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POPULATION DISTRIBUTION, HOST RANGE AND CONTROL OF GLASS HOUSE WHITE FLY, *Trialeurodes vaporariorum (W)*

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Glass house white fly catch in sticky trap was more in main season (April-August). The pest was found to tide over the cooler months in number of alternate hosts. Monocrotophos 0.04% spray registered lesser population buildup.

KEY WORDS : Control measures, White fly

The green house white fly **Trialeurodes vaporariorum** (Westwood) is nearly cosmopolitan as a pest of green house plants and occurs out of doors in warm climates. Mohan **et al.,** (1988) reported the outbreak of the pest in Nilgiris and listed number of feeding and breeding hosts. Population dynamics in different months, additional host plants and control aspects are discussed in this paper.

MATERIALS AND METHODS

Four circular (12 cm) diameter yellow sticky traps smeared with castor oil were placed in the potato field at one metre height in Horticultural Research Station, Udhagamandalam. Total number of white flies trapped were counted at weekly intervals from June'89 to December '89 and average trap catch per day was computed.

Farmer's field in Udhagamandalam block and glasshouse at Government Botanic Garden, Udhagamandalam were surveyed at monthly intervals for enlisting the breeding host of the whitefly. The host plants were categorised into three groups viz, highly preferred host (30 nymphs/sq. cm.) moderately (10-20 nymphs/sq.cm.) and less preferred host (<10nymphs/sq. cm) for breeding based on the nymphal population in one square cm of adaxial leaf surface.

A green house insecticidal evaluation test was carried out with six insecticides (Table 1), in potato variety Kufri Jyoti and replicated thrice. The chemicals were applied with a high volume pneumatic sprayer on 50, 70 and 90 days after sowing.

Total nymphal population was counted in ten randomly selected middle potato leaves since nymphs are most abundant on the middle leaves (Vaishampayan and Kogan, 1980).

RESULTS AND DISCUSSION

Population dynamics

The adult glass house fly population in sticky trap catch ranged from 0.35

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TABLE 1 : Population buildup of glass house fly nymphs in Potato.

Number of Nymphs per leaf

Chemical	Days after planting			Mean
	60	80	100	
Monocrotophos 0..04% (Nuvacron)	0.45 a	0.90 a	1.60 a	0.98
Neem Oil 0.4% (Biosol)	3.18 a	9.26 b	2.02 a	4.82
Chlorpyriphos 0.04% (Durmet)	1.60 a	2.43 b	7.98 a	4.00
Endosulphan 0.07% (Thiodan)	4.47 a	10.75 b	7.67 a	7.63
Quinalphos 0.05% (Ekalux)	3.88 a	9.63 b	8.90 a	7.47
Acephate 0.075% (Acetaf)	8.10 a	55.93 d	73.52 c	45.85
Control	27.38 b	27.88c	28.61 b	27.95

1 / Mean of three replications

In a row, means followed by a common letter are not significantly different at 0.05 level (DMRT)

to 81.50 per day in different periods (Fig. 1). The trap catch was more in main season with steady decline in autumn season. The area under potato crop is more in main season (April-August) than in autumn (Sept.-Dec.) and irrigated season (Jan.-April). Expansion of abundant host plant influences the multiplication and outbreak (Costa et al., 1973). Sudden increase in trap catch was recorded from 1.75 to 81.5 adults during June second fortnight to July second fortnight. The peak catch of 81.5/day coincides with the bulking stage of main crop characterised by more foliage. The adult exhibit a significant predilection to rest and oviposit on younger leaves (Vaishampayan and Kogan 1980) in June months to higher trap catch in first week of July. The Southwest monsoon lasts from last week of May to June followed by brief spell of dry weather with high humidity in later months. This period is characterised by lack of irrigation, hot climate followed by cold winds and conducive for white fly multiplication (Mor and Maran, 1984). The foliar growth in main season ceases after July second fortnight leading to senescence of leaves. The non-availability of suitable young potato leaves in fields might forced the adult flies to shift to other alternate host plants leading to lesser trap catch in July last week and early August.

