



Where I work Leena Tripathi

Photographed by
Jaindra Nath Tripathi.

For more than two decades, I have been working to improve several staple food crops in Africa, including bananas, plantains, cassavas and yams. As principal scientist and a plant biotechnologist at the International Institute for Tropical Agriculture in Nairobi, I aim to develop varieties that are resistant to pests and diseases such as bacterial wilt, Fusarium wilt (caused by the fungus *F. oxysporum*) and banana streak virus

In 2011, my team and I created a set of tools, the only one of its kind in Africa, for changing DNA sequences so that we could develop genetically modified and genome-edited products in sub-Saharan Africa. In 2018, we pioneered the first application of CRISPR gene-editing technology to deactivate banana streak virus in plantains. This technology overcame a major hurdle in banana breeding on the continent, and is the first reported successful use of genome editing to improve bananas.

Now, I'm using CRISPR to protect bananas against bacterial wilt, which threatens production and affects millions

of farmers, particularly in Uganda, Kenya, Rwanda, Tanzania and Burundi. We are also developing plantain varieties for west Africa that are resistant to the banana streak virus. In this picture, I am in our biosafety-level-2 greenhouse, evaluating gene-edited Cavendish bananas for disease after they were inoculated with *Xanthomonas campestris* pv. *musacearum*, which causes bacterial wilt disease. I usually visit the plants every afternoon.

Kenya imposed a partial lockdown on 7 April, but I was allowed to continue some crucial laboratory work, and our research is not affected. Since mid-May, my team has been working in shifts. These plants are like our 'babies' in the lab – I can't leave them.

I am excited to see the resultant performance of the bananas in our greenhouse. By next year, we should have some plants ready for trials in the field.

Leena Tripathi is principal scientist in plant biotechnology at the International Institute for Tropical Agriculture in Nairobi, Kenya.

Interview by Abdullahi Tsanni.