

**MINISTRY OF AGRICULTURE LIBERIA**  
SAPEC / MOA / GAFSP / AfDB / IITA



# Common Pests and Diseases of Cassava and Control



**Michael Edet**

(Smallholder Agricultural Productivity Enhancement & Commercialization  
Project Cassava Extension Agronomist)

International Institute of Tropical Agriculture (IITA)



# Common Pests and Diseases of cassava and control

**Michael Edet**

Cassava Extension Agronomist

Smalholder Agricultural Productivity  
Enhancement & Commercialization Project  
(SAPEC)

Published by the International Institute of Tropical Agriculture (IITA)  
Ibadan, Nigeria

IITA is the lead research partner facilitating agricultural solutions for hunger and poverty in the tropics. It is a member of the CGIAR Consortium, a global research partnership that unites organizations engaged in research for sustainable development for a food secure future.

International address:  
IITA, Grosvenor House,  
125 High Street  
Croydon CR0 9XP, UK

Headquarters:  
PMB 5320, Oyo Road  
Ibadan, Oyo State

ISBN 978-978-8444-97-8

Correct citation: Michael Edet, 2017. Common Pests and Diseases of cassava and control. IITA, Ibadan, Nigeria. 22pp.

Cover photos: Common Diseases and pests of cassava.



# Contents

Acknowledgement .....	vii
Introduction.....	1
Termites.....	2
Symptoms .....	2
Control practices.....	2
Cassava Mealybug.....	3
Symptoms .....	3
Control practices.....	4
Cassava Green Mite.....	6
Symptoms .....	6
Control practices.....	7
Cassava Red Mite .....	7
Symptoms .....	7
Control practices.....	8
Variegated grasshopper, <i>Zonocerus variegatus</i> .....	9
Control practices.....	10
Vertebrates.....	10
Control practices.....	11
Symptoms .....	12
Control practices.....	13
Cassava brown streak disease (CBSD) .....	14
Symptoms .....	14
Control practices.....	15
Cassava Bacterial Blight Disease (CBB).....	16
Symptoms .....	16
Leaf.....	16
Stem.....	16
Cassava Anthracnose Disease (CAD) .....	20
Symptoms .....	20
Control and practice.....	22



# Acknowledgement

- Department of Regional Development, Research and Extension, Ministry of Agriculture, Liberia
- International Institute of Tropical Agriculture. Cassava in Tropical Africa. A reference manual.





# Introduction

Correctly identifying the pests and diseases which attack a crop is the first step in effectively controlling the problem. "Common African Pests and Diseases of Cassava" describes the most common fungal, bacterial, insect, and mite problems associated with the cultivation of the cassava root crop. While some problems are of major economic importance, others do not present major constraints to cassava production in Liberia.

The incidence and the distribution of the various pests (fungal, bacterial, nematode, insect, or mite) associated with the cassava root crop are based on literature reviews and personal observations. This booklet is intended as a pictorial guide for cassava growers in Liberia to help identify constraints often associated with cassava production. Good information on the symptoms of cassava root crop diseases and pests allows for appropriate implementation of control measures once an incident has occurred. The integration of several control measures: cultural, biological, and chemical may prove to be the most effective approach. The cost of any control measure, whether alone or in combination should not be more than the increased value of the crop to be economically feasible, as well as readily available to the smallholder farmers who are the major producers of cassava in Liberia.

There are numerous pests and diseases which affect cassava and this booklet will list the most common, and how to identify and control them. Some other diseases which you may notice in cassava are caused by non-living things such as wilting due to drought and poor plant growth as a result of poor soil.

Common pests in the cassava farm include:

- Termites
- Cassava Mealybugs
- Cassava Green Mites
- Insects
- Rodents

Common diseases in the cassava farm include:

- African Cassava Mosaic Virus
- Cassava Bacteria Blight
- Brown Leaf Spot
- Brown Streak Disease
- Cassava root rot

# Termites

Termites live in the soil and feed on cassava stems and roots. Termites attack plants in the seedling to early growth stage especially in dry and sandy soil. They generally destroy the bark of the cuttings and make tunnels that favor the development of microbial rots, which cause germination losses and seedling death. In Liberia, two types of termites predominate:

1. The planting season or wet season termite feeds voraciously on newly planted cassava stem cuttings. It occurs only in the rainy season and quits the stage by October for the second type. It is locally referred to as *Bogaboy* and is very destructive.
2. The dry season termite feeds on dry stalks, stems, and wood but does not damage growing cassava at this time.

