

Pests and Diseases of Cassava

A FIELD
IDENTIFICATION
GUIDE



Pests and Diseases of Cassava: A Field Identification Guide 2025

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Fax: (234 2) 241 2221

E-mail: iita@cgiar.org

PMB 5320, Oyo Road

Ibadan, Oyo State

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Yvonne Ishimwe, Juma Yabeja, James Legg, Regina Kapinga, Athanase Nduwumuremyi, Ildephonse Niragire, Ines Benitha Isingizwe, and Silver Tumwegamire. 2025. Pests and diseases of cassava. A Field Identification Guide. International Institute of Tropical Agriculture (IITA)

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Authors and their addresses

Ishimwe Yvonne: International Institute of Tropical Agriculture
P.O Box 1269, Kigali, Rwanda.

Juma Yabeja: International Institute of Tropical Agriculture
P.O Box 34441, Dar es Salaam, Tanzania

James Legg: International Institute of Tropical Agriculture
P.O Box 34441, Dar es Salaam, Tanzania

Regina Kapinga: International Institute of Tropical Agriculture
P.O Box 34441, Dar es Salaam, Tanzania

Nduwumuremyi Athanase: Rwanda Agriculture and Animal Resource
Development Board,
P.O Box 5016, Huye, Rwanda

Niragire Ildephonse: Rwanda Inspectorate, Competition
and Consumer Protection Authority
P.O Box 621, Kigali, Rwanda

Isingizwe Ines Benitha: International Institute of Tropical Agriculture
PO Box 1269, Kigali, Rwanda

Tumwegamire Silver: International Institute of Tropical Agriculture
P.O Box 1269, Kigali, Rwanda

INTRODUCTION

In Rwanda, cassava is the second most important food security crop, particularly for low-income households after banana, with 42% of all households reported to cultivate cassava (MINAGRI 2011). In addition to its important role as a food security crop in Rwanda, cassava is also used as a cash crop in various cassava-growing regions.

Cassava production in Rwanda is affected by two devastating viral diseases: Cassava Mosaic Disease (CMD) and Cassava Brown Streak Disease (CBSD). Both diseases are pandemic, so in combination with an underdeveloped cassava seed system, it encourages the increased use of recycled “low-quality” cassava planting material by farmers.

IITA, in partnership with MEDA, RAB, RICA, and cassava seed entrepreneurs, is working to address this problem by developing a more sustainable cassava seed system, which makes high-quality planting materials available to farmers, and when used, grants an increase in fresh root yield by 80% as compared to the recycled seed of the same cassava variety (Yabeja et al., 2025). The project aims to build capacity for early-generation seed production, develop a national cassava seed quality assurance system, and establish a sustainable, commercialized cassava seed system.

In this context, IITA organized a training to equip seed inspectors with knowledge on pest and disease identification. At the end of this training, the seed inspectors requested a published field guide or handbook with pictures of pest damage and disease symptoms to serve as a field guide and reference for both damage and symptoms during inspection and certification of cassava seed fields.

This field guide aims to provide cassava inspectors and seed multipliers with a reference material during the assessment of pests and diseases in the seed fields. The guide may also be used by the extension officers and cassava farmers for pest and disease identification in root production fields.

Cassava pests and diseases are well documented in many parts of the world. This guide highlights the pests and diseases commonly found in cassava production in Rwanda. It is structured to facilitate identification of the main cassava pests and diseases on leaves, stems, and roots. Pests and diseases are presented with images and symptom descriptions highlighting their most prevalent characteristics on the plant.

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HEALTHY CASSAVA PLANT

- ▶ No symptoms or signs of diseases and pests on leaves, stems, and roots
- ▶ Leaves are pure green



Health leaves (Source: IITA)



Healthy stem (Source: IITA)



Healthy root (Source: IITA)

CASSAVA PESTS

1

WHITEFLIES (*Bemisia tabaci*)

Description

Whiteflies are very small insects that resemble tiny moths and measure less than 2 mm in length. The adults appear white colored body with snow-white wings. The nymphs are pale yellow oval specks to the naked eye. The adults and nymphs occur on the undersurfaces of young leaves where they feed with piercing, sucking mouthparts; the affected leaves become yellowed (chlorosis). Whiteflies excrete a sugary substance called honeydew, which accumulates on the leaves, and this encourages the growth of sooty mold. Severe infestations can cause the leaves to distort, curl, or become deformed.

Whiteflies are important vectors of Cassava Mosaic Geminiviruses (CMGs) and Cassava Brown Streak Virus (CBSV).

