UC Riverside

International Organization of Citrus Virologists Conference Proceedings (1957-2010)

Title

Witches' Broom Disease of Lime in the United Arab Emirates

Permalink

<https://escholarship.org/uc/item/6jr50660>

Journal

International Organization of Citrus Virologists Conference Proceedings
(1957-2010), 12(12)

ISSN

2313-5123

Authors

El Shereiqli, R. K.
Gassouma, S.

Publication Date

1993

DOI

10.5070/C56jr50660

Peer reviewed

Witches' Broom Disease of Lime in the United Arab Emirates

R. K. El Shereiqli and S. Gassouma

ABSTRACT. Symptoms of witches' broom disease of acid lime were first noticed in the United Arab Emirates in 1988 in the Eastern Coastal Region. Since then it has spread towards the north east and then southwards. In the latter area the disease has been found in citron, sweet lime and sweet limetta as well as in acid lime. Diseased lime specimens sent to INRA, France were shown to contain mycoplasma-like organisms, and to react in immunofluorescence tests with witches' broom MLO monoclonal antibodies. Large numbers of the putative leafhopper vector *Hishimonus phycitis* were caught in light traps.

Witches' broom disease of acid lime is a comparatively new disease, being first observed in Oman in the late 1970's (1, 4). It is characterised by abnormal growth of twiglets and leaves. During the spring or autumn growth, successive branching of slim twiglets with short internodes, devoid of thorns and flowers, and packed with tiny leaves appears usually on one side of the tree (4). This branching continues forming a large bunch. This then occurs in other branches, and as the tree sheds normal leaves the abnormal growth appears as conspicuous green bunches, and when their leaves drop they leave dry twigs behind. The lime tree dies 4-5 years after the disease first appears; Palestine sweet lime and sweet limetta die 2-3 yr after appearance of first symptoms. Mycoplasma-like organisms have been observed in the phloem sieve elements of diseased lime and in diseased periwinkle to which witches' broom was transmitted by dodder (2, 5). Recent evidence from Oman suggests that the vector may be the leafhopper, *Hishimonus phycitis* (3).

The disease was first noticed in the UAE in 1988 in Bethna village in the

Eastern Coast region, and in Masfut and Hatta villages near the Omani border. In each, only 2-3 trees per farm were affected. In the former area the disease spread slowly in Bethna, and then appeared in trees 12-23 km away to the north east. The disease also appeared in one lime tree on the Ministry of Agriculture and Fisheries experimental farm in March 1989, and 2 yr later 35 out of 101 trees in the orchard were diseased. A second nearby orchard showed 27% infection, and a third 11%. By mid-1992 all the trees had died.

After a lull in 1991, the disease spread southwards in 1992, and appeared in orchards in Siji village. For the first time not only acid lime trees were affected but also a local variety of citron, a variety of Palestine sweet lime and sweet limetta.

The extent of the disease in acid lime trees in the UAE in 1992 is shown in Table 1.

Specimens of small leaves from infected trees (acid lime, sweet lime, sweet limetta and citron) were sent to INRA, Bordeaux, France, where electron microscope studies showed the presence of MLO's in the phloem, and

TABLE 1
DISTRIBUTION OF WITCHES' BROOM DISEASE OF ACID LIME IN THE
UNITED ARAB EMIRATES

Region	No. of farms	Total no. of trees	No. of diseased trees	% infection
Eastern Coast	5,355	94,481	3,160	3
Central (Masfut, Meleiha & Aweer)	2,122	4,628	500	11

immunofluorescence studies demonstrated that it is identical to Omani witches' broom (J. M. Bové, personal communication).

Large numbers of *H. phycytis* were found in light traps, especially in May.

In collaboration with J. M. Bové and M. Garnier, large numbers of *H. phycytis* leafhoppers were captured on acid lime, sweet lime, sweet limetta and citron trees in February 1993 with the use of a D-vac aspirator.

LITERATURE CITED

1. Bové, J. M.
1986. Witches' broom disease of lime. *FAO Plant Prot. Bull.* 23: 217-218.
2. Bové, J. M., M. Garnier, A. M. Mjeni and A. Khayrallah
1988. Witches' broom disease of small-fruited acid lime trees in Oman: First MLO disease of citrus, p. 307-309. *In: Proc. 10th Conf. IOCV.* IOCV, Riverside.
3. Bové, J. M., L. Zreik, J. L. Danet, M. Garnier and A. M. Mjeni
1993. Witches' broom disease of lime trees: Monoclonal antibodies and DNA probes for the detection of the MLO and the identification of insect vectors, p. 342-348. *In: Proc. 12th Conf. IOCV.* IOCV, Riverside.
4. Garnier, M., L. Zreik and J. M. Bové
1991. Witches' broom, a lethal mycoplasmal disease of lime trees in the Sultanate of Oman and the United Arab Emirates. *Plant Dis.* 75: 546-551.
5. Garnier, M., L. Zreik and J. M. Bové
1991. Witches' broom disease of lime trees in Oman: Transmission of a mycoplasma-like organism (MLO) to periwinkle and citrus and the production of monoclonal antibodies against the MLO, p. 448-453. *In: Proc. 11th Conf. IOCV.* IOCV, Riverside.