## Symptoms

- Nibbled stems and roots.
- Cuttings do not develop into seedlings.
- Stunted plant growth.
- Dead plants.

## Control practices

- Use hot water or recommended insecticide to drench termite colony.
- Spray whole farm with Dursban at a rate of 200 mL in 16 L Knapsack sprayer.
- Dip stem cuttings in insecticide solution for 30 min before planting.
- Destroy any termite mounds around farm and vicinity before planting.



Termites

- Keep soil moist during dry spells to disrupt termite activities.
- Apply insecticides such as Aldrin, or granulated Carbofuran, which should be incorporated into soil directly under the cuttings.
- Practice farm sanitation by collecting, burning, burying, or composting plant debris.

## Cassava Mealybug

The mealybug (*Phenacoccus* spp.) is a small, pinkish, wingless insect covered with white fluffy wax. It attacks the tips, stems, and leaves of cassava plants by sucking the sap from the plant. It causes two types of damage; mechanical or direct damage caused by their sucking feeding habits, and indirect damage produced by the build-up of the sooty mold on the leaf surface due to mealybug excrement.

Environmental conditions, including a prolonged dry season, are favorable for population build-ups. Yield losses due to mealybugs are estimated to be up to 80% under severe attack.

### Symptoms

- Leaves curled and distorted, stunted plant growth.
- Sooty mold on shoot tips, leaves, and stems.
- White, waxy material on shoot tips, leaves, and stem.
- Short internodes on cassava stem.



Cassava Mealybugs.



Mealybugs on cassava leaves.



Severe stage.

#### Control practices

1. Plant cassava early in the rainy season. This ensures high vigor sprouting and good plant establishment, and it enables plants to withstand mealybug attack later in the season.
2. Check underside of leaves, remove and destroy leaves and plants that are infected with mealybugs.
3. Cuttings can either be treated with hot water (52 °C for 10 min) or dipped in 0.1% dimethoate solution before planting.
4. Biological approach by introducing and multiplying natural enemy such as parasitoids and predators, *Hyperaspis pumila*.





*Hyperaspis pumila* predator feeding on mealybug.

# Cassava Green Mite

Cassava green mites are small spider-like creatures which are found on the underside of young cassava leaves. They feed on the leaves by sucking the sap. Infestation is usually severe during the dry season when temperatures are high. Populations of the organism (*Mononychellus tanajoa*) develop on the upper part of the plant, growing points, young leaves, and green portions of the stem. They are smaller than many spider mites, green in color at a young age, turning yellowish as adults. Severe green mite attack during the dry season could result in 20–80% losses in root yield.

## Symptoms

- Small yellow spots on upper surface of leaves.
- Curled, shriveled leaves.
- Spider webs on leaves.
- Varied, from few chlorotic spots to complete chlorosis.
- Heavily attacked leaves are stunted and become deformed; severe attacks cause the terminal leaves to die and drop, producing a "candlestick" appearance.



Cassava green mite (0.5–0.8 mm).



Mite damage to cassava leaves.

### Control practices

- Remove infected leaves and destroy away from field.
- Prepare spray solution by crushing 3 cloves of garlic in 10 L of water and 7 g of soap powder; mix well.
- Prepare spray solution by crushing 500 g onions in 10 L of water; add 2 teaspoons of vegetable oil and 7 g of soap powder. Must be well mixed.

## Cassava Red Mite

The mites are visible to the naked eye as red specks. Under magnification, juveniles and adults appear as ovoid bodies with 4 pairs of appendages bristling with hairs. There are four major species, *Oligonychus gossypii*, *Tetranychus telarius*, and *T. neocaledonicus*. In Liberia, only *Tetranychus* sp has been identified. Most damage occurs at the beginning of the dry season but its apparent control is by local, natural enemies.

