

2017

Rotten Inedible Tubers: The Case of Cassava Brown Streak Disease

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Abstract

This case study is based in Africa, where cassava is a key food security crop, and focuses on the gravity of the threat that cassava brown streak disease (CBSD) poses to resource-poor cassava growers. The goal of the study is to illustrate how providing information on disease spread can help not only growers who plant infected material but also other growers in the region. Planting infected cuttings can negatively impact cassava production and intensify hunger in the region. The case also highlights the role that non-governmental organizations (NGOs) and research organizations play in multiplication and dissemination of cassava cuttings and how this activity can be coupled with providing information on disease management. Both cassava mosaic disease (CMD) and CBSD can cause devastating losses depending on the susceptibility of the variety planted and the time of infection.

Disciplines

Agricultural Science | Agriculture | Agronomy and Crop Sciences | Plant Pathology

Comments

This article is published as Mallowa, S., Athman, S.Y., Ruong'o, S., Abucheli, G., Korir, N.K., Odongo, H., Miano, D.W., and Robertson, A.E. 2017. Rotten Inedible Tubers: The Case of Cassava Brown Streak Disease. The Plant Health Instructor. doi: [10.1094/PHI-T-2017-0619-01](https://doi.org/10.1094/PHI-T-2017-0619-01). Posted with permission.

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Background Information

The Case

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Mallowa, S., Athman, S.Y., Ruong'o, S., Abucheli, G., Korir, N.K., Odongo, H., Miano, D.W., and Robertson, A.E. 2017. Rotten Inedible Tubers: The Case of Cassava Brown Streak Disease. *The Plant Health Instructor*. DOI: 10.1094/PHI-T-2017-0619-01

SUMMARY

This case study is based in Africa, where cassava is a key food security crop, and focuses on the gravity of the threat that cassava brown streak disease (CBSD) poses to resource-poor cassava growers. The goal of the study is to illustrate how providing information on disease spread can help not only growers who plant infected material but also other growers in the region. Planting infected cuttings can negatively impact cassava production and intensify hunger in the region. The case also highlights the role that non-governmental organizations (NGOs) and research organizations play in multiplication and dissemination of cassava cuttings and how this activity can be coupled with providing information on disease management. Both cassava mosaic disease (CMD) and CBSD can cause devastating losses depending on the susceptibility of the variety planted and the time of infection.

INTRODUCTION

Cassava is an important food security crop in many tropical areas of the world. An organization called New Partnership for Africa's Development has designated it as a crop of choice for poverty reduction in Africa. Cassava production in East African nations is under serious threat from two different diseases caused by viruses: cassava mosaic disease (CMD) and cassava brown streak disease

(CBSD). Accurate diagnosis is vital for effective management of these diseases. The case study is intended to serve as an undergraduate-level teaching resource that acquaints students with diagnosis of CBSD (currently the most damaging of the two diseases), presents facts on the disease, and discusses principles related to its management.

This case study is a decision-making scenario in which Neema, a mother of eight children, who is a hard-working small-scale farmer in Soroti, Eastern Uganda (Figures 1A and 1B) and the chairlady of a self-help group, faces a food security crisis. This crisis erupts after she shared the CMD-resistant cassava varieties she was given by Opio, an agricultural project coordinator with a local non-governmental organization (NGO) called UWEZO, with her neighbors; soon, the tubers develop disease symptoms and begin to rot.



Figure 1A. Map of Uganda in Africa.

Figure 1B. Map of Uganda showing location of Soroti District.

WHAT IS THE CRISIS?

The crisis is how to solve Neema's and her neighbors' problem and ensure they will have enough to eat. In addition, UWEZO hopes to be absolved from being blamed for distributing diseased cassava cuttings to growers. UWEZO obtained the cuttings from the cassava planting material multiplication center at the agricultural research center in Soroti.

OBJECTIVES

Demonstrate to students the challenges that growers face when trying to manage cassava virus diseases on their farms. This case study will:

- Introduce key facts about CBSD and its importance.
- Teach principles of CBSD pathology and management. (Students will realize that to develop an effective CBSD management strategy they need to understand how the disease develops and spreads from one farm to another).

- Explain how to diagnose CBSD in the field (challenges and constraints).
- Discuss the threat posed by CBSD to food security in the wider African Great Lakes region.

This case study will reinforce two fundamental plant pathology concepts:

- Planting genetically uniform crops is risky.
- Plant pathogens are easily spread in vegetative propagation materials like cuttings.

About This Case Study



