brings the soil back to life.



Argentina /Bolivia /Colombia /Ecuador /Honduras /Paraguay /Peru

+300
Expected commercial yield increase (boxes)

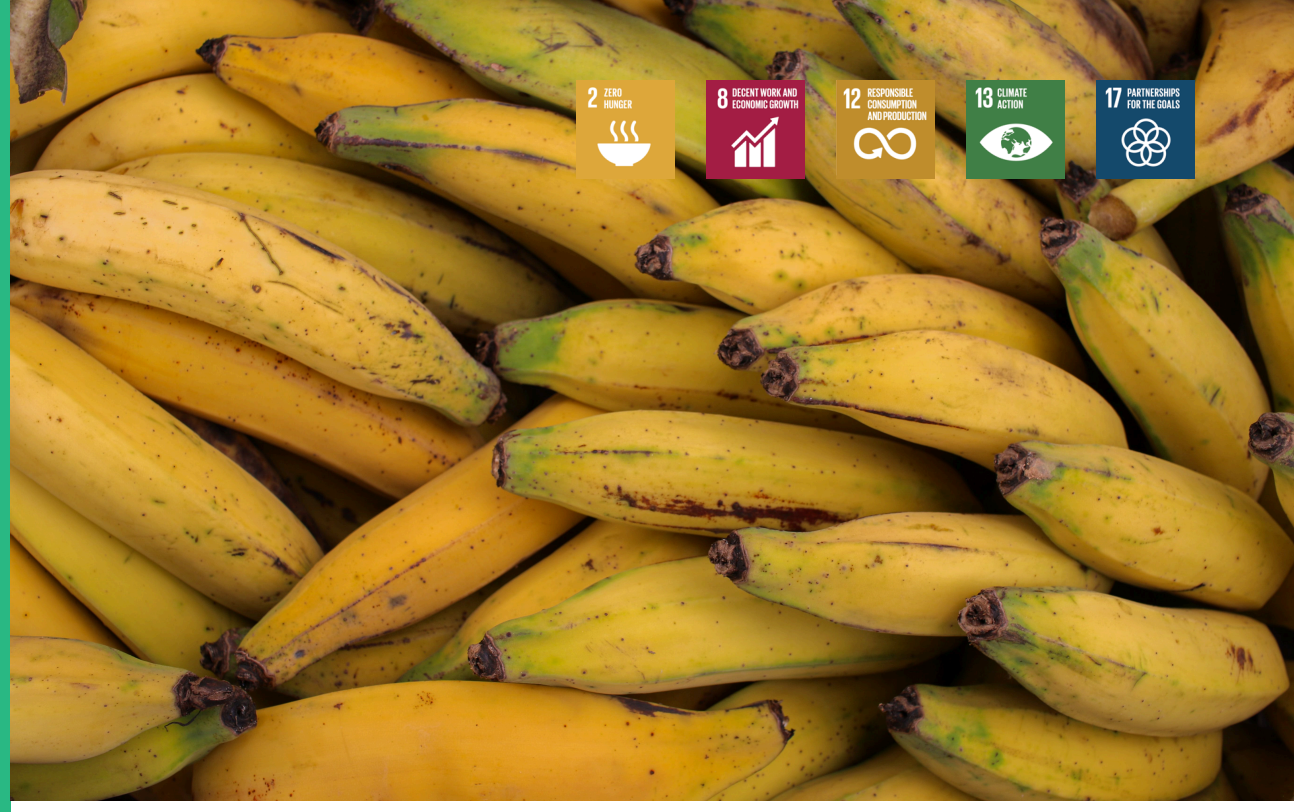
+7 US$
Expected price improvement per box

13
Comparative yield trials established

18
Expected technical-scientific personnel trained

3700
Expected direct beneficiaries

12
Advanced lines sequenced, identified, and field-evaluated



Four countries, thirteen trials, and one shared protocol

Initiative

The work is divided according to what each country does best. Argentina brings more than twenty years of subtropical banana breeding and twelve advanced lines already selected for resilience, yield, hand shape, and disease resistance. Paraguay contributes its experience in agroecological management with bioinputs and leachates; Bolivia, soil health and certified organic fertilization; Colombia, high disease pressure environments where those same clones can face Fusarium, Ralstonia, and Sigatoka before the pathogens reach the south. Thirteen comparative yield trials, run under a shared protocol of variables and measurement timings, will make it possible to read results from very different environments side by side.

Homegrown genetics and microorganisms that hold the soil together

Tech solution

The solution has two halves that need each other. The first is twelve advanced lines of subtropical Cavendish banana, identified by genome sequencing and by sequence-specific molecular markers that make it possible to recognize the variants appearing spontaneously in the field or during in vitro culture. Multiplied by tissue culture, they deliver uniform, pathogen-free plantlets: 700 plants per line, 10,000 in all. The second half is management. Resilient material does not perform on its own; it needs soil that absorbs heavy rain instead of letting it run off. Hence the application of root growth promoting microorganisms (Pseudomonas spp., Azospirillum spp., and Trichoderma spp.), preventive control of yellow Sigatoka with Bacillus amyloliquefaciens, and intervention timing set by biological forewarning systems fed with weather forecasts.

MORE INFO

Impacts and Results

The project expects to identify the best performing clones for each environment and establish genotype by environment interactions from thirteen comparative yield trials: eight in Argentina, three in Paraguay, and two in Bolivia, plus a disease screening in Colombia against Fusarium, Ralstonia, and Sigatoka. The twelve advanced lines will be sequenced and characterized with markers also validated on 40 clones from a 150-clone collection.

Between months 24 and 36, external and internal fruit quality will be measured, with tasting panels and comparison against market benchmarks. On the agroecological side, a diagnosis of the critical management points in each country and a validated transition model are anticipated. The team's ex ante estimate places the benefit at a rise from 800 to 1,100 boxes per hectare per year and a price improvement from 16 to 23 dollars per box.

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