### Symptoms

- Initially, it appears on the under surface of fully mature leaves as yellowish (chlorotic) "pinpricks" along the main vein, which may increase to cover the entire leaf.
- Turning the surface reddish brown or rusty in color.
- Protective webbing can often be seen.



Red mite.



Cassava leaf affected by red mite.



# Cassava scale insect

The cassava scale insect is not a serious pest, but is locally abundant on the stem of plants weakened by previous insect attack and drought. The scale covers the lower stem and eventually the leaves, and occasionally kills the host.

## Symptoms

- Form whitish scales on the cassava stem.

## Control practices

- Control measures are not usually required since this is typically a secondary pest attacking weak plants.



A typical diaspine scale with elongated silvery white cover, 2-2.5 mm long. The insect under the cover is reddish.



Cassava plant destroyed by scale insect



# Variegated grasshopper, *Zonocerus variegatus*

The variegated grasshopper, *Zonocerus variegatus* L. chews cassava leaves, petioles, and green stems. It defoliates the plants and debarks the stems. The leaves are eaten by nymphs and adults. After leaves are gone, green stems are consumed leaving only the white wood. The pest damage is more common on older than on younger cassava plants, and is more severe in the dry than in the wet season. The variegated grasshopper spreads by flying from farm to farm. However, the insect does not fly over long distances. It spreads faster in areas where the forest has been cleared than in thick vegetation.



Devastating effects by the adult grasshopper.



Devastating effects by the nymph.



The adult grasshopper.

## Control practices

1. This pest can be controlled culturally by destroying its egg sites pest.
2. Control of freshly hatched nymphs is the easiest and most economical way, but requires a communal effort.
3. The bands of freshly hatched nymphs can easily be detected and treated with insecticide.

## Vertebrates

The common vertebrate pests of cassava are birds, rodents, monkeys, wild pigs, and domestic animals. The bird pests are usually bush fowl and wild guinea fowl. These birds feed on storage roots that have been exposed. They also scratch the soil surface to expose the storage roots. The remaining portion of the scratched root later rots. Birds are particularly a problem where cassava is planted in soils that are loose and easy to scratch away. The major rodent pests of cassava are grass cutter or cane rat, giant rats, mice, and squirrels. Among these, grass cutter causes the greatest damage to cassava. It cuts down and chew the stems and feeds on the storage root. Wild pigs dig, uproot, and feed on cassava roots. Monkeys damage cassava in a similar way while domestic animals such as cattle, goats, and sheep defoliate cassava by eating the leaves and green stems.



Wild guinea fowl



Grass cutter.

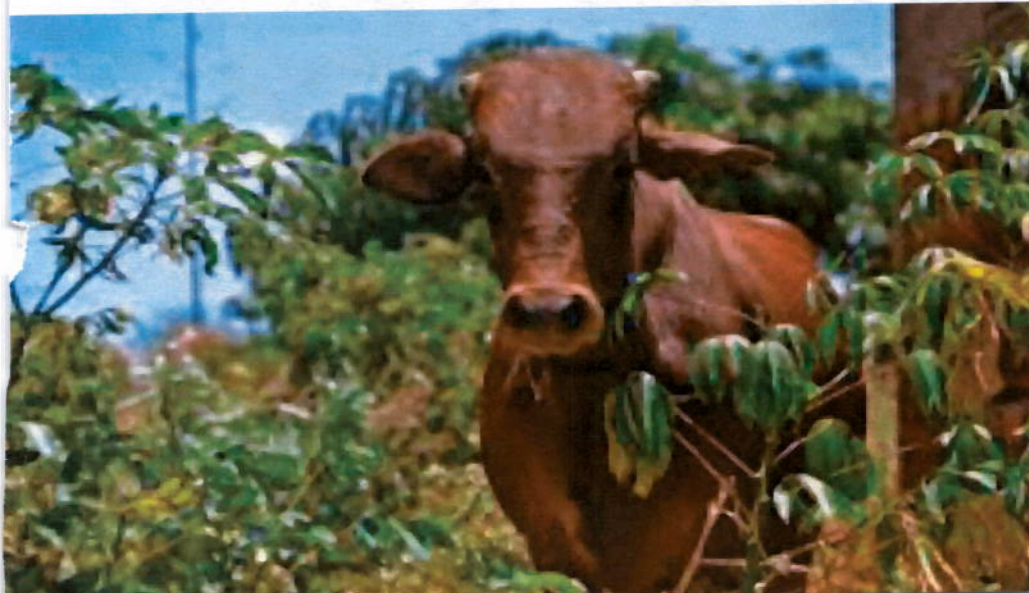


### Control practices

- Keep farm clean.
- Set traps.
- Build fences.
- Use scarecrows.



