



Ministry of Industry, Commerce, Agriculture and Fisheries' Response

FACT SHEET

The Tropical Race 4 (TR4) Disease of banana

What is Tropical Race 4?

The Tropical Race 4 (TR4) Disease of banana or fusarium wilt is a deadly disease of bananas and plantains. It is caused by the soil-borne fungus, *Fusarium oxysporum* f. sp. *cubense*. TR 1 and TR 2 are present in Jamaica and the Tropical Race 1 ravaged 'Gros Michel'-based export trades until the cultivar was replaced by resistant Cavendish cultivars. It also killed the Silk variety (Apple, Bumpy, Thousand fingers, Chinese). Tropical Race 2 Banana severely impacted the banana varieties: Bluggoe, Bodles Altafort and Highgate (Jamaican Tetraploid) Source: Banana Board Jamaica. Tropical Race 3 affects the *Heliconia* plant, an ornamental which is a close relative *Musa* or banana and plantain plants.

The new variant of TR4 identified in Southeast Asia and has since spread throughout the region. Cavendish clones, which are most important in subsistence and export production, are among the wide range of cultivars that are affected. TR4 also has the potential to completely wipe out common varieties of banana: Robusta, Lacatan, William, Gran Naine and plantains (Horse, French) and all of the varieties affected by PDR1 and 2. TR4 can also be transmitted in Heliconia plants.

TR4 is currently not present in Jamaica and it is very important to keep it out of the country!!

Recognition of the Disease

The symptoms of the disease is similar to Race 1 and 2 to include: premature yellowing of oldest leaves, dying of leaves and plants, buckling of the leaves, splitting of the banana trunk, darkening of the plant water and food vessels (see figure 1).

How does the disease spread?

The disease is spread through living or dead host plants, infested plant parts and soil from infested fields, carried in and out of the field by persons, tools, animals and irrigation water.



MINISTRY OF INDUSTRY, COMMERCE,
AGRICULTURE & FISHERIES



PEST ALERT

CAUTION! HELP US KEEP IT OUT!

Tropical Race 4

Fusarium oxysporum f. sp. cubense



TR4 causes yellowing and wilting of leaves and basal splitting

How it spreads

The fungus spreads via production and dissemination of spores formed on dead and dying plants. These spores can travel on planting material, plant parts and contaminated soil.

People, vehicles, water, tools and animals can also carry the disease.

Tropical Race 4 (TR4) is caused by the soil-borne fungus *Fusarium oxysporum f. sp. cubense*. It is considered to be the most destructive disease of banana in modern times. Primary hosts of TR4 include bananas, plantains, and Heliconia plants.

TR4 is present in parts of Asia, Africa, the Middle East and Australia.

Internal Symptoms of TR4



Discolouration of vascular tissues

If you see signs of TR4, contact the
PQPI Branch at 977-0637 or 977-6401 or the
Banana Board at 922-2083 or 383-7235

Symptoms of Panama Disease Race 4

Similar symptoms to Race 1 and 2

Premature yellowing
of oldest leaves



Dying of leaves and plants



Discolouration of vascular tissues
of the trunk



Buckling of the leaves in Gros Michel



Discolouration of vascular tissues
in the corm



Splitting at the base of the
trunk



Darkening of water and
food channels (vessels) not
seen in young suckers



Figure1: Symptoms of the TR4 Disease (Jamaica Banana Board 2017)