Joint FAO/IAEA Centre
Nuclear Techniques in Food and Agriculture

Virtual Training Workshop on Enhancing Climate Change Adaptation and Disease Resilience in Tropical Perennial Cropping Systems

Seibersdorf, Austria
via Microsoft Teams

3 - 7 November 2025

Ref. No.: EVT2405089

Information Sheet

Introduction

Climate change significantly affects tropical perennial crops — such as banana, plantain, cassava, and coffee — by intensifying water scarcity, exposing crops to temperature extremes, reducing yield stability, and increasing the prevalence of pests and diseases.

In response, the IAEA promotes research and development (R&D) using nuclear science and applications to support the development and deployment of innovative strategies that enhance the resilience of these crops to drought and pathogen pressures driven by climate change. These approaches aim to ensure food security, protect farmer livelihoods, and promote the efficient use of natural resources, particularly water.

This virtual training course focuses on the application of nuclear and complementary techniques to address the growing challenges posed by climate change to tropical perennial crops. Participants will gain insights into tools and methodologies for assessing and improving drought tolerance and disease resilience.

Objectives

The main objective of this training course is to enhance awareness and strengthen technical capacities in the use of nuclear and complementary technologies for improving drought tolerance and disease resilience in tropical perennial crops. Specific goals include:

- Introducing advanced isotope and nuclear techniques for crop and crop management improvement under climate stress.
- Demonstrating how these technologies can support Member States in addressing climate-related agricultural challenges.
- Promoting integration of these techniques into national R&D programmes targeting banana, plantain, cassava, and coffee.

Target Audience

IAEA Member States who are involved in enhancing climate change adaptation and disease resilience in tropical perennial cropping systems are eligible to apply for the training course.

Working Language

English.

Expected Outputs

By the end of the course, participants are expected to:

- Demonstrate a solid understanding of isotope, nuclear, and complementary techniques used to improve the productivity and resilience of tropical perennial crops.
- Apply basic to intermediate knowledge of nuclear techniques to real-world challenges in water use efficiency, genetics, and disease management.
- Integrate advanced R&D methodologies to improve the quality and impact of scientific investigations related to climate-resilient agriculture.

Structure

The training programme will comprise three modules: (1) Introduction to Climate Challenges for Tropical Perennial Crops, (2) Isotopic Techniques to Monitor and Enhance Drought Tolerance, (3) Mutation Breeding Innovations for Crop Disease Resilience.

The training will employ live and recorded lectures, video presentations of laboratory procedures and 'live' online question and answer sessions. Selected applications will be presented to provide the participants with basic to intermediate knowledge of techniques.

Topics

Module 1: Introduction to Climate Challenges for Tropical Perennial Crops

- Overview of climate change impacts on key crops.
- Implications for food security and farmer livelihoods.

Module 2: Isotopic Techniques to Monitor and Enhance Drought Tolerance

- Soil and water management for improved water use efficiency.
- Application of isotope techniques to assess and improve drought resilience.
- Key considerations in experimental design for assessing drought tolerance using isotopic and related techniques.

Module 3: Mutation Breeding Innovations for Crop Disease Resilience

- Mutation breeding and other R&D strategies for enhancing crop resistance to pests and diseases.
- Enabling technologies for enhancing efficiency of mutation breeding in clonal and perennial crops.
- Development of climate-ready crops using next-generation tools and adaptive agricultural approaches.
- Plant health applications to counter trans boundary plant pests and pathogens.

Participation and Registration

This training course will be open for remote access from 3 to 7 November 2025 using the virtual platform Microsoft Teams. All persons wishing to participate in the event have to be designated by an IAEA Member State or should be members of organizations that have been invited to participate.

Each country is entitled to nominate up to **four candidates** in line with the requirements described in the Participants Qualification and Experience.

Participants' Qualifications and Experience: Countries are invited to nominate candidates in the fields of expertise below for the consideration of the Joint FAO/IAEA Centre's selection committee. (Please note: A total of maximum four candidates per country can be nominated, with only two candidates per field of expertise).

Field of Expertise 1 – Soil and water management and resource use efficiency

Eligible candidates are scientists and technicians with a background in soil science, agricultural water management or any related discipline and experience in mitigation of climate change impacts on tropical perennial crops.

Field of Expertise 2 – Plant breeding and associated biotechnologies

Researchers working on genetic innovations including plant breeding and protection, tissue culture techniques, functional genomics, and allied disciplines in the field of tropical perennial crops.

Registration through the InTouch+ platform:

In order to be designated by an IAEA Member State or invited organization, participants are requested to submit their application via the InTouch+ platform (https://intouchplus.iaea.org) to the competent national authority (Ministry of Foreign Affairs, Permanent Mission to the IAEA or National Atomic Energy Authority) or organization for onward transmission to the IAEA by **15 September 2025**, following the registration procedure in InTouch+:

1. Access the InTouch+ platform (https://intouchplus.iaea.org):
   - Persons with an existing NUCLEUS account can sign in with their username and password;
   - Persons without an existing NUCLEUS account can register here.

2. Once signed in, prospective participants can use the InTouch+ platform to:

   - Complete or update their personal details under 'Basic Profile' and upload the relevant supporting documents;
   - Search for the relevant event (EVT2405089) under the 'My Eligible Events' tab;
   - Select the Member State or invited organization they want to represent from the drop-down menu entitled 'Designating Authority' (if an invited organization is not listed, please contact InTouchPlus.Contact-Point@iaea.org);
   - Based on the data input, the InTouch+ platform will automatically generate Participation Form (Form A).
   - Submit their application.

Once submitted through the InTouch+ platform, the application, together with the auto-generated Form A, will be transmitted automatically to the required authority for approval. If approved, the application, together with the Form A, will automatically be sent to the IAEA through the online platform.

For additional information on how to apply for an event, please refer to the InTouch+ Help page. Any other issues or queries related to InTouch+ can be sent to InTouchPlus.Contact-Point@iaea.org.

Selected participants will be informed in due course on the procedures to be followed with regard to administrative and technical matters. Candidates who successfully complete the virtual training course will receive a certificate.

No registration fee is charged to participants.

Participants are hereby informed that the personal data they submit will be processed in line with the Agency's Personal Data and Privacy Policy and is collected solely for the purpose(s) of reviewing and assessing the application and to complete logistical arrangements where required. Further information can be found in the Data Processing Notice concerning IAEA InTouch+ platform.

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Subsequent correspondence on scientific matters should be sent to the Scientific Secretaries and correspondence on other matters related to the event to the Administrative Secretary.