ALTERNATIVE HOSTS OF OKRA MOSAIC VIRUS NEAR PLANTINGS OF OKRA IN SOUTHERN IVORY COAST

Louise Givord

Laboratoire de Virologie, Centre ORSTOM d'Adiopodoumé, B.P. V51, Abidjan, Côte d'Ivoire.

The author is indebted to J. C. Thouvenel for the electron microscope observations. We wish to thank L. Hirth for constructive criticism of the manuscript, L. Den Boer for experimental assistance in insect transmission, and C. R. Jessop for helping with the English translation.

ABSTRACT

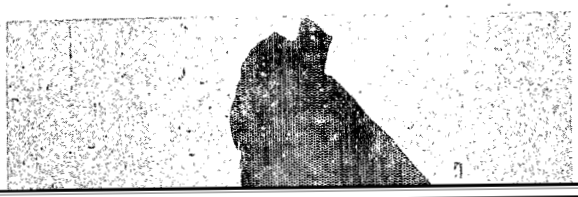
Symptoms of virus diseases were observed in Corchorus olitorius, Hibiscus sabdariffa, Urena lobata, Borreria intricans, and Blighia welwitschii in fields of okra. Symptomatology, insect transmission, host range, electron microscopy, and serological tests revealed okra mosaic virus as the causal agent of all of these diseases. Their role as reservoirs of okra mosaic virus is discussed.

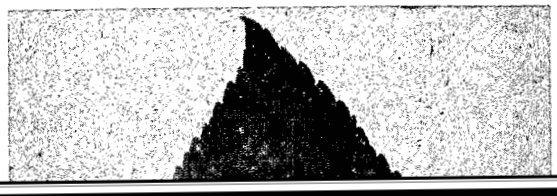
Plant Dis. Reptr. 62: 412-416.

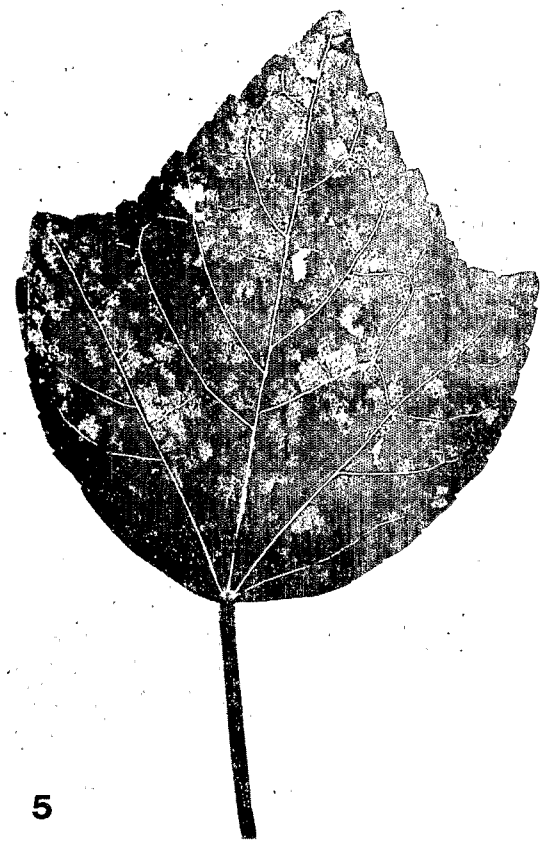
Additional key words: tymovirus, Podagrica decolorata.

In the southern part of Ivory Coast, around Abidjan, okra (Abelmoschus esculentus, formerly Hibiscus esculentus) is grown in nearly every village. Most of these cultivations of okra are infected by okra mosaic virus (4) (Fig. 6). Okra plants in gardens are generally mixed with other vegetables, such as Corchorus olitorius (Tiliaceae) and Hibiscus sabdariffa (Malvaceae), which sometimes show symptoms of virus disease.

A small brown chrysomelid is a serious pest of the three species. This beetle can transmit







5

FIGURE 5. Symptoms of okra mosaic virus (OMV) on Hibiscus sabdariffa leaves appeared after mechanical inoculation.

FIGURE 6. OMV symptoms on okra found in the field. The leaves are damaged by the beetle vector.

6

Mechanical transmission: Mechanical transmissions of virus collected in the fields from every species mentioned above were positive, and inoculated okra cv. Clemson Spineless seedlings had symptoms of OMV (3). Back inoculation from okra onto H. sabdariffa, C. olitorius, U. lobata, B. intricans, and B. welwitschii produced symptoms that were similar to those observed in the fields for each species respectively.

Host range: This is exactly the same as that of the Ivory Coast okra type strain (2).

Serology: Serological reactions of purified virus from each species of plants with homologous and heterologous antisera of the two strains of OMV were similar to those obtained with the purified Ivory Coast strain of OMV (2).

Electron microscopy: Electron micrographs of the virus from each species showed isometric particles identical with OMV.

Insect transmission: Transmission experiments with P. decolorata were positive in every case: from okra to H. sabdariffa, C. olitorius, U. lobata, B. intricans, and B. welwitschii, and from these species to okra.

DISCUSSION AND CONCLUSION

All properties of the viruses isolated from C. olitorius, H. sabdariffa, U. lobata, B. intricans, and B. welwitschii indicate that it is OMV (Ivory Coast strain). The five species can therefore be reservoirs of the virus.

In the southern part of Ivory Coast, okra, C. olitorius, and H. sabdariffa grow throughout the year. P. decolorata can also be observed at all times. Therefore, virus sources are always present and OMV can multiply either in one crop or in another.

The stump of B. welwitschii is an occasional host, as we found in our survey. This example of a naturally infected B. welwitschii stump indicates that there may be other occasional natural hosts of OMV. This is logical when one considers the extensive host range of OMV (3).

Obviously, the natural host range described here is not all inclusive, especially for the other regions of Ivory Coast.

Literature Cited

1. BOS, L. 1970. Symptoms of virus diseases in plants. Cent. Agric. Public. Doc., PUDOC, Wageningen, Netherlands. pp. 53-63.
2. GIVORD, L. 1977. Identification de souches du virus de la mosaïque du gombo (okra mosaic virus). Ann. Phytopathol. 9(1): 53-70.
3. GIVORD, L., and L. HIRTH. 1973. Identification, purification and some properties of a mosaic virus of okra (Hibiscus esculentus). Ann. Appl. Biol. 74: 359-370.
4. GIVORD, L., P. PFEIFFER, and L. HIRTH. 1972. Un nouveau virus du groupe de la mosaïque jaune du navet: le virus de la mosaïque du gombo (Hibiscus esculentus L. Malvacée). C. R. Hebd. Seances Acad. Sci., Sér. D, Sci. Nat. 275: 1563-1566.