



KALRO/NAVCDP Programme Factsheet No.../2024

Integrated Pest Management of Major Banana *Fusarium Wilt* (Panama Disease) Diseases in Kenya



A healthy banana plant
Source: Ngugi, CN.
2019, KALRO



Yellowing and collapse of lower leaves while still green at the base
Source: SHEP PLUS



Browning of leaves and plant eventually die in the late stages. Cracking of the pseudo-stem may occur
Source: Viljoen et al, 2016



Pseudo-stem vascular bundles turn yellow to reddish-brown while an inner rhizome develop deep golden discoloration. Source: Rose Kamau, MoA, 2019 Kenya

Description

A soil-borne fungal disease also referred to as Fusarium Wilt. It attacks roots eventually blocking vascular system (transport system) leading to wilts.

Diagnosis/Identification and Symptoms

Symptoms

- Conspicuous Yellowing and drooping of older leaves while still green at the base
- Leaf droop, from the oldest to the youngest and hang like a skirt, and dry up

- The emerging heart /central leaf may die, stem remains upright until it decays after which it falls over
- Normal fruit production fails and die before the fruit stalk is fully developed
- Highly susceptible banana varieties include; Apple and Gross Michel/Kampala
- Conditions contributing to proliferation of the pathogen
- Development is favored by high temperatures and warm moist soils.
- Poor soil drainage and aeration
- Optimum soil temperature for root infection is 28-30 °C.
- Disease infection on seed can occur at temperatures as low as 14 °C.
- Banana cultivar susceptibility
- Mature plants are more resistant than younger plants
- Nematodes infection
- Soil low pH



Conditions prevailing that contribute to failure of pathogen

- Higher soil pH
- Well drained and aerated soils

Management Strategy

The following management options are recommended:

Cultural practices:

- Use of resistant varieties, such as Giant Cavendish, Lacatan or FHIA hybrids
- Use disease-free planting materials (Tissue Culture and clean suckers)
- Establish banana on clean field with no disease history
- Working tools sterilization (dip them into bleach, Methylated spirit and Formalin for one minute after working on infected field)
- Dip the planting materials in fungicide solution before planting
- Run-off water from diseased areas to be avoided to prevent fungus distribution
- Continuously monitoring of plants for light yellow colouration on the lower leaves
- Removal of the infected banana stools, surface drying and burying them or burn on putting them in plastic bags
- Add urea to the uprooted infected materials for fast drying

Other management options

- Basal application of ash and water mixture.

Biological control

- Incorporation of TRICHOTECH WP (Trichoderma asperellum) at the rate of 125 g/ha at planting.
- Chemical management:
- Dip planting materials before planting in fungicide containing; Carbendazim eg (Rodazim, Pearl), Propamocarb or Fludioxinil + Metalaxyl-M eg (MAXIM XL 035 FS)
- Trichoderma (Trianium P11.5 WP, Root Guard, Eco-T, Mazao Sustain, Trichotech and BIO CURE F 1.5 WP)
- Note
- Always consult recent list of registered pesticides at PCPB (www.pcpb.go.ke)
- Keep unprotected persons, livestock and pets out of treated areas for at least 24 hours
- Agro-chemicals should be used in consultation with professional practitioners and considering existing cautionary/safety measures, particularly the manufacturer's instructions.

Compiled by: Ruth Amata., David Thurania and Lusike Wasilwa

Edited by: Cecilia N. Ngugi and Otieno A Susan

Design and Layout: Nogrecia Mnene

Disclaimer: The content of this publication is for general information to banana farmers and technical staff only and no person should act, or fail to act on the basis of the information herein without professional advice from crop health experts affiliated to Kenya Agricultural and Livestock Research Organization (KALRO).

For more information, Contacts:

Director General

Kenya Agricultural & Livestock Research Organization, Kaptagat Road, Loresho Nairobi Kenya

P.O. Box 57811, City Square, Nairobi, 00200, Kenya

Email: info@kalro.org

Safaricom: +254 722206986/722206988; Airtel: +254 733-333-223/4/733333299/4

