

Innovea Global Coffee Breeding Network

Peru Arabica Breeding: Current Progress, Challenges, and Goals

I. Report Overview & Objectives

- **Project Title:** Innovea Global Coffee Breeding Network—Arabica
- **Reporting Period:** 2024-2025
- **Partner Institution & Location:**
Instituto Nacional de Innovación Agraria – INIA, Peru
Estación Experimental Agraria Pichanaki, Junín
- **Date of Report:** November 04, 2025
- **Alignment with Core Objectives:** Briefly describe how, until this point, the activities conducted align with the main objectives of the breeding network, which include:
 - Develop a collaborative network of partners to increase genetic gain in coffee breeding
 - ✓ A partnership has been established between INIA and the Innovea-Arabica Global Coffee Improvement Network to strengthen capacities for effectively implementing research that contributes to the development of high-yield and high-quality coffee varieties.
 - ✓ Meetings and workshops have been held to discuss objectives and define strategies regarding the plot installed at the EEA Pichanaki, Junín, Peru.
 - Improve populations from which national coffee institutes can continuously select high-performing coffee varieties.
 - ✓ High-yield, high-quality hybrid coffee varieties with tolerance to coffee leaf rust are being identified and selected.
 - Enhance national breeding and research capacity to effectively implement product-focused research.
 - ✓ Meetings have been held and training provided to universities, national institutes and agricultural cooperatives working with coffee cultivation to improve their capacities in breeding and research.
 - Contribute to the development of national varieties that respond to both the international export market and farmer demands.
 - ✓ The activities carried out so far are aligned with the main objectives of the breeding network, contributing to the development of high-yield and high-quality coffee varieties that meet the demands of the market and farmers.

II. Overall Progress

This section should detail concrete achievements and activities completed during the reporting period.

A. Executive Summary of Achievements

- a. Provide a high-level summary of the main accomplishments so far. For example, the successful establishment of the field trial and the initial identification of breeding populations that look promising and why.



WCR Training for leaf sampling in nurseries for DNA analysis



WCR verification of the installation of coffee plants in the field



Training in the use of the application for coffee morphological evaluation



Second morphological evaluation of coffee hybrids in the field at the EEA Pichanaki



Field leaf sampling for DNA analysis



Pest control in the field

- ✓ Hybrid coffees exhibit morphological characteristics such as greater stem thickness, plant height, greater vigor, and also show tolerance to coffee leaf rust.

B. Project Implementation & Milestones

- ✓ Third evaluation of morphological characteristics in the field
- ✓ Continuation of activities in agronomic management

- ✓ Evaluation of cherry ripening in the field
- ✓ Harvesting and post-harvesting of ripe cherries
- ✓ Assessment of productivity and results

C. Research & Data Collection

- ✓ Tolerance and/or resistance to coffee leaf rust
 - ✓ Evaluation of morphological characteristics
 - ✓ Analysis of genotypic data from the medium-density panel
 - ✓ Evaluation of productivity and cup quality
-

III. Challenges and Limitations

This section is dedicated to openly discussing challenges and their implications for the project's progress.

A. Establishment & Agronomic Challenges

- ✓ Prolonged summer periods result in low soil moisture availability
- ✓ Increased temperatures due to prolonged summers directly influence flowering
- ✓ Plot installed at low altitude: 600 m.a.s.l.

B. Research & Analysis Limitations

- ✓ Regular training in data collection, processing, and interpretation methodologies
-

IV. Next Steps and Future Goals

This section highlights a constructive approach for the remaining years of the network's first cycle, focusing on our achievements and identifying the challenges that lie ahead.

A. Addressing Research Limitations

- ✓ Variations in temperature, humidity and rainfall, as a result of climate change
- ✓ Identification of the hybrid that contains the gene or genes for resistance to Coffee Leaf Rust

B. Future Data Collection & Analysis

- ✓ Replicate the experiment at different ecological levels above 1000 m.a.s.l.
- ✓ Evaluation of distinctness, uniformity, and stability of the most outstanding hybrids

C. Contribution to Long-Term Objectives

- How will the upcoming activities contribute to identifying and selecting **new high-performing, climate-resilient coffee varieties** for the nation's coffee sector?*

- ✓ The development of new varieties adapted to different ecological zones will contribute to the improvement of the coffee sector
- ✓ Preserve genetic material for the generation of future hybrids with outstanding characteristics

b. *Describe the plan for the improved materials that resulted from this first cycle from your own sites.*

- ✓ Clone the hybrids with the best morphological characteristics, productivity, resistance to coffee leaf rust and cup quality
- ✓ Verification of hybrids with the best morphological characteristics, productivity, resistance to coffee leaf rust and cup quality in different ecological zones
- ✓ Incorporation of the best-performing hybrids into the breeding program for crosses with local varieties

Itnan Oscco Medina
Analista de investigación Agrícola
EEA Pichanaki

Dina Lida Gutiérrez Reynoso
Directora General
Dirección de Recursos Genéticos y
Biotecnología