The International Exchange and Testing of Cassava Germ Plasm in Africa

Proceedings of an interdisciplinary workshop held at IITA, Ibadan, Nigeria 17-21 November 1975

Editors: Eugene Terry and Reginald MacIntyre

Cosponsored by the International Development Research Centre and the International Institute of Tropical Agriculture
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Part C
Major Pests of Cassava in Africa and Preliminary Guidelines for Screening of Resistance

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Cassava has, compared with other crops, relatively few insect problems. Traditional methods of cultivation in smaller plots and mixed cropping are less favourable to severe insect attack. However, there are some insect and mite species which are, or may become, major pests in Africa.

The main pests of cassava in Nigeria are the white fly (*Bemisia tabaci*), the grasshopper *Zonocerus variegatus*, and the red spider mite *Tetranychus telarius*. Outside Nigeria, the green spider mite (*Mononychellus tanajou*) which occurred recently in Uganda and Tanzania and a not-identified mealy bug in Zaire have become serious pests of cassava. *Scirtothrips manihotis* reported from East Africa and termites can occasionally be dangerous.

**Major pests of cassava**

*Bemisia tabaci*

**Distribution:** All over Africa

**Damage:** Vector of cassava mosaic virus; no damage by the insect itself

**Yield losses:** Yield losses between 20 and 90% for CMB between 1930 and 1940; today cassava seems to live with the virus and is still able to produce

**Biology:** *Bemisia* lays its eggs on new developing leaves; larvae and pupae can be easily detected on older, fully grown leaves. One generation lasts about 4–5 weeks depending on climatic conditions (about 10 generations per year). The population level depends more on the physiological conditions of the plant than on climatic conditions

**Host range:** Tomato, eggplant, tobacco, cassava, sweet potato, cowpea, and many others

**Control:** Because of the wide host range and the fact that a single insect can transmit the mosaic disease, only total immunity of cassava would be of value. Because this rarely can be obtained, either with insecticides or in resistant varieties, we should look only for varieties which do not favour white fly development

*Zonocerus variegatus*

**Distribution:** Widespread in Africa between 10° north and south of the equator

**Damage:** Defoliation of plants between November and March; heavy outbreak can result in stripping of the bark

**Yield losses:** Yield can be affected when plants are younger than 1 month; 60% loss has been reported
**Biology:**  
*Zonocerus* is a dry-season pest. Eggs are laid in April and hatching occurs at the end of October and November. Two generations are possible of which only the dry season one is of importance. Young hatchings do not touch cassava until they reach the 3rd instar. By this time cassava is often the only suitable food-plant because it can withstand drought. With increased cultivation of cassava *Zonocerus* seems to gain in importance.

**Host range:**  
Cotton, citrus, sweet potato, cassava, tobacco, etc.

**Chemical control:**  
*Zonocerus* can be controlled by insecticides like Gamalin 20 and Tenitrothion.

**Screening for resistance:**  
Screening for resistance against *Zonocerus* might be possible. Preliminary tests showed a preference for certain varieties: 60444, Isunikakiyan, 58101. Screening is not very easy because of high mobility and large numbers, but possible during early morning. Possible rating system: 0 — none; 1 — few resting only; 2 — slight feeding; 3 — obvious feeding; 4 — numerous skeletonized leaves, no extensive bark damage; 5 — near defoliation with extensive bark feeding.

*Tetranychus telarius* (red spider mite)

**Distribution:**  
Worldwide

**Damage:**  
With increased mite population, yellowish-white dots occur and later the leaves turn yellowish-brown and eventually drop; heavy outbreaks can cause complete defoliation; tips show light-coloured mottling, leaves remain stunted, drop, and the growing point dies.

**Yield losses:**  
Unknown, but might be heavy if cassava is attacked by young as in the case of *Zonocerus*.

**Biology:**  
Life cycle varies from 7 to 12 days; 2–6 eggs are laid per day with a total of 70 eggs per female. They hatch in a few days into six-legged larvae which molt into two recessive nymphal instars and an eight-legged adult. The mite is a dry-season pest. It prefers high temperature and low relative humidity. Mostly older and well-maintained plants are attacked. The mite is spread by wind, animals, and man.

**Host range:**  
Groundnuts, cassava, cotton, cucurbits, etc.

**Control:**  
Heavy outbreaks might require the use of acaricides like Azadrin, Dicrotophos, Dimethate fundal, etc.

**Resistance:**  
There may be differences in the susceptibility of cassava varieties to spider mites, but this has not yet been established. Possible rating system: 0 — no evidence of mites or damage; 1 — nil damage, only occasional speckling; 2 — speckling localized, less than 25% of the leaf surface speckled; 3 — speckling extends length of the mid-side and covers 30–50% of leaf surface; 4 — most leaves including young ones showing over 50% speckling; 5 — whole plant looks whitish with large amount of webbing and defoliation. Actual counting of mites is also possible but rather time-consuming.

**Minor pests**

Minor pests should be carefully watched especially in connection with newly released, high-yielding and resistant varieties.