ENABLING SAFE AND CLIMATE SMART COFFEE PRODUCTION IN COLOMBIA

Locations	Colombia
Dates	31/05/2019 - 31/10/2020

Summary

The coffee berry borer (CBB) is the most serious coffee pest, worldwide, causing crop damage in excess of $US500 million, annually. In Colombia, 75% of coffee crops are affected by this pest, where it directly damages coffee beans, destroying the taste and making the beans unsaleable. To exacerbate the problem, climate change is enabling the wider spread of CBB, especially at higher altitudes. So, to overcome losses, the trend amongst farmers is to intensify their activities and expand growing areas. CABI and partners are producing an alert system that uses climatic data and remote sensing technology to give farmers advance warnings of CBB surges, allowing them time to access and apply controls effectively. Biopesticides will be profiled by CABI and relayed into the alert system to further advance the farmers' abilities to select the right product, at the right time. Women farmers are also integral to the project and to on-farm decision-making but a lack of access to information reduces their participation. This project will also focus on overcoming gender disparities in coffee farming.

The problem

Coffee berry borer (CBB) (*Hypothenemus hampei*) is devastating coffee crops in Colombia and destroying farmers' livelihoods, many of whom are smallholders. With 75% of coffee crops affected by CBB in Colombia, worldwide, the pest is causing more than $US500 million worth of damage each year.

Previously confined to coffee grown below 1500m altitude, CBB has now spread upwards as climate change creates warmer and wetter conditions – perfect for the CBB, but worse for the arabica coffee grown in Colombia.

The trend amongst farmers is to intensify their activities to escape the pest, clearing natural borders to make fields bigger, or moving upwards and clearing native forests to create new fields. But it's not working, nor is it sustainable. It is damaging the environment and causing deforestation. There is also an increase in the frequency of chemical pesticide sprays used by farmers, meaning that on the farms, families and children are exposed to more poisons. Furthermore, women farmers, in particular, also lack access to information and on-farm decision-making control to tackle the CBB and adapt to climate change impacts. The farmers need help.

Biopesticides for CBB do exist and will safely kill the pest. But farmers are reluctant to use them because they are perceived to be ineffective and slow-acting. The actual problem is that biopesticides are often applied at the wrong time to be most effective.

What we are doing	Cafexport, who provide support and advice to coffee growers in Colombia, together with scientists from CABI and other partners from the UK, are spending 12 months capturing data, such as temperature, relative humidity, CBB numbers and berry maturity, from coffee fields, using remote sensing technologies and in-person analysis with the farmers.
	The data will be combined with earth observation data from satellites and historic climate trends to help produce a CBB early warning alert system that will be used by farmers to identify when best to apply biopesticides and avoid crop losses.
	The approach of combining field data with satellite data will enable geographical scaling-out of the CBB alert and action tool and can inform climate smart coffee farming practices.
	Under different climatic conditions, in CABI's labs, CABI scientists will identify the best conditions for the growth of the CBB biopesticide (a living fungus), which will be fed into the alert system so it can be tailored to biological, rather than chemical, control.
	The project is working with farming households, in particular women coffee farmers, rather than individuals, to help increase their participation, make them more central in the decision-making for CBB control and make them more aware of the dangers of insecticide on their farms.
	By doing this, the project will help overcome gendered disparities. It will provide access to critical information and ensure that those involved become aware of the alert system, its value and the need to move towards cleaner, safer, more sustainable methods of controlling crop pests.
	By ensuring that farmers lose less of their crops to CBB damage, the project reduces the need for farm expansion, avoiding deforestation and damage to natural borders. The climatic data can also be used to inform farmers of climate adaptation strategies to cope with rising temperatures and erratic rainfall.
Results so far	Once the initial data collection phase has been completed and the alert system tested, the aim is to scale out the system to the wider coffee-growing regions of Colombia and further refine the system.
	Analysis of the barriers to more gender-equitable coffee farming will result in recommendations for changes in practices, which CABI and its project partners aim to integrate into any future phases of the project in Colombia.
Donors	Prosperity Fund Colombia: Agri-Tech Catalyst Challenge Project; administered by Innovate UK
Partners	Cafexport, Colombia, Climate Edge, UK, Assimila, UK
CABI Project Manager	Steven Edgington

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