

# FONTAGROTECH Cadmium Diagnosis and Management System for Avocado (SIDMCA)

PERU, ECUADOR, CHILE, ARGENTINA, COLOMBIA, BOLIVIA, COSTA RICA, PARAGUAY, UNITED STATES, PERU



**i** Webstory



## Technological solution

The proposed technological solution consists of the development and implementation of a regional model for the integrated management of cadmium in avocado cultivation, supported by scientific evidence, standardized diagnostic tools, and a strong knowledge management strategy. This solution will combine, on the one hand, harmonized methodologies to quantify the presence of cadmium in soil, water, plant material, and agricultural inputs within the agroecosystem, thereby generating comparable and reliable information across countries; and, on the other hand, it will promote the validation of agronomic management strategies aimed at preventing, reducing, or mitigating the absorption and accumulation of this metal in the crop. In addition, it includes a key capacity-building component through training processes, technical exchange, systematization of experiences, and dissemination of results, targeting both project partners and producers, extension agents, and other stakeholders in the value



## Technological description

SIDMCA brings together three complementary innovations. First, a harmonized protocol for cadmium sampling and analysis in soil (total and bioavailable), leaves, fruits, irrigation water, and fertilizers, validated in 50 plots across four countries under diverse soil and climatic conditions, generating a comparable and traceable regional baseline. Second, a set of management tools: evaluation of 24 avocado rootstocks in pots with Cd-enriched soil to identify rootstock-scion combinations with low accumulation; factorial field trials with soil amendments and balanced fertilization over two growing seasons; and laboratory kinetic adsorption trials that model Cd immobilization through amendments with high cation exchange capacity. Third, a knowledge management system including dissemination materials, good practice manuals, and training for lead instructors, all supported by scientific publications and a regional network of laboratories and certified technical specialists.



## Impacts and results

As expected results, the project will generate a regional baseline on the presence of cadmium in the avocado production system, supported by the analysis of more than 250 samples of soil, leaves, fruits, water, and fertilizers collected from 50 representative plots in Peru, Ecuador, Colombia, and Bolivia. This process will make it possible to establish a consensual protocol and standardized technical notes for sampling and laboratory analysis applicable throughout the Andean region, thereby strengthening the comparability, reliability, and traceability of the information. It is also expected to identify at least 24 avocado rootstocks with lower cadmium bioaccumulation capacity in leaves and fruits under controlled conditions, as well as to generate experimental evidence on the effect of soil amendments and balanced fertilization schemes in reducing cadmium availability in soil and its accumulation in fruit on pilot farms.



MAIN DONORS

PARTICIPATING ORGANIZATIONS