TROPICAL PEST MANAGEMENT, 1991, 37(1) 57–58

Insect pests of intercrops and their potential to infest oil palm in an oil-palm-based agroforestry system in India

(*Keywords:* Insect pests; oil palm; *Elaeis guineensis* Jacq.; Intercropping; agroforestry; India)

K. DHILEEPAN

Central Plantation Crops Research Institute, Research centre, Palode 695 562, Kerala, India

Abstract. Among the various intercrops in the oil-palm-based agroforestry system, only cacao shared a common pest complex with oil palm. Insect pests of other intercrops such as Albizzia, Ailanthus, Casuarina and Subabul are host-specific and do not infest oil palm. No pest incidence was noticed in Eucalyptus and Australian black wood.

1. Introduction

The oil palm *Elaeis guineensis* Jacq. is usually grown as a monocrop. However, in small oil palm holdings the available wide interspace (9 m × 9 m) is used for interplanting of various shade-loving food crops (Hartley, 1977). Similarly, interplanting of perennial crops such as cacao, coffee and rubber with oil palm has also been attempted (Hartley, 1977). Intercropping of various forest trees such as Albizzia, Ailanthus, Eucalyptus, Subabul, Casuarina and Australian black wood, as well as cacao with oil palm in an oil-palm-based agroforestry system, was initiated at CPCRI, Palode.

The major problem in growing intercrops with oil palm is that they are susceptible to attack by a wide range of insect pests (Rao, 1970). There should be no risk of an intercrop pest attacking the oil palm and developing into a problem (Turner and Gillbanks, 1974). Though information on the insect pests of cacao (Premkumar and Nair, 1981), Albizzia (Nair *et al.*, 1986), Ailanthus (Verma, 1986), Subabul (Thakur and Pillai, 1984) and oil palm (Dhileepan, 1987) is available, literature on the pest incidence on various forest trees when grown as intercrops with oil palm, as well as their ability to infest oil palm, is not available. Hence in the present study insect pests of various intercrops in the oil-palm-based agro-forestry system were surveyed and their potential to infest oil palm was assessed.

2. Method

The on-going oil-palm-based agroforestry trial at CPCRI, Palode, initiated during 1983, was surveyed at monthly intervals between June–August 1985 and January 1986–December 1988, and the insect pests of intercrops as well as oil palm were recorded. Insect pests collected during the survey were identified from the Commonwealth Institute of Entomology, London; the Department of Entomology, Kerala Agricultural University, Vellayani and the Department of Entomology, Kerala Forest Research Institute, Peechi. The host range and host preferences of the insect pests were also studied in the laboratory.

3. Results and discussion

Among the seven species of crops grown as intercrops with oil palm, no pest incidence was noticed on Eucalyptus and Australian black wood. Pest incidence was noticed in all the other intercrops, and the attack was greater in cacao, Ailanthus, Albizzia and Subabul. In Casuarina the incidence of insect pests was occasional and less severe. Studies on the host-specificity of *Coptosoma variegata* H. & S. (Platispidae), *Eumeta crameri* Westw. (Psychidae) and *Gargara* sp. (Membracidae) infesting Casuarina revealed that although they are polyphagous they do not infest oil palm. Cacao was infested by as many as seven species of polyphagous insect pests: *Dasychira mendosa* Hb. (Lymantriidae), *Antigestra ?bubo* (Pyraustidae), *Hoplasoma unicolor* Illiger (Chrysomelidae), *Proutista moesta* (Westwood) (Derbidae), *Idioscopus* sp. (Cicadellidae), *Leptocentrus* sp. (Membracidae) and *Planococcus* sp. (Pseudococcidae), throughout the year, of which the former five species also infested oil palm. On Albizzia, *Eurema hecabe* was recorded as a major pest causing complete defoliation during the months of June to October. Similarly on Ailanthus, infestation by *Eligma narcissus* Roth (Noctuidae), resulting in complete defoliation, was noticed during May to November. On Subabul the exotic psyllid bug *Heteropsylla cubana* Crawford was first noticed during June 1988, causing serious damage to the young shoots and emerging leaves. However, host-specificity studies showed that the insect pests of Subabul, Ailanthus and Albizzia are highly host-specific and none of them infested oil palm. Among the seven species of intercrops only cacao shared a common pest complex with oil palm, while the insect pests of the other intercrops are host-specific and do not pose any problem to oil palm (Figure 1).

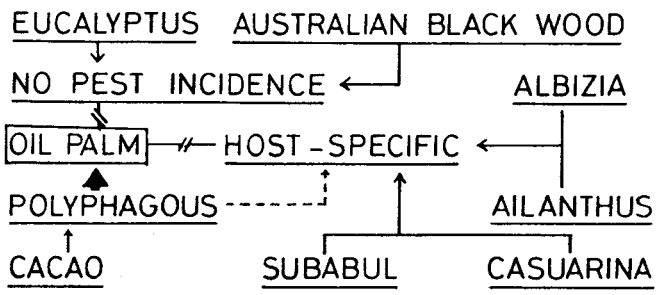

Figure 1. Insect pests of intercrops and their potential to infest oil palm in an oil-palm-based agroforestry system.

0143-6147/91 $3.00

Acknowledgements

Thanks are due to Dr K. U. K. Nampoothiri, Scientist-in-charge, CPCRI (RC), Palode and Mr G. B. Pillai, Head, Division of Entomology, CPCRI (RS), Kayangulam for suggestions and encouragement. Thanks are also due to the Director, CIE, London; Dr George Mathew and Mr K. Mohandas, Division of Entomology, Kerala Forest Research Institute, Peechi; and Dr (Mrs) Visalakshi, Department of Entomology, Kerala Agricultural University, Vellayani, for identifying the insects. Facilities provided by Mr P. Thomas Varghese and Mr K. J. Abraham are also gratefully acknowledged. This paper is CPCRI contribution no. 718.

References

DHILEEPAN, K., 1987. Pests of oil palm and their management strategies in India. In *Training on Production Technology for Oil Palm.* (Palode, Kerala: Central Plantation Crops Research Institute, Research Centre), pp. 14–17.

HARTLEY, C. W. S., 1977. *The Oil Palm* (London: Longmans, Green), 706.

NAIR, K. S. S., MATHEW, G., MOHANADAS, K. and MENON, A. R. R., 1986. A study of insect pests incidence in natural forests. *Kerala Forest Research Institute Research Report* 44, p. 28.

PREMKUMAR, T. and NAIR, C. P. R., 1981. Caterpillar and beetle pests of cacao (*Theobromae Cacao* L.) in India. *Planter, Kuala Lumpur*, **58**, 3–13.

RAO, B. S., 1970. Pest problems in inter-cropping in plantations. In *Crop Diversification in Malaysia* (E. K. Blencowe and J. W. Blencowe, Eds) (Kuala Lumpur: Incorporated Society of Planters), pp. 245–252.

THAKUR, M. L. and PILLAI, S. R. M., 1984. Insect fauna associated with Subabul, *Leucaena leucocephala* (Lam) Dewit. in South India. Paper presented at the *Third Oriental Entomology Symposium*, Trivandrum, 21–24 February.

TURNER, P. D. and GILLBANKS, R. A., 1974. *Oil Palm Cultivation and Management* (Kuala Lumpur: Incorporated Society of Planters), p. 622.

VERMA, R. V., 1986. Seasonal incidence and possible control of important insect pests in plantations of *Ailanthus triphysa*. *Kerala Forest Research Institute Research Report 39.* p. 42.