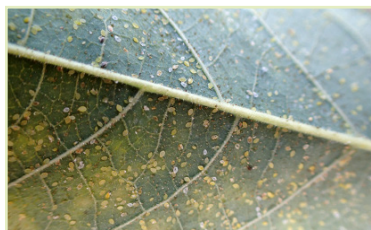


Adult whiteflies on the underside of a young cassava leaf (Source: IITA)

Damage and symptoms



Development of sooty mold
(Source: IITA)



Whitefly nymphs
(Source: IITA)

Management Strategies

- Spray using insecticides to control whiteflies. This is recommended with pre-basic seed production in screenhouses, but it is not cost-effective for field seed management and is not environmentally friendly.

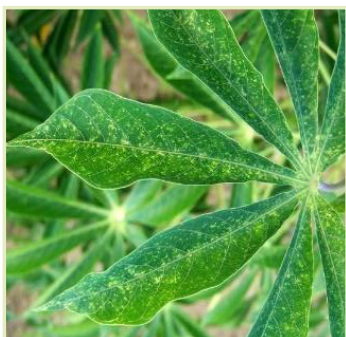
Description

Cassava green mites (CGM) are small spider-like creatures about 0.8 mm (difficult to see with the naked eye unless supported by magnifying lenses). At the young age, they are green in color and when adults, they turn yellowish in color. They are found on the axial surface of cassava leaves where they pierce and suck sap from plant and this causes leaf chlorosis. Affected leaves may begin to curl downward and deform, particularly along the edges (terminal shoot) and prolonged infestations can lead to reduced or stunted growth. Cassava green mites are one of the most important cassava pests in many parts of tropical and subtropical regions, especially during the sunny season.



Cassava green mite
(Source: CABI)

Damage and symptoms



Small yellow spots on the upper surface of leaves, which can increase from a few to a complete loss of chlorophyll (Source: CABI)



Distortion, deformation, and stunted leaves (Source: IITA)

Management Strategies

- Use cultural practices such as crop rotation, removing infested leaves, and maintaining plant health through adequate irrigation and fertilization to reduce the impact of CGM.

Description

The cassava mealybug is typically a small, pinkish bug surrounded by very short filaments and covered with a fine, white, fluffy wax coating. It sucks sap from cassava shoot tips, leading to becoming deformed and stunted.

As a result, the leaves at the top of the plant cluster tightly together, known as bunchy tops. In cases of severe infestation, the cassava plant may become stunted, with limited growth, poorly developed new shoots, shortened spaces between leaves (internodes), and even plant death, starting from the tip. Mealybugs are significant pests of cassava in many tropical and subtropical regions.



Pre-oviposited stages feeding on cassava (Source: IITA)

Damage and symptoms



White, waxy material on shoot tips, leaves, and stems (Source: IITA)



Curling of the young leaves on the cassava growing tip (Source: IITA)



The internodes become short, and the plants die, starting at the top (Source: IITA)

Management Strategies

- Plant at the right time and with proper spacing.
- Use cuttings from a mealybug-free field.
- Uproot any contaminated cuttings.

Description

Cassava scales appear as white scales or black scales. They are typically found attached to stems. As the insects feed on plant sap, they excrete a sugary substance called honeydew, which promotes the growth of sooty mold. Affected plants often dry and prematurely drop leaves, especially older ones.

Damage and symptoms



Black scale on the stem (Source: IITA)



Leaf discoloration, dry up, and premature leaf fall (Source: IITA)

Management Strategies

- Plant at the right time.
- Use cuttings from a cassava scale insect-free field.
- Uproot any contaminated cuttings.

CASSAVA DISEASES

1

CASSAVA MOSAIC DISEASE (CMD)

Description

Cassava mosaic disease is a viral disease caused by Cassava Mosaic Virus. Viral particles are transmitted through a vector, whitefly (*Bemisia tabaci*), and infected cuttings. CMD symptoms include mosaic patterns, where pale yellow to nearly white chlorotic patches intermingle with patches of green. These symptoms may spread across the leaf surface frequently near the leaf base.

As CMD advances, leaves may also become distorted or curled, with a noticeable reduction in leaf or leaflet size and, in severe cases, leaves appear stunted or deformed, resulting in stunted or underdeveloped plants, significantly reduced tuber formation, and reduced production.

Damage and symptoms



Light green, yellow, or white leaf mosaic patterns on the leaves (Source: IITA)



Malformation and distortion of leaves (Source: IITA)



Production of few or no tubers (Source: IITA)

Management Strategies

- Plant CMD-resistant cassava varieties.
- Maintain field hygiene by removing and destroying infected plants and plant debris.
- Plant healthy certified virus-free cassava cuttings.

