



Briefing: Banana Disease

- Cavendish bananas are the most commonly eaten banana worldwide.
- Fusarium wilt TR4, a fungal disease that kills Cavendish bananas, has recently spread to the Middle East and East Africa, where it has the potential to hit food security.
- Should TR4 spread to the Americas, it could destroy the export trade that supplies bananas to the EU and USA.

SUMMARY

UK consumers eat five billion Cavendish-type bananas every year. This banana type dominates global export markets and is also grown and eaten in parts of sub-Saharan Africa as a staple food.

Recent epidemiological reports from Mozambique have identified the spread of a fungal disease, Fusarium wilt Tropical Race 4 (TR4), that kills Cavendish bananas. It has the potential to impact food security on the African continent if it spreads further.

If the disease appeared in Latin America or the Caribbean, it could progressively destroy the export trade that supplies bananas to the EU and USA.

THE DISEASE

Fusarium wilt is caused by a fungus, *Fusarium oxysporum f.sp. cubense*. The TR4 strain targets Cavendish bananas, as well as many other banana varieties.

The fungus persists in the soil for long periods, so that the ground cannot be used to grow bananas for 30+ years once infection has set in. Fungicide spraying does not control TR4.



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PAST PRECEDENT

In the 20th century, the global trade based on the Gros Michel banana cultivar was gradually wiped out when another strain of the Fusarium wilt – Race 1 – infected banana crops in Latin America and the Caribbean.

Plant breeders identified the Race 1-resistant Cavendish type banana as a viable alternative to Gros Michel in the 1920s. It proved difficult to shift tastes, however, and it took 40 years for Cavendish to enter the mainstream among consumers, wholesalers and exporting firms.

The UK Ministry of Food's decision in the 1940s to import Cavendish to the British market proved pivotal in changing opinion on the new banana's commercial merit, as did the introduction of box packaging to protect the fragile Cavendish skin.

RISK ASSESSMENT

TR4 has been present in Asia since 1992 where it has destroyed thousands of hectares of Cavendish plantations. It has now spread to the edges of the Western hemisphere in Jordan, Oman and Mozambique.

It is absent in West Africa and the Americas, where the bulk of Europe's bananas originate, and has therefore not impacted the UK's banana imports.

To assess the potential for the global spread of TR4, we will need to understand systematically the international movements of contaminated soil and tools from infected regions in Asia and Africa.

TACKLING TR4

Since the disease first appeared in Asia in 1992, scientists have taken action to raise awareness of the disease and seek solutions to it. The Banana Asia-Pacific Network (BAPNET) promotes collaborative research on bananas.

Growers in the region have successfully responded to the disease by introducing:

- Crop rotation and the use of 'TR4-tolerant' strains.
- Biosecurity – rigorously enforced quarantine and disinfection measures.

The major banana exporting firms are now beginning to mobilise around TR4 as a significant threat in the Western hemisphere. This has led to the formation of the World Banana Forum's TR4 Task Force.

Solutions developed in Asia are unlikely to be instantly applicable in the Americas due to differences in cropping practices, or because they are too costly and impracticable in Latin America's monoculture export plantations.

THE WAY FORWARD

Containment of material from infected areas (biosecurity) will be a crucial first line response that will make the spread of the disease less likely. However, we cannot prevent the eventual spread of TR4 with complete certainty, and the longer-term solution will lie with developing resistant banana varieties.

A large number of such resistant varieties likely exist around the world, providing genetic diversity for breeding programmes. Cropping systems may also have to change, and suppliers and consumers will eventually need to adapt their tastes to new types of banana.

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