



COFFEE BERRY BORER MODELLING FOR KENYAN COFFEE PRODUCTION

Locations Kenya

Dates 01/12/2023 - 30/06/2025

Summary

The coffee berry borer is a major coffee pest worldwide, threatening farmers' livelihoods and the production of coffee. In Kenya, the pest is a particular problem in low-altitude zones and can cause up to 80% losses. Erratic rainfall and other effects of climate change are making it hard to break the pest lifecycle. In this project, CABI is using its tried and tested PRISE model to compile a comprehensive risk assessment of the Kenyan coffee sector and create a model specific to the coffee berry borer in Kenya. With partners, the project aims to empower farmers and stakeholders within the coffee value chain with actionable advice derived from data and modelling.

The problem

[Coffee berry borer \(CBB\)](#) is a significant constraint to coffee production globally and is present in coffee-growing regions in Kenya, including low-altitude zones.

CBB reduces the quantity and quality of coffee produced. It causes berries to fall prematurely and destroys the taste, making the beans unsaleable. The resulting losses are economically damaging to farmers' incomes, impacting heavily on their income and their livelihoods.

Climate change amplifies the impacts of other risks for smallholder farmers, such as extreme weather and pests and diseases, expanding the range of areas at risk of CBB.

Control methods for the CBB include manual or cultural control whereby farmers collect fallen berries or deforest areas for expansion, or chemical control which exposes farmers, their families and other biodiversity to hazardous chemicals. Neither of these are sustainable. Biopesticides do exist for CBB and they offer a more environmentally friendly alternative.

For farmers, knowing when to act on CBB invasions can help farmers integrate better coffee farming practices. In a [previous project in Colombia](#), CABI developed a model to predict the risk of CBB infestations using Earth observation and climate data. The information produced enabled farmers to identify the best time to intervene.

Additionally, emerging, and uncertain new regulatory landscape compliances, such as the EU Deforestation Regulation, to demonstrate compliance with full traceability of the coffee value chain is adding additional pressure for growers.

What we are doing

This project aims to establish an integrated value chain for the coffee industry, using Kenya as a pilot country.

The project objectives are to empower farmers with actionable insights, therefore enhancing the value of their holdings, while delivering necessary legal verification sought by coffee traders, wholesalers, and other stakeholders for existing and forthcoming regulations.

As part of this project, CABI is focusing on conducting a comprehensive risk assessment review of the Kenyan coffee sector and addressing the risk of CBB by undertaking ground verification of the existing model, developed in a prior CABI project, and further modelling.

Data to increase the resilience, traceability and sustainability of this supply chain is being produced by using modelling techniques to provide insights into deforestation and pest risk for smallholders and commercial producers of coffee.

By integrating Trade in Space's geolocation-based sustainability and risk verification, Farmer Connect will leverage this data to offer EU Deforestation Regulation compliance with full traceability for farmers and operators. This will allow farmers and farmer associations to receive tailored crop management advice while ensuring regulatory compliance for exporters and importers.

CABI is working with the Kenya Coffee Research Institute (CRI) to understand the Kenyan coffee supply chain, the CBBs risk to Kenya, and adapt CABI's existing CBB model to Kenya. Key activities include:

- Liaise with stakeholders and the coffee agriculture community in Kenya through CRI and CABI's centre in Kenya to compile a comprehensive risk assessment of the Kenyan coffee sector
- In season, infield data collection including coffee phenology, pest phenological development information and weather data which will be gathered by CRI staff who have been trained by CABI on data collection
- CBB modelling calibration and validation, using the infield data collected

Results so far

The project has successfully started in Kenya. CABI and CRI have selected a range of farms in the Kirinyaga County that are being used to collect data to update and validate the PRISE CBB model. The model aims to predict the emergence of coffee berry borer and provide accurate timings for intervention strategies.

CRI officers have been trained to collect coffee phenology, pest phenological development information and weather data, focusing on Kirinyaga County.

Donors Innovate UK, Innosuisse

Partners Farmer Connect, Trade in Space, KALRO Coffee Research Institute (CRI)

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