

## Cassava green mite (438)

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### Common Name

Cassava green mite

### Scientific Name

*Mononychellus tanajoa*. Another mite, *Mononychellus caribbeanae*, is considered a separate species by some taxonomists; previously, it was thought to be another name for *Mononychellus tanajoa*.

### Distribution

Africa, North (Mexico) and South America, the Caribbean (Dominican Republic, Trinidad and Tobago). It is not recorded in Oceania. The mite is native to the tropical parts of Central and South America. The distribution of the mite is still to be resolved due to confusion with other similar species.

### Hosts

Cassava, and other *Manihot* species.

### Symptoms & Life Cycle

The mite pierces and sucks juices from the leaves, most commonly from the underside; this causes yellowing, mottling, death and leaf fall. Stems show a 'candle stick' effect with the loss of terminal shoots.

There are four stages, a larva with six legs, two nymphs and the adult. From egg to adult takes about 12 days at 27°C. Adults are green at first; later, they become yellowish-green (Photo 1). The adult female lives for about 12 days and lays about 60 eggs. They grow to 0.8 mm, slightly larger than males. Populations are greatest during dry seasons: rainfall tends to wash the mites from the leaves.

Spread occurs by mites walking from plant to plant, and when they are blown in the wind or carried in water. Long distance spread is by human beings moving planting material, nursery plants, and marketing leaves as a vegetable. Spread also occurs on farm vehicles and other machinery. Survival is on leaves and stems for up to 60 days.

### Impact

The mites impact in Africa has been devastating: it was introduced in 1971 and by 1985 it had spread throughout the cassava belt. Depending on the variety and the length of the dry season there can be a 50% loss of leaf weight and up to 80% loss in root yield. Poor growth and thin stems reduces the quality of planting material in the next crop.

### Detection & inspection

Look for yellowing and loss of leaves on the terminal shoots. Use a hand lens or a microscope to look for life stages of the mite along the veins on the undersides of leaves. Because of similarity with closely related species, critical identification is needed by a taxonomist familiar with phytoseiid mites.

Other spider mites common on cassava leaves, such as the two-spotted spider mite, usually attack lower leaves, and make webs along the veins on the underside. Symptoms are similar to cassava mosaic virus, except the virus causes patches of yellow and green, which are not confined to the veins, and also deforms leaves. It does not cause the 'candle stick' symptom. Cassava bacterial blight does cause the 'candle stick' symptoms either, and causes angular black spots on the leaves (**see Fact Sheet no. 173**).



Photo 1. Adult cassava green mite, *Mononychellus tanajoa*. Note the egg at top left.

## Management

### BIOSECURITY

Countries still free from the cassava green mite should take all practical measures to prevent its introduction and further spread. Whenever cassava varieties are moved between countries they should be as pathogen-tested plantlets growing in sterile media according to the FAO/IBPGR *Technical Guidelines for the Safe Movement of Cassava Germplasm* - <https://www.biodiversityinternational.org/e-library/publications/detail/faoibpgr-technical-guidelines-for-the-safe-movement-of-cassava-germplasm>.

### NATURAL ENEMIES

Mites of the family Phytoseiidae are the most important predators of cassava green mite because they are effective even when there are low numbers of mites to eat, and they are also easy to rear. Introductions began with *Amblyseius* species from South America to Africa in the mid-1980s. However, more success was obtained with *Typhlodromalus aripo* introduced in 1993; it is now considered the key predator of green cassava mite in the African cassava belt. Good effect occurs when it is present with another introduced species, *Typhlodromalus manihoti*.

### CULTURAL CONTROL

Cultural control is limited in its effectiveness, although selection of planting material from healthy plants, early planting in the rainy season and intercropping with pigeon pea have been suggested.

### RESISTANT VARIETIES

Varieties with tolerance to the green cassava mite have been bred at IITA, Ibadan, Nigeria.

### CHEMICAL CONTROL

This is not a recommended method of control because it is too expensive when cassava is produced only for household use; also there is the possibility that extensive use will select resistant populations of mites. Most importantly, pesticides will interrupt the biological control of predatory mites. However, although abamectin has been found effective.

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*When using a pesticide, always wear protective clothing and follow the instructions on the product label, such as dosage, timing of application, and pre-harvest interval. Recommendations will vary with the crop and system of cultivation. Expert advice on the most appropriate pesticides to use should always be sought from local agricultural authorities.*

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Information from CABI (2019) *Mononychellus tanajoa* (cassava green mite). Crop Protection Compendium. (<https://www.cabi.org/cpc/datasheet/34767>); and from Integrated cassava project. (<http://www.cassavabiz.org/production/mites.htm>); HarvestChoice (2014) *Mononychellus tanajoa* (Cassava green mite). Pest Geography. (<https://ideas.repec.org/p/ags/hcpggb/249751.html>). Photo 1 Georg Goergen, IITA/Insect Museum, Cotonou, Benin.

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