

by Umar Nsubuga

After visiting Kaveri Coffee Plantation in Mubende district in 2018, Anthony Zirabamuzale returned to Kyebanja B Village in Busaale Parish, Kayunga district, determined to apply what he had learned.

Today, he manages a two-acre coffee farm and also supports other farmers in managing their gardens. But like many growers across Uganda, he soon encountered a major threat to his investment: the black coffee twig borer.

"The black twig borer is among the most dangerous pests affecting coffee today. It weakens branches, and once it enters the plant, it is very difficult to reverse the damage," he explains.

His experience reflects a nationwide challenge being addressed by scientists at the National Coffee Research Institute (NaCORI), where researchers have developed an innovative solution known as the Black Coffee Twig Borer (BCTB) trap.

The black twig borer is one of the most persistent and costly pests in coffee production. It affects both Robusta and Arabica coffee, though Robusta is more heavily attacked.

Dr Godfrey Kagezi, a senior research officer at NaCORI and one of the lead scientists behind the BCTB trap, explains that the pest tunnels into coffee branches where cherries develop, disrupting nutrient flow. Affected branches dry up, leading to significant losses in harvestable coffee.

Field studies show that nationally, the pest contributes to about 9.4% loss in coffee production. In poorly managed farms, losses can rise to more than 50%.

For Uganda, where coffee is a key export earner supporting millions of households, this is a serious economic threat.

SCIENCE BEHIND THE SOLUTION

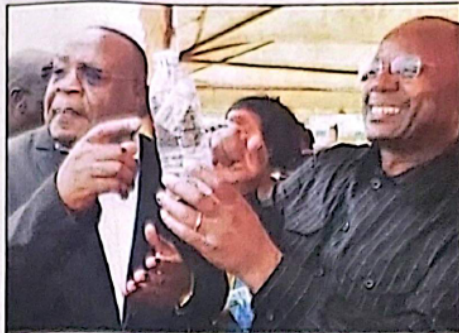
The breakthrough came from studying the insect's behaviour; scientists discovered that the black twig borer is strongly attracted to ethanol compounds.

Dr Kagezi explains that damaged coffee plants naturally release chemical signals, including ethanol-like compounds. Researchers replicated this signal to design a trap that attracts the pest.

"We are not fighting the pest blindly. We are using its own behaviour against it," he says.

The trap is simple: a plastic container filled with water and ethanol. As the ethanol evaporates, it releases a scent that attracts the beetle. Once

HOW UGANDA IS BEATING BLACK COFFEE TWIG BORER



Minister of State for Agriculture Fred Bwino Kyakulaga (right) looking at the BCTB trap developed by NaCORI

it approaches, it falls into the liquid and it drowns.

"The principle is simple; we are mimicking nature to control the pest before it reaches the plant," he adds.

USING THE TRAP

On farms like Zirabamuzale's, the technology is already in use as part of integrated pest management.

He explains that farmers can make the trap using an empty bottle, string, an eyedropper and alcohol (ethanol or locally sourced spirits). The traps are hung in the coffee garden to attract and capture beetles before they enter the plant.

"You must replace the alcohol every two to three weeks. If you do not maintain that, the trap stops working," he says. On his farm, proper placement is crucial.

"In one acre, a farmer can install about seven traps, and that is often enough because the insect can detect the scent from eight to ten metres," he explains.

For larger farms, up to 15 traps per acre may be used for stronger control.

He notes that it may take four to five days before beetles begin appearing in traps, after which numbers increase. The traps also capture the coffee berry borer, making them useful beyond a single pest.

Dr Kagezi adds that the pest lays eggs inside coffee branches and once the larvae hatch, about two weeks later, they feed on the plant, cutting off nutrients and destroying

to use neutral or transparent containers, as the insect is sensitive to colour. Certain colours, especially red, may repel the pest. Instead of attracting it. In addition to its simplicity, the trap is highly effective when properly used.

ENVIRONMENTAL BENEFITS

Unlike chemical pesticides, the BCTB trap is environmentally friendly. It targets only the pest without harming beneficial insects, such as bees, which are essential for coffee pollination.

"One of the biggest advantages is that it is safe for the environment. It does not disturb useful insects in the ecosystem," Dr Kagezi says.

This makes it a sustainable, environmentally conscious farming solution.

FARMERS' CHALLENGES

A major issue is maintenance, whereby many farmers fail to refill ethanol regularly, which reduces effectiveness.

"There is often a gap between knowledge and practice. Farmers know what to do, but consistency is a challenge," Dr Kagezi notes.

Another challenge is the misuse of alcohol used in the traps, including theft or human consumption in some communities, which affects performance.

COMMUNITY-BASED CONTROL

Experts stress that because the pest moves easily between farms, controlling the black twig borer requires collective action.

"If one farmer uses the trap and the neighbour does not, the pest will continue spreading," Dr Kagezi explains.

He recommends community-wide adoption, where entire villages or parishes implement the same control strategy at the same time. This approach improves effectiveness and reduces re-infestation from neighbouring farms.

CHALLENGE

The pest spends most of its life inside the coffee stem and by the time farmers notice it, the damage is already done. Because the pest hides inside the plant, chemical spraying is largely ineffective.

the branch.

"This is why early trapping is important to break the pest cycle before it causes serious damage," he says.

SIMPLE AND AFFORDABLE

One of the biggest advantages of the Black Coffee Twig Borer (BCTB) trap is its low cost. Farmers can make it using recycled materials, such as plastic bottles, making it accessible even to smallholder growers.

"This is a low-cost technology. The only important input is the attractant, which is ethanol," Dr Godfrey Kagezi explains.

Farmers are also advised

FUTURE OPPORTUNITIES

Researchers are working with private companies to commercialise improved versions of the trap, with the aim of making it more durable, standardised and widely available. Market studies indicate strong farmer interest, provided the technology remains affordable and accessible.

There is also potential for youth involvement in manufacturing, distribution and installation of traps, creating rural employment opportunities. Extension services continue to play a key role in training farmers and ensuring proper BCTB trap adoption.



BCTB traps on a coffee plant. This technology has proven to be affordable and environmentally friendly



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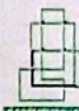


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