Cassava demonstration farms destroyed by cattle

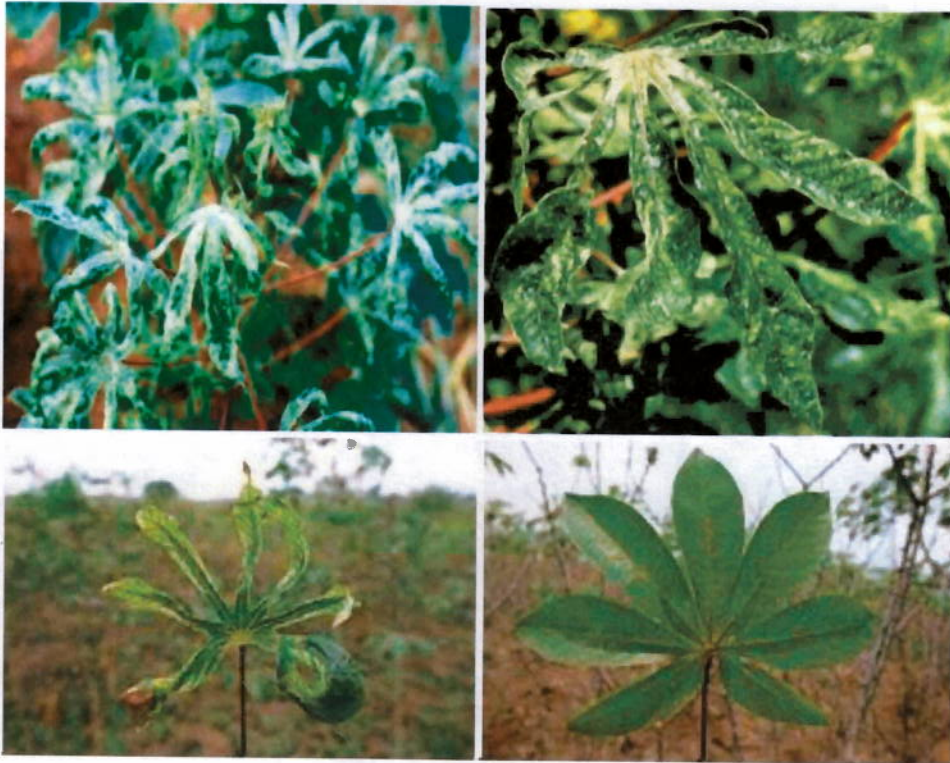


# African Cassava Mosaic Virus (ACMV)

The most serious cassava disease in Africa is African Cassava Mosaic Virus. It is a major constraint to cassava production and has destroyed over 150,000 hectares of cassava with a loss of an estimated US\$60 million per annum. It spreads through infected cuttings and whiteflies (*Bemisia tabaci*).

## Symptoms

- Light green, yellow, or white patches on the leaves.
- Wrinkled or crinkled leaves.
- Shrunken or crinkled leaves.
- Stunted plant growth.



Virus infected cassava plants.

### Control practices

- Use disease-free cuttings.
- Early planting to avoid peak of whitefly vectors.
- Regular field inspection (2–3 times) to rogue out infected plant in cases of low disease incidence.
- Use resistant/tolerant varieties.
- Control insect vectors.





# Cassava brown streak disease (CBSD)

This disease is serious in East Africa and is a threat to the whole of sub-Saharan Africa. The virus is vectored by whiteflies (*Bemisia* spp.) and transmitted through infected cuttings.

## Symptoms

- Yellowing of leaf (leaf chlorosis).
- Streaks in the stem bark (cortex).
- Infected roots have brown streaks (root necrosis). It's a stealth virus, which destroys everything in the field. The leaves may appear healthy even when the roots have rotted away.





