SPIRALLING WHITEFLY, *AEURODICUS DISPERSUS*,
A RECENT INVADER AND NEW CASSAVA PEST

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ABSTRACT

The spiralling whitefly, *Aeurodicus dispersus* Russell (Hom., Aleyrodidae), a native of Central America, was found in continental Africa for the first time early in 1992, and has since spread to five West and Central African countries. It is a polyphagous pest which causes substantial damage also on cassava. In mid-1993, two parasitoids, *Encarsia* sp. near *haelensis* Dozier and *E. guadeloupae* Vigiani (Hym., Aphelinidae) were recovered from *A. dispersus* in Benin. They probably had arrived serendipitously. Wherever the whitefly spreads, initially damaging populations were observed. In coastal Benin, population levels declined sharply in 1994. The necessity of introducing another biological control agent, the predator *Nephaspis oculatus* Blatchley (=*annicola* Wingo) (Col., Coccinellidae), remains therefore unclear.

*Key Words*: Biological control, *Encarsia* spp., *Nephaspis oculatus*, whitefly

RÉSUMÉ


SPREAD OF AEURODICUS DISPERSUS AND PEST STATUS

The spiralling whitefly, *Aeurodicus dispersus* Russell (Hom., Aleyrodidae), was described in 1965 and distinguished from similar species accumulated in the U.S. Department of Agriculture collection over 60 years. Its distribution covered southern Florida, portions of Central and South America, the West Indies, and also the Canary Islands (Russell, 1965). It was known from a wide range of host plants (38 genera from 27 families, but not from cassava) and not considered a pest. In southern Florida, the species seems to reach the northern limit of its distribution due to cold winter temperatures (Cherry, 1979).

*Aeurodicus dispersus* was first noticed as a pest insect in Hawaii in 1978, from where it
spread across the Pacific (Lauofo and Iwamoto, 1982; Martin and Lucas, 1984) to Sri Lanka (Wijesekera and Kudagamage, 1990), and the Maldives Islands (Martin, 1990). It was, however, not noted as a cassava pest.

In continental Africa, A. dispersus was observed for the first time in the area of Ibadan and Lagos, Nigeria as a serious pest of cassava early in 1992, though unverifiable reports suggest that the insect might have been present since 1990. In limited surveys, it was also found in other south-western states of Nigeria. Important hosts, other than cassava, included soybean, pigeon pea, fruit crops like Citrus spp., papaya (Carica papaya), as well as numerous ornamentals and shade trees (Akinlosotu et al., 1993). The dense populations of A. dispersus producing ample honeydew and sooty mould, led to abandonment of some cassava fields and the removal of some ornamental trees.

Auleurodicus dispersus was also observed in Cotonou, Benin, and Lomé, Togo early in 1993. It spread rapidly, but irregularly, mainly along the roads, and by the end of the year was observed in many localities up to about 100 km inland in Benin (d’Almeida, 1994; J. A. Lys, pers. comm.) and Togo (D. Agounké, pers. comm.), and in two localities in Ghana. It was also reported from Congo (A. Kiyindou, pers. comm.). By early 1995, it occupied almost the whole coastal region between Lagos and Accra, Ghana, up to 150 km inland, and had spread locally to some large cities in the north, like Parakou, Benin, and Lama Kara, Togo (O. Ajuonou and Y. d’Almeida, unpubl. results). The number of host plants recorded surpassed 100.

**BIOLOGICAL CONTROL**

In Hawaii, A. dispersus was considered an economic pest of major significance and a search for natural enemies was initiated in the Caribbean. Three species of coccinellid predators and two species of aphelinid parasitoids, namely Encarsia sp. near haitiensis Dozier and Encarsia sp., were introduced, studied for their host specificity, and liberated. By 1981, the whitefly populations were judged to be under control, which was credited to the exotic parasitoids and the coccinellid Nephaspis oculatus Blatchley (=amnicola Wingo) (Kumashiro et al., 1983). Similar success was achieved in other Pacific countries, either by E. ?haitiensis and one or the other coccinellid or by E. ?haitiensis alone, as in Palau and Pohnpei (Waterhouse and Norris, 1989). In the Maldives Islands, E. ?haitiensis was introduced as the only exotic agent and achieved control (C. Klein-Koch, G. Schulten, pers. comm.).

In view of the conspicuous damage, particularly on cassava, by A. dispersus in West Africa, the national plant protection services of Togo, Benin, Ghana, and Nigeria contacted Food and Agricultural Organisation of the United Nations (FAO), the C.A.B. International Institute of Biological Control, and International Institute of Tropical Agricultural (IITA) for assistance in developing a biological control project. Before the planned introduction of E. ?haitiensis could be implemented, this parasitoid together with Encarsia guadeloupeae Viggiani (as identified by G. Viggiani and A. Polaszek) were discovered in southern Benin and Togo, in two localities in Ghana, and in Ibadan (J.A. Lys, P. Neuenschwander, Y. d’Almeida, unpubl. results) in the second half of 1993. By 1995, E. ?haitiensis had spread throughout the infested area in the south, but its distribution in the north remained patchy. In southern Benin, surveys indicated fluctuating, but clearly lower whitefly populations than had been noticed before the advent of E. ?haitiensis (d’Almeida, 1994; O. Ajuonou and Y. d’Almeida, unpubl. results). By early 1995 it remains uncertain whether E. ?haitiensis can permanently control A. dispersus on all host plants in West Africa.

A similar serendipitous introduction of parasitoids of A. dispersus had been noted in Guam for Encarsia sp. (Waterhouse and Norris, 1989), where E. ?haitiensis had been released and established, and in Florida for Euderomphale vittata Dozier (Hym., Eulophidae) where E. ?haitiensis had not become established (Bennett and Noyes, 1989).

An eventually desired introduction of N. oculatus has to await the results of extended host specificity trials, as requested by the soon-to-be ratified FAO convention concerning the introduction of beneficial organisms. The life history of N. oculatus has in fact been studied in
some detail (Yoshida and Mau, 1985). Adults fed on three whitefly species other than A. dispersus, and, to a limited extent, on red spider mite, but not on an aphid and a coccid (Yoshida and Mau, 1985).

At a planning meeting in Lomé in February 1995, attended by the plant protection services of Togo, the Inter-African Phytosanitary Council of Yaounde, Cameroon, IIBC and ITA, it was therefore decided to go ahead with testing N. oculatus for an eventual introduction into Africa and to continue monitoring the spread and impact of E. haitiensis.

REFERENCES


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