

Losses caused by CBSD

- CBSD causes both quantity and quality loss of cassava storage roots
- In susceptible varieties, the losses can be up to 100%
- Roots showing CBSD symptoms are not fit for human and animal consumption

How CBSD spreads

Spread through virus-infected planting material: CBSD mainly spreads when cuttings taken from a diseased plant are used as planting material. The new plants will have CBSD. Sometimes the plant may be carrying CBSV or UCBSV without showing symptoms, when it was recently been infected or when the variety is tolerant. Since the virus is already in the plant, CBSD symptoms may eventually appear and the virus can be spread to other plants by the insect vector.

Spread by whiteflies: The viruses are spread from plant to plant by small white insects called whiteflies, just like the malaria parasite is carried by mosquitoes. Whiteflies feed on the sap in cassava leaves, just like mosquitoes feed on blood. The virus lives in the sap of the plant. While sucking sap of an infected plant, the virus is carried along with the sap into the body of the whitefly. If the same whitefly later feeds on a healthy plant, it will transmit the virus to the healthy plant.

What should be done to control cassava brown streak disease?

- Always get planting materials (stem cuttings) from clean CBSD-free plants
- Select planting materials from gardens without history of CBSD
- Plant CBSD and cassava mosaic disease tolerant varieties. Varieties that are resistant to CMD and moderately tolerant to CBSD include NASE 3 and MM 96/4271 (NASE 14). Additional five CMD resistant and CBSD tolerant varieties were released by NARO in 2011. These are NASE 15, NASE 16, NASE 17, NASE 18 and NASE 19. The National Cassava Programme of NARO is developing better varieties that have higher levels of resistance to CBSD.

Those multiplying cassava planting materials should:

- Be trained in proper identification and management of CBSD
- Regularly inspect their fields for CBSD using trained personnel.
- Rogue out all plants showing symptoms of CBSD
- Distribute cassava stems only when the health status has been approved by trained inspectors and a movement permit officially issued the Ministry of Agriculture Animal Industry and Fisheries (MAIIF).

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Know Cassava Brown Streak Disease

A devastating disease of cassava



What is cassava brown streak disease?

Cassava brown streak disease (CBSD) is a devastating disease that causes poor yields of cassava. It causes rotting of the storage roots and the spoilt roots can not be eaten. CBSD is caused by two viruses; *(i) Cassava brown streak virus (CBSV), (ii) Ugandan cassava brown streak virus (UCBSV).* A virus can not be seen with the naked eye and only survives inside a living organism. CBSD is present in Uganda, Kenya, Tanzania, Malawi, Mozambique and Rwanda.

How to recognize cassava brown streak disease

Symptoms of CBSD can be observed on leaves, stems and cassava roots. While some varieties can show symptoms on leaves, stems and roots, others may only show symptoms on leaves and not on roots. Some varieties do not show symptoms on leaves but on roots only. Symptoms are most visible in old cassava plants, especially on the lower mature leaves. In many varieties, young leaves at the tip of the plant do not show CBSD symptoms. So, whenever the old leaves drop off, the plants may appear healthy, when in fact, they have CBSV or UCBSV.

Symptoms of CBSD on leaves

- Thin yellow lines or patches along the small veins within normal green leaf colour. The yellowing is also called chlorosis.
- The yellow lines or patches are larger and clearer on older leaves which are at the lower part of the plant
- In mature cassava plants, the yellowing on the lower leaves becomes larger until most of the leaf is yellow and only the small veins remain green
- Leaves showing CBSD symptoms retain their normal shape and are not distorted as for cassava mosaic disease

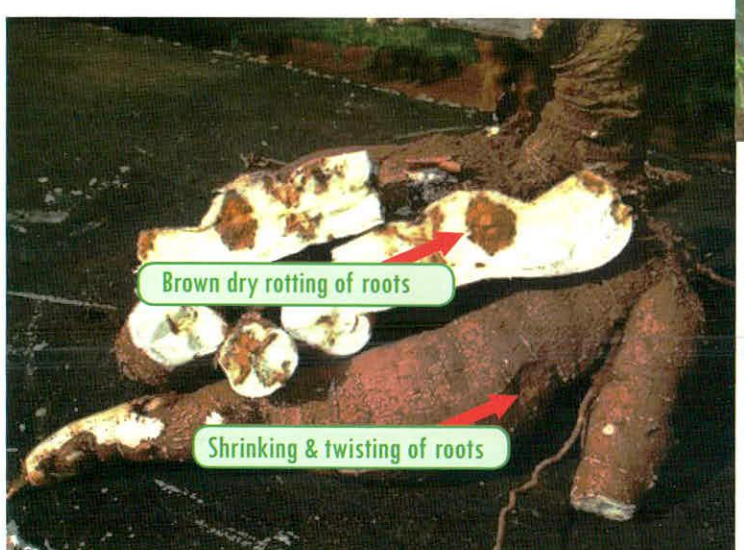




Symptoms of CBSD on stems

- Dark brown 'streaks' on the stem
- The 'streaks' appears as scratch like wounds in some varieties
- These streaks can be most clearly seen on upper, young green portions of the stem
- In very susceptible varieties, the shoot tips may dry and fall off and this condition may progress to affect the whole cassava, and is called 'stem die–back'
- Eventually the whole plant may dry and die





Symptoms of CBSD on cassava storage roots

- Sections of the edible part of storage root turn brown or yellowish and hard
- The dry and hard brown rot consisting of dead tissue becomes evident in the root
- In very susceptible varieties, CBSD causes deep constrictions, twisting and reduction in size (shrinking) of the storage roots (string of beads appearance)
- The outer skin of the storage roots may develop deep cracks on the surface