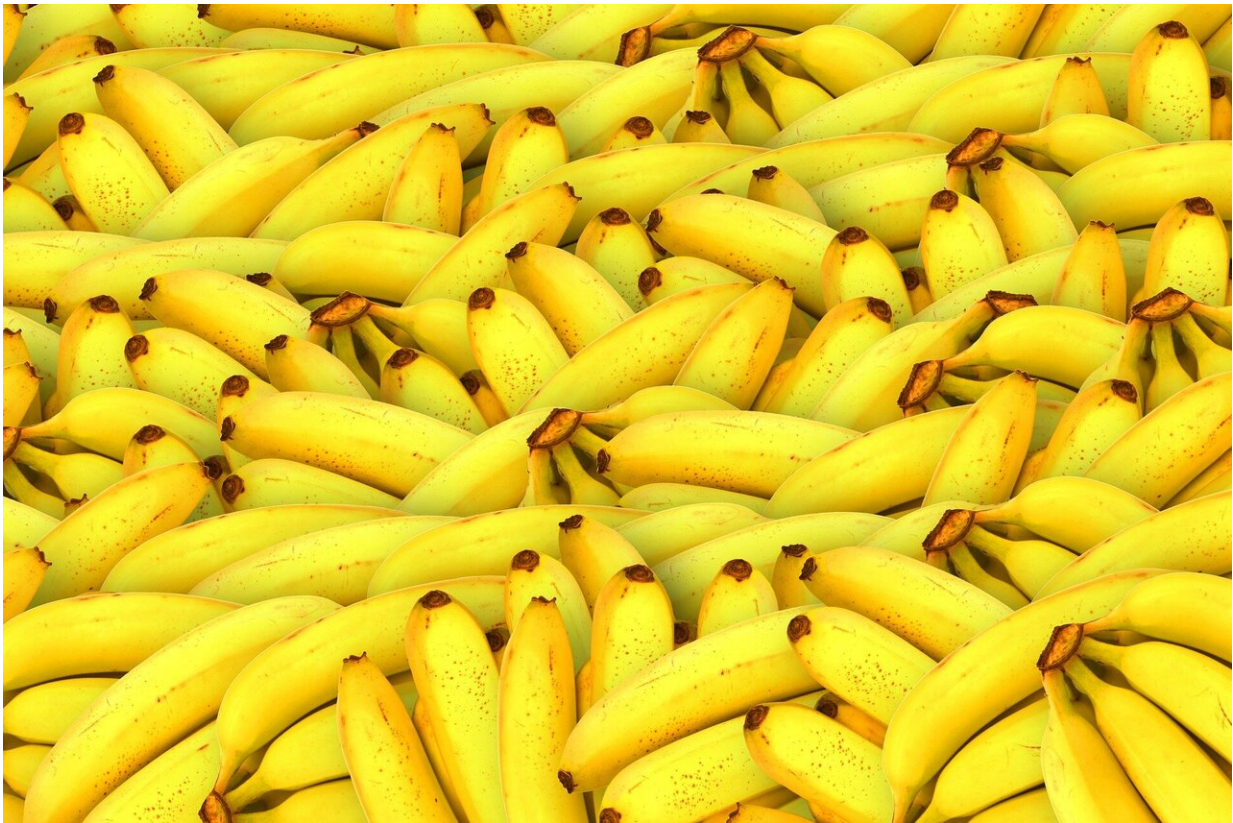


New field test detects banana fungus faster than ever

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A new field test developed by Wageningen University & Research (WUR) for detecting Tropical Race 4 (TR4) – the *Fusarium* strain that causes the much-feared Panama disease in bananas—has tested positive

in Colombia. The so-called LAMP test (from Loop-Mediated Isothermal Amplification assay) helped swiftly determine the presence of TR4 in the South American country. The WUR test is faster and more practical than laboratory tests and allows banana farmers and authorities to take immediate measures once suspect plants test positive for the fungus in order to prevent further spreading. The LAMP test was developed by a research team led by professor Gert Kema (WUR).

It had never previously been possible to diagnose TR4 this quickly, which marks an important step for banana growers worldwide. The Panama disease caused by *Fusarium* has been disastrous, frequently destroying entire banana plantations while many people around the world depend on the crop as a food source.

Handy size for the field

Gert Kema, professor in Phytopathology at WUR, heads the team that developed the [new test](#). "The main benefit of the new LAMP [test](#) is that it has a handy size and can be used in the field. It's no longer necessary to employ a laboratory to analyze the samples. In principle, any company active in banana farming can purchase the device, train its employees and deploy it immediately."

The new technique is therefore very accessible to companies without a laboratory and for government institutions. "Now they only need limited means to test whether any banana plants are affected by TR4," Kema explains. "They have the result within an hour. Fast tests are indispensable to adequately establish quarantine measures for any pandemic. This is a key development for the industry."

Combination of tests

The same WUR research group developed the first molecular test for TR4 in 2010. Commercialised by ClearDetections, the test is now being used around the world and has become an essential tool in detecting and quarantining TR4. In the years that followed, the group developed a DNA database of *Fusarium* strains which cause Panama disease. The LAMP test uses a new unique DNA fragment of the TR4 genome derived from this database, so the two methods strengthen each other.

Size of a shoe box

"The [training sessions](#) we set up with the authorities in Colombia and growers in the Philippines have shown that the test is easy to perform," Kema continues. "You take a piece of tissue, isolate some DNA via a fast and easy process, and place this in the device. The device itself is the size of a shoe box so can easily be taken into the field. This test is especially crucial to map an outbreak in areas where the *Fusarium* fungus has just appeared."

More information: N. Ordóñez et al. A loop-mediated isothermal amplification (LAMP) assay based on unique markers derived from genotyping by sequencing data for rapid in planta diagnosis of Panama disease caused by Tropical Race 4 in banana, *Plant Pathology* (2019). [DOI: 10.1111/ppa.13093](https://doi.org/10.1111/ppa.13093)

Provided by Wageningen University

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