

Innovations for the Prevention and Management of the Banana Fungal Disease Foc TR4 (ALER4TA)

Implemented by the *Fund for the Promotion of Innovation in Agriculture (i4Ag)*
As part of the special initiative *Transformation of Agricultural and Food Systems*

The Challenge

Preventing and strengthening the banana sector's resilience to Foc TR4 fungal disease

Bananas are crucial for food security, employment and exports in Latin America and throughout the world. Most Musaceae grown in Latin America are bananas, followed by plantains or cooking bananas. Vital to the region's economy, bananas produced in Ecuador, Colombia and Peru combined represent 35.5% of global export quantities. Over 90% of all imported bananas in Germany come from Latin America, the majority from Ecuador and Colombia.

The emergence of *Fusarium wilt tropical race 4 (TR4)* poses a serious threat to 80 % of the global banana production. Outbreaks of TR4 have been recorded in the region of Colombia (2019) and Peru (2021); it risks spreading within those countries and throughout the world. Its dissemination would result in major economic, social and environmental impacts for small scale producers and other stakeholders within the entire sector.

Name of the Project	Innovations for the prevention and management of the banana fungal disease Foc TR4 (ALER4TA)
Name of the Global Fund	Fund for the Promotion of Innovation in Agriculture (i4Ag)
Commissioned by	Federal Ministry for Economic Cooperation and Development (BMZ)
Project Region	Ecuador, Colombia, Peru, Bolivia
Implementing Partners	Alliance of Bioversity International (CIAT), Inter-American Institute for Cooperation in Agriculture (IICA), Andean Community (CAN)
Duration	03/2022 – 12/2024

The Innovation

Prevention, management and monitoring of Foc TR4 through digital solutions

Prevention strategies

Using innovative tools based on artificial Intelligence (AI) and drone-image analyses, data collected from the phytosanitary surveillance systems will be uploaded to a global digital platform.

Integrated management

Scientists cooperate with banana growers to validate good agricultural practices based on agroecological principles for the integrated management of Foc TR4 in national and regional contexts. Based on this knowledge, crop and disease management tactics are developed and disseminated through small-scale farmers and SMEs. Considering transboundary scenarios, the expertise gained will be shared by incorporating experience from all countries to further develop site-specific approaches.

Research and development

The combination of measures is simultaneously embedded in scientific accompanying research, within which Foc TR4-tolerant banana varieties will be released, evaluated and disseminated.

The Main Objective

Increase the resilience of the banana sector in Ecuador, Colombia and Peru to the fungal disease



L.: Banana production in Ecuador; R.: Project Region

Methodological Approach and Innovation Partnership

The project sees stakeholders from the public and private sector, national and international research partners and banana growing communities from banana producing countries in Colombia, Peru and Ecuador working together towards an overall goal of reducing the risks to food security and the livelihoods of small-scale farmers in banana-based agricultural systems. The aim is to lessen the impact on these communities by preventing the further spread of TR4 and by generating scientific knowledge for improved grower management of banana. Three specific pillars have been proposed to achieve these objectives:

- Contain existing cases of Foc TR4 in Colombia and Peru to avoid its dissemination
- Strengthen capacities that allow for the identification of and rapid response to contain new TR4 outbreaks
- Expand and strengthen research projects to generate solutions in the short-, medium-, and long-term

These efforts need to be better coordinated to create synergies and make better use of available resources. As an example, preventing new introductions and spread of TR4 into pathogen-free areas, such as Ecuador, is essential. Therefore, measures are being taken to exclude pathogens and strengthen quarantine and surveillance. In parallel, disease management strategies, including the use of tolerant cultivars, are strengthened. For the success of the project, the development and implementation of regional strategies and policies are essential.

Important Activities

- Adaptation of artificial intelligence (AI) and drone images for the local early detection of infested banana trees
- Development of a virtual platform to exchange information on a regional level
- Development of tailor-made information material for the prevention of Foc TR4 for banana producers and other stakeholders
- Dissemination of good practices by the private sector
- Introduction, evaluation and selection of available tolerant genotypes of Foc TR4 in field experiments

Sustainability and Scaling Strategy

Along with participating partners and national institutions, the project will create the conditions for sustainable regional cooperation to address Foc TR4. This involves the standardisation of contingency plans, protocols and regulations, which will create a unified framework for the management of Foc TR4 at the regional level. Establishing a collaborative system based on a digital platform will promote networking between the relevant actors and institutions. The involvement of the private sector for piloting and adapting tolerant varieties provides a strong incentive for the application and continuation of innovations developed under the project. Given the magnitude of the threat to the banana sector from Foc TR4 infestation and the resulting economic consequences, all partners and stakeholders are interested in the continuation and upscaling of measures beyond the project duration.

260,000 ha between Ecuador, Colombia, Bolivia and Peru are under active phytosanitary supervision

8,500 farmers and agricultural workers trained to manage Foc TR4 in banana farms

Signed agreement to combat Foc TR4 by all members of the regional cooperation network in Ecuador, Colombia, Bolivia and Peru

The project contributes to the achievement of these Sustainable Development Goals (SDGs):



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