

# A RESISTENT BANANA IS IN THE MAKING

After a search of many years, Wageningen phytopathologist Gert Kema has found partners willing to invest in bananas that are resistant to fungal diseases: Keygene and the Gates Foundation.

**I**ncredible quantities of bananas are cultivated and consumed across the globe – some 40 million tonnes each year. Half of these, including almost all the bananas exported to Europe and the United States, are of the Cavendish variety. But a fungal disease, Tropical Race 4 (TR4), is quietly advancing around the world and killing Cavendish bananas on plantations. Kema, a leading expert on fungal diseases threatening banana crops, wants to breed new varieties that are resistant to TR4.

That doesn't look too difficult on paper. As early as 2012 Kema and French researchers published an article on the banana genome in the leading journal *Nature*. He discovered genes that are resistant to the fungal disease in wild banana varieties (that are inedible). He wanted to start a breeding programme to implant these genes into the Cavendish banana. The breeding programme cost millions of euros, but he expected leading global banana producers such as Chiquita and Dole to be willing to help finance the research. That didn't go to plan, however.

With the help of international financiers, Kema also launched a company in order to develop resistant banana varieties.

While he was at it, he hoped to solve another problem in the banana industry: Black Sigatoka fungal disease. All Caven-




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## The banana is a staple food in Africa

dish bananas are clones, meaning they are genetically identical and by definition vulnerable to diseases and pests. Kema wanted a sustainable banana sector with sufficient genetic variation in the crop, to be achieved by developing several local banana varieties.

### Not a snack

And he succeeded, thanks to breeding company Keygene and the Bill and Melinda Gates Foundation. The Phytopathology chair group, which Kema leads, has been collaborating with Key-

gene for several years on the genetics of the banana. Fernando Garcia-Bastidas, one of Kema's PhD students, mapped the resistance of several hundreds of banana varieties and is now employed by Keygene to work on resistant bananas.

In Africa, the banana is not just a snack, as it is in many western countries, but a staple food. Due to diseases and pests, harvests in Africa are much lower than they are under ideal circumstances. So this breeding programme for resistant bananas could make a huge difference for African farmers. AS