

Cassava green mite

Mononychellus tanajoa



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Cassava green mite adult and egg.

SUMMARY: The cassava green mite is an important pest of cassava in Africa that can cause significant losses in yield. The mite can easily be spread from one place to another on leaves and cuttings of the plant, and by wind. An integrated approach is required to control the pest and reduce the damage. Cultural practices, such as using clean planting material, planting early in the rain season and intercropping with pigeon pea, can reduce populations of the pest.

KEY SIGNS

The cassava green mite is green to yellowish in colour and can barely be seen by the naked eye (they look like tiny greenish-yellowish spots). The mites feed on the underside of young leaves and green stems of the cassava plant. Use a hand lens to look for cassava green mites on the underside of leaves, along the veins and close to the base of the leaf. Mite populations increase on the young leaves in the early part of the dry season.

Mites attack the plant by sucking fluids out of the cells of the plant tissue, which causes chlorotic spots (yellow spotting) to appear on leaves due to the loss of chlorophyll (green pigment). The leaves may become mottled and die. These symptoms can be confused with cassava mosaic virus, but cassava mosaic virus causes larger greenish-yellowish patches and leaf distortion. A severe attack by cassava green mite causes the terminal (or newest) leaves to die and fall off, and the shoot tip to look like a 'candle stick'.

MANAGEMENT

Prevention – what to do before signs are seen

Cultural approaches: Use resistant varieties if they are available in the region.

If resistant varieties are not available, ensure clean planting material is used. Inspect the fresh sprouts on the cassava cuttings closely for mites and destroy any infested planting material.

Plant early, at the start of the rainy season, to encourage leaf growth and plants that are able to survive an attack. Cassava plants between 2 and 9 months old are the most vulnerable.

Intercrop with pigeon pea, in double or triple rows, to reduce the damage and also increase yields.

Control – what to do after signs are seen

Cultural approaches: The cassava green mite has a number of natural enemies that can be used for biological control, including predatory mites *Typhlodromalus manihoti* Moraes and *Typhlodromalus aripo* DeLeon, as well as many predatory insects from the *Stethorus* and *Holobus* (= *Oligota*) genera. There have been successful country-wide programmes to release these predatory mites and insects in several countries in Africa.

During the season, leaves that show signs of mites should be removed and destroyed away from the field. After harvest, destroy all infested crop residues.

Chemical approaches: Use of chemicals by smallholders is often not possible due to the cost. Furthermore, pesticides reduce the population of natural enemies which can cause the mite populations to increase rapidly.

CAUSE

The cassava green mite, *Mononychellus tanajoa*, belongs to the Acari family of mites. It has no wings or antenna. Adult females can grow up to 0.8 mm and are bigger than the adult males.

In development, there are four active instars including a six-legged larva, two nymphal stages (proto- and deuto-nymphs) and the adult stage. Development time from egg to adult takes approximately 11 days. The females can live up to 30 days, laying an average of 60 eggs over a 9 day period.

Temperature is the factor that has the greatest impact on development and growth rate of the mite. The higher the temperature the faster the growth rate: a female mite can produce on average 4.0 to 4.5 eggs per day at temperatures between 27°C and 34°C.

The mite is easily spread by the wind and through infested plant materials such as leaves (eaten as a vegetable), cuttings (used for propagation) and root tubers. Mites can survive on leaves, stems and cuttings removed from the field for a period of up to 60 days.

IMPACT

The cassava green mite is a major pest of cassava throughout Africa. It can severely reduce yields by reducing the leaves and lowering the photosynthetic activity of the plant. Due to the reduced plant growth, fewer leaves are available for harvest as green vegetables and yield losses of the tubers can range from 10-80%. Prolonged periods of drought can lead to an increase in the population of mites and further reduced yields.

DISTRIBUTION

Native to the neo-tropical areas of Brazil and South America, the cassava green mite was introduced into Uganda in the 1970s and has since spread throughout Africa.

FURTHER READING

Plantwise Knowledge Bank www.plantwise.knowledgebank.org

Integrated Cassava Project <http://www.cassavabiz.org/production/mites.htm>

Onzo, A., Hanna, R. & M.W. Sabelis. Biological control of cassava green mites in Africa: impact of the predatory mite *Typhlodromalus aripo*. *Entomologische Berichten*, 65(1), 2005.