#### Control practices

- Use disease-free cuttings.
- Use tolerant/resistant varieties.
- Remove diseased plants from the field.
- Reduce the population of vectors.

# Cassava Bacterial Blight Disease (CBB)

Cassava Bacterial Blight (CBB) is a major bacterial disease. The disease is **systemic** and favored by wet conditions. Yield loss is from 20 to 100% depending on variety, bacterial strain, and environmental conditions. CBB can be spread through infected cuttings, raindrops, use of contaminated farm tools (e.g., knives when cutting stems), chewing insects (e.g., grasshoppers), and movement of man and animals through plantations, especially during or after rain.

## Symptoms

### Leaf

- Angular leaf spots on cassava.
- Droplets of exudates on the spots.
- Wilting of young leaves followed by shoot die back.
- Leaf spots, blights.

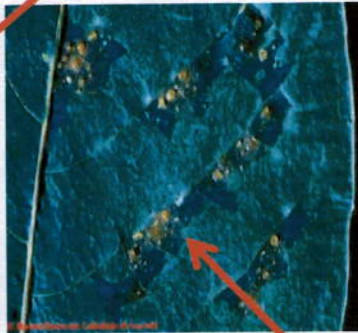
### Stem

- Brown/black lesions on cassava stems.
- Formation of gummy exudate.
- Stem die back.
- Complete defoliation resulting in "candlestick" effect.





Blight symptoms on the leaf



Water-soaked lesions on leaves with bacterial exudates.



Bacterial exudate on the stem



Brown/black necrosis on stem.



Candlestick symptom in severe cases.



Severe stem rot.



Snapping of stem due to CBB.

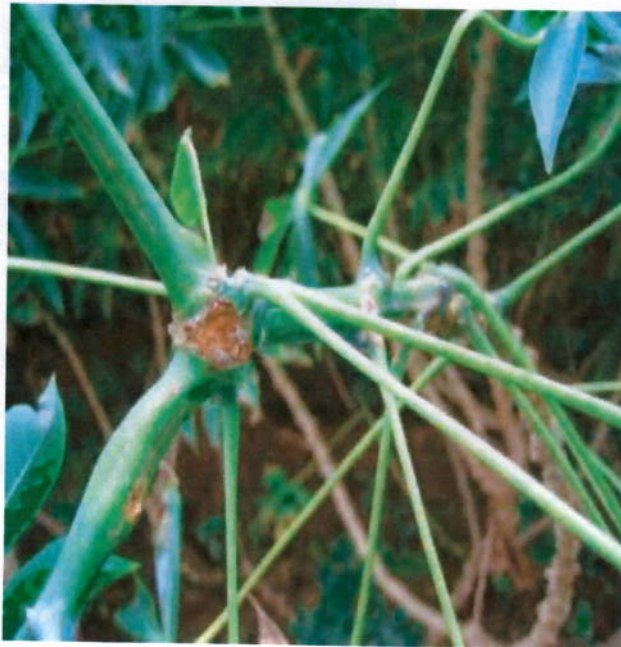


# Cassava Anthracnose Disease (CAD)

Cassava Anthracnose Disease (CAD) is the most important stem disease in Africa. It occurs in all major cassava growing areas. The fungus attacks mainly the stem and fruits causing deep wounds ("cankers"), leaf spotting, and tip die back.

## Symptoms

- Slightly depressed oval lesions, which quickly turn dark brown on young stems.
- In the older stems, raised fibrous lesions eventually develop into deep cankers that make the stems brittle.
- The deeper cankers sometimes affect the pith of the plant thus blocking transportation of vital nutrients to parts of the plant.
- Cankers on stems and leaf petioles; leaves drooping downwards; wilting leaves which die and fall from plant leading to plant defoliation; death of shoots; soft parts of plant become twisted and distorted.



Anthracnose canker on cassava stem.



Symptoms of a severe anthracnose infection on cassava stem.



