Observations on *Phytoseiulus persimilis* Athias-Henriot (Acarina: Phytoseiidae) for control of the phytophagous mites of areca palm*

Areca palm is attacked by several species of mites. Of these *Oligonychus indicus* (Hirst) (Acarina: Tetranychidae) and *Raoiella indica* Hirst (Acarina: Tenuipalpidae) infesting the leaves are especially severe duringt he summer months (March to early June). Their control by foliar spraying is difficult and expensive mainly because of the height of these palms. So a study was initiated to control them biologically by using *Phytoseiulus persimilis* Athias-Henriot (Acarina: Phytoseiidae) in collaboration with the Commonwealth Institute of Biological Control, Indian Station, Bangalore.

P. persimilis is an efficient predator of spider mites of fruit trees and vegetables in temperate countries. This mite was introduced from Chile into Europe and North America for biological control of spider mites, especially *Tetranychus urticae* Koch and *T. cinnabarinus* Boisd., which are important pests on cucumber, tomato, French bean, peach, strawberry, chrysanthemum, and rose in glasshouses and fields (Chant, 1961; Oatman, McMurtry and Voth, 1968, French et *al.*, 1976).

Nucleus cultures of *P. persimilis* were obtained by CIBC during 1969 from Switzerland for trial against the mites infesting areca and tea plants in India. Laboratory studies at CIBC, Bangalore (21°–27°C) revealed that this predator could survive and reproduce on *Tetranychus* sp., *Oligonychus* sp., and *R. indica*, but its reproductive potential was reduced when *R. indica* was the food source and that it might not be able to survive in the field during the monsoon when *R. indica* populations would decrease (Kamath, 1968).

The mites were first obtained by us in 1969 from the CIBC, Indian Station, Bangalore. They were supplied with honey-agar or agar medium in glass tubes. Out of five shipments of 1,100 mites, only 86 nymphs and adults survived the transportation. The mites were sent here by letter post which took 3-4 days in transit. The [illegible] in the laboratory at the prevailing temperature of 29-32° C, so they were transferred to an airconditioned room later. Thirty predaceous mites were released in April 1969 on two areca seedlings infested with the red mite *R. indica* but none survived after 24 hr presumably because of the prevailing high field temperature (34-39 C). (Annual Report, CPCRI, Kasaragod, 1971).

During 1971, another founder culture of *P. persimilis* was obtained from England through CIBC, Bangalore. This time the predator was sent here with phytophagous mites as food material. They were multiplied in the laboratory at a controlled temperature of 27-29° C. Both *O. indicus* and *R. indica* were used as food material but the predator was found to prefer only the eggs of *O. indicus*. There are, however, reports of its feeding on adult red spider mites also (Chant, 1961). The predator fed on freshly laid eggs of *R. indica* when no other food was available. The culture of the predator declined in size when the room temperature was raised to 30-32 °C. Force (1967) pointed out that the predatory efficiency declined above an optimum temperature of 20 C. Because of the prevailing highly fluctuating temperatures (up to 40° C) and high humidity in areca fields, this predator is unable to survive in nature. Its food preference has also shown that it may not be effective for biological control of phytophagous mites of areca palms.

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Central Plantation Crops Res. Institute, Regional Station, Vittal 574 243, Karnataka.

Mariamma Daniel
S. N. Seshadri**

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