REVIEW OF LITERATURE
Plate 4

a. *Oligonychus isei lemae* - Male
b. *Oligonychus isei lemae* - Female

c. *Oligonychus isei lemae* - Egg laying female

d. *Tetranychus ludeni* - Female

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2. REVIEW OF LITERATURE

2.1 Oligonychus iseilemae (Hirst) (Plate 4 a,b,c)

2.1. (i) Nomenclature

9 (4): 524

Oligonychus iseilemae (Hirst)

Pritchard and Baker, 1955.


Taxonomic descriptions of the tetranychid mites O. iseilemae and T. ludeni were available from Evans and Till (1979), Hirst (1924), Pritchard and Baker (1955) and Zacher (1913).

2.1. (ii) Host plants

Original record of O. iseilemae is from a grass Iseilema laxum Hack (Hirst, 1924). The current record of the mite was from a perennial palm crop Cocos nucifera (Sathiamma, 1983, 1986).

2.1. (iii) Distribution

O. iseilemae was originally recorded from Coimbatore, Tamil Nadu, India (Hirst, 1924). According to Pritchard and Baker (1955), this species was known only from the types from S. India. Further, it was recorded from Kayangulam, Kerala (Sathiamma, 1983; 1986). Gupta (1985) recorded this species from Andaman and Nicobar Is. O. indicus and O. plegas had been recorded on coconut from India.
Other species recorded include *O. modestus*, *O. plegas*, *O. pratensis*, *O. velascoli* and an unidentified species of *Oligonychus* (Table 1).

2.1. (iv) Economic importance

*O. isellemae* (Hirst), commonly known as the coconut white mite, was newly recorded as a pest on coconut palm foliage (Sathiamma, 1983; 1986). The mites live in colony on the adaxial surface of the leaflets along the midrib under delicate webbing. The immature and adult mites sucked sap from the foliage and the affected portions dried up. They occurred on young and old palms and often posed problem in coconut nurseries and young palms in the main field.

However, Gupta (1985) could not attribute any economic importance to this species.

2.2 *Tetranychus ludeni* Zacher, 1913 (Plate 4d)

2.2. (i) Nomenclature


*Tetranychus* (*Epitetranychus*) *ludeni* Zacher, 1921

*Zts. ang. Ent.*, 7: 187


*Septanychus deviatarsus* McGregor, 1950


*Tetranychus ludeni* Zacher Pritchard and Baker, 1955

2.2. (ii) Host plants

Puttarudriah and Channabasavanna (1959) first recorded its occurrence as a pest on vegetable crops. Since then, its occurrence was noted on a number of crops. Nearly 30 species of plants were recorded as natural hosts of this spider mite (Jeppson, et al., 1975; Gupta, 1985; Sadana, 1985). Recently, Karuppuchamy and Mohanasundaram (1987) recorded five vegetable host plants from Tamil Nadu. Record of *T. ludeni* was mostly from annual plants and none of the palms was noted as host of this spider mite.

2.2. (iii) Distribution

*T. ludeni* was recorded from most of the tropical countries. It was distributed in India, Southern United States, Mexico, Central and South America, South Africa, Australia and Europe (Puttarudriah and Channabasavanna, 1959; Jeppson, et al., 1975; Gupta, 1985). In India, this was recorded from Kerala (Saradamma and Nair, 1976; Sathiamma, 1986); Karnataka (Puttarudriah and Channabasavanna, 1959; Puttaswamy and Channabasavanna, 1979, 1980) and Tamil Nadu (Karuppuchamy and Mohanasundaram, 1987). Three more species of *Tetranychus* were recorded on coconut. These included *T. fijiensis*, *T. neocalylicus* and *Tetranychus* sp. (Table 1).

2.2. (iv) Economic importance

*T. ludeni* Zacher, the coconut red spider mite, was recorded as a polyphagous species infesting a number of agricultural and
horticultural crops (Jeppson et al. 1975; Puttaswamy and Channabasavanna, 1979, 1980 and Gupta, 1985). Channabasavanna (1981) recorded this species as one of the most important pests of vegetable crops in India and they often caused heavy loss in yield. *T. ludeni* appeared as an occasional pest on coconut palm (Sathiamma, 1986, 1988). Immature and adult mites infested the leaflets and sucked the sap, similar to *O. isellemae*. Excessive draining of the sap by the mites resulted in drying of the affected portions.

2.2.(v) Nature of damage

Puttaswamy and Channabasavanna (1979b) described the nature of injury by *T. ludeni* on French bean plants. As in other spider mites, the mites sucked the plant sap by penetrating the host tissue with the sharp stylets, which induced white stippling at the feeding sites. As feeding continued, the number of blotches increased and gradually coalesced with the adjoining ones producing larger blotches. Profuse webbing of the mites covered the entire leaf surface. During severe infestation, the leaves lost their green colour, turned yellow initially, developed necrotic patches, gradually wilted and dried resulting in poor or no yield. Govindan, Puttaswamy and Devaliah (1981) observed that on mulberry plants, the yellowish white speckles did not coalesce so quickly as in others. The lesions produced by a large number of individuals resulted in yellowing and drying of the leaves. Gupta (1985) stressed its importance as the only spider mite known as a vector of a virus disease, the Dolichos Enation Mosaic Virus.
2.2.(vi) Biology

Biology of *T. ludeni* was studied on eight host plants (Puttaswamy and Channabasavanna, 1979b, 1980b; Puttaswamy *et al.*, 1981 and Govindan *et al.*, 1981). According to Puttaswamy and Channabasavanna (1979a), high temperature (30-35°C) and low relative humidity (55-75%) were favourable factors for the development of *T. ludeni*. Puttaswamy and Channabasavanna (1980b) also observed that the host plants, on which this mite fed and bred, had considerable influence on the developmental period of *T. ludeni*. These authors also studied the interaction of *T. ludeni* and *T. neocaledonicus* Andre, another key pest on vegetables. On Okra plants, co-habitation restricted the development of both the species (Puttaswamy and Channabasavanna, 1979c).

2.2. (vii) Ecology

Studying the effect of cropping pattern, Puttaswamy and Channabasavanna (1978) observed that by alternating host and non-host crops cultivation under field conditions, the continuity of build up of population of *T. ludeni* could be arrested. The influence of weather parameters in the incidence of *T. ludeni* was studied by Puttaswamy and Channabasavanna (1980a). They observed that on aubergine plants, population of *T. ludeni* occurred throughout the year with a peak from May to July and was low from August to late February. Population increase was associated with high temperature, low rainfall and relative humidity.
As regards the natural enemies, nine species of predators comprising five species of Phytoseiidae; one species each of Coccinellidae and Staphylinidae; two species of Thysanoptera and a fungus were observed to check the population of T. ludeni in the field (Mallik and Channabasavanna, 1975; Reddy and Jagdish, 1977; Puttaswamy and Channabasavanna, 1979d and 1980a; Krishnamoorthy, 1983; Edge, 1984; Peter and David, 1988).

So far, eight species of tetranychid mites were recorded from the coconut palm from different parts of the world (Table 1). But the details on the nature and extent of damage, biology, ecology and economic importance of these mites are yet to be worked out.