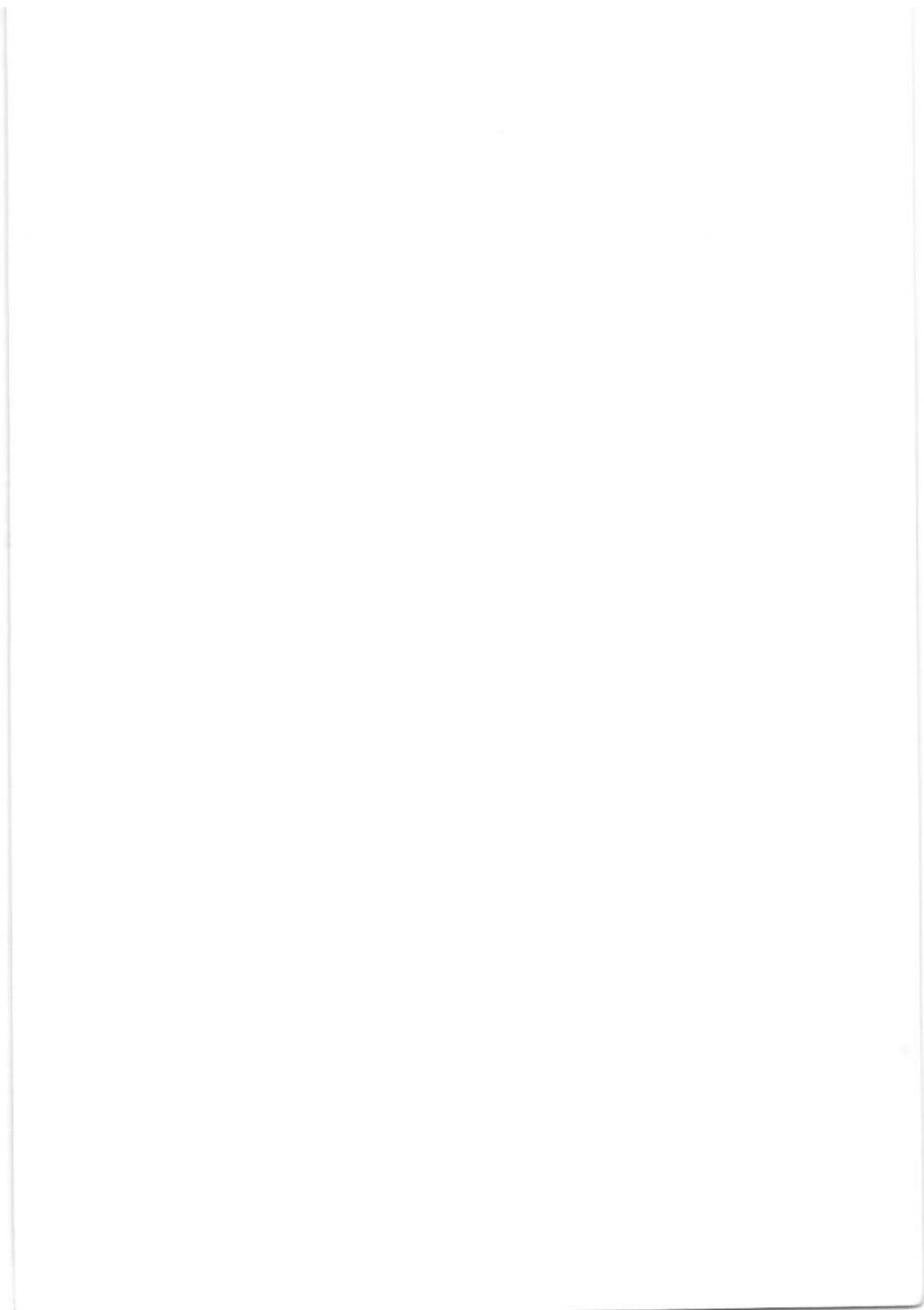
Cankers of cassava anthracnose disease on stem



Cankers girdle affected branches.

#### Control and practice

- Remove infected plant and destroy from field.
- Use disease-free cuttings.
- Regular field inspection (2–3 times) to rogue out infected plant in cases low disease incidence.
- Use resistant/tolerant varieties.



This guide is prepared for wide circulation among Liberia cassava farmers with funding from the African Development Bank (AfDB) and the Global Agriculture and Food Security Program (GAFSP) through the Smallholder Agriculture Productivity Enhancement and Commercialization (SAPEC) project.

Implemented by International Institute of Tropical Agriculture (IITA)