Description

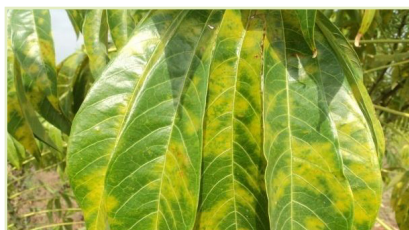
Cassava brown streak is a viral disease caused by cassava brown streak virus (CBSV) and affects cassava. CBSD is transmitted by the whiteflies and using infected cuttings. Symptoms of CBSD vary depending on the part of the plant affected. Foliar symptoms include leaf chlorosis and yellow spots. Leaves at the senescence stage retain a greenish color along the veins, unlike chlorosis symptoms observed on the growing green leaves. In the case of the stem, brown streaks indicate the presence of the virus. For roots, brown streaks and constricted roots indicate that the roots are infested.

Damage and symptoms

Leaf Symptoms



Yellowing of the leaf along the veins (leaf chlorosis) (Source: IITA)



Yellow blotches on the leaves (Source: IITA)



Senescing CBSD symptomatic leaves retain the greenish color along the veins (Source: IITA)

Stem Symptoms



Brown, round, or elongated streak-like lesions on the young green portions of the stem. (Source: IITA)



Stem diebacks (Source: IITA)

Root Symptoms:



Roots are constricted (Source: IITA)



Brown streaks (root necrosis) inside the root flesh (Source: IITA)

Management Strategies

- Plant CBSD-resistant/tolerant cassava varieties.
- Maintain field hygiene by removing and destroying infected plants and plant debris.
- Plant certified healthy cuttings that are free of the virus.

Description

The causal agent is a gram-negative bacterium *Xanthomonas axonopodis* pv. *Manihotis*. The bacteria occur on cassava leaves, from where they move systemically into the petiole and stem and continue to multiply discontinuously throughout the plant. The earliest symptoms visible on cassava leaves are small, angular, water-soaked lesions on the leaf surface, often near the veins. On the stems, often starting as streaks. In severe stages, the disease can cause the tips of the cassava plant's stem to blacken and dieback of the branches or the entire plant, known as the candlestick appearance.

Damage and symptoms



Water-soaked lesions on the leaf surface near the veins (Source: IITA)



Cassava plant's stem blackens (Source: IITA)



Dying of leaves or the entire plant (Source: IITA)

Management Strategies

- Plant cassava varieties resistant to CBB.
- Practice crop rotation and maintain clean fields to reduce bacterial inoculum in the soil.

Description

Cassava Anthracnose (CAD) is a fungal disease caused by fungus known *Colletotrichum gloeosporioides* which occurs on the surface of cassava stems. This disease is characterized by lesions that appear on various parts of the cassava plant, including the leaves, stems, and roots. The fungus typically thrives in humid conditions and spreads rapidly under warm temperatures, especially during the rainy season. The disease can lead to significant yield losses and poor tuber quality.

CAD causes cankers on the stems and leaf petioles. The petioles weaken and cause the leaves to wilt and droop off, which can lead to total plant defoliation and death.

Damage and symptoms



Cankers ("sores") on the stem and bases of leaf petioles (Source: IITA)



Reduction of the sprouting ability of stem cuttings (Source: IITA)

Management Strategies

- Use cultural practices such as crop rotation, removal of infected plant debris, and proper spacing.

Conclusion

Ensuring access to quality disease-free cassava seeds by farmers is critical for the development of the cassava value chain in Rwanda. Moreover, the crop is among seven priority crops to commercialize agriculture while ensuring food self-reliance. This calls for adequate capacities for inspection and certification through a sustained knowledge base among the official and private accredited inspectors, seed multipliers, and the extension personnel to identify and assess properly the pests and diseases affecting cassava seed crops. Knowledge erosion and turnovers among inspectorate staff can affect this knowledge base over time, hence need for sustained capacity-building opportunities for the personnel tasked with seed inspection and extension. The field guide will be an all-time readily available knowledge resource for proper pest and disease identification, a critical step in quality seed inspection and certification in Rwanda. A sister version translated in Kinyarwanda is intended for proper and wide use of the guide up to the farmer level.

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For more information:

Yvonne Ishimwe / Silver Tumwegamire

Telephone: +250 788 928 544 / +250 788380555

Email: Y.Ishimwe@cgiar.org / S.Tumwegamire@cgiar.org

International Institute of Tropical Agriculture (IITA-Rwanda) Kacyiru,
KG 563 Street #3

PO Box 1269 Kigali - Rwanda