The sowing of autumn crop commences during August month and fields are generally with fewer potato foliage for whitefly breeding. The poor catch during August is attributed to this fact also. In autumn season, there was slow increase in the trap catches from 0.75 to 7.00 per day. The maximum catch was recorded during last week of September followed by steady decline as the autumn crop matures. The labour part autumn season in The Nilgiris characterised by low temperature with high late blight incidence. The change in colour of the potato plant due to late blight infection and fall in night temperature and availability of nursery crops in glass house might have forced the pest

to switch over its breeding hosts to other glass house crops and ornamental with poor catches in sticky trap.

Alternate Hosts

Glass house white fly can multiply on a very large number of cultivated plants and weeds (Gour, 1988). This enable the pest to remain in considerably large numbers throughout the year. Mohan et al., (1988) recorded 21 hosts in Nilgiris. In the present study four cultivated crops, eight ornamental plants, three medicinal plants and one in each of shrub, weed and tree are reported as breeding host of glass house white fly (Table 2). These host plants play a vital role in carry over of the pest across the season.

TABLE 2 : Alternate most plants for white fly, Trialeurodes vaporariorum (w)

	Host Plant	Level of Preference
A.	CULTIVATED PLANTS,	
	Peas, Pisum sativum L	+
	Double bean, Phaseolus faba L	+
	Pole bean, Phaseolus sp. L	+
	Chillies, Capsicum frutescens L	+
B.	MEDICINAL & AROMATIC PLANTS,	
	Organo, Origanum marjorans L	+++
	Rose Mary, Rosmarinus officinalis L	+
	Thyme, Thymus vulcaris L	+
C.	ORNAMENTAL PLANTS,	
	Prime Rose, Primula obconica H	+++
	Poor Man's orchid, Schizanthus wistonensis H	++
	Lady's purse, Calceolaria herbeohybrida Ross	+++
	False honeysuckle, Azalea indica L	+++
	Widow box flower, Petunia hybrida H	+
	Poppy, Papaver somniferum L	+
	Achimenes hybrids	+
	Asystesia varieqata Bl.	+++
	Night queen, Cestrum aurantiacum	++
	Morning glory, Ipomea purpures R.	++
D.	WEEDS,	
	Sonchus arvensis L.	+++
E.	TREE,	
	Australian turpentine tree, Tristania conferta R.Br.	+++
	Low preference for breeding (<10nymphs/sq.cm)	+
	Moderately preferred host for breeding (10-30 nymphs/sq.cm.)	+
	Highly preferred host for breeding (>30 nymphs/sq.cm.)	+++

Insecticidal evaluation

The nymphal population in insecticide treated plot ranged from 0.345 to 28.61 per leaf in different periods (Table 1). Among the chemicals, monocrotophos 0.04% significantly registered lesser population in all the periods. Efficacy of monocrotophos with higher mortality rate and lesser population build up was reported by Gurdip Singh et al., (1973). David et al., (1986) opined that efficacy of different chemicals against white fly should be evaluated only after subjecting the plants to minimum of two spray application. An analysis of the nymphal population at 100 days (after 3 spraying) indicated that there was no significant difference among chemicals excepting acephate. Efficacy of endosuephan, chlorpyriphos and need oil against white fly were earlier documented by several workers (Gurdip Singh et al., 1973, Rataul and Singh 1974. Sidhu et al., 1979, and Jayaraj et al., 1986). The glass house white fly is not exposed to much insecticidal selection pressure as that of cotton white fly, **Bemisia tabaci** (G) and this may be the reason for lower population buildup in all the treatments. The higher population in acephate treatment may be attributed to resurgence inducing effect (Mallikarjuna Rao and Khalid Ahmed 1986) and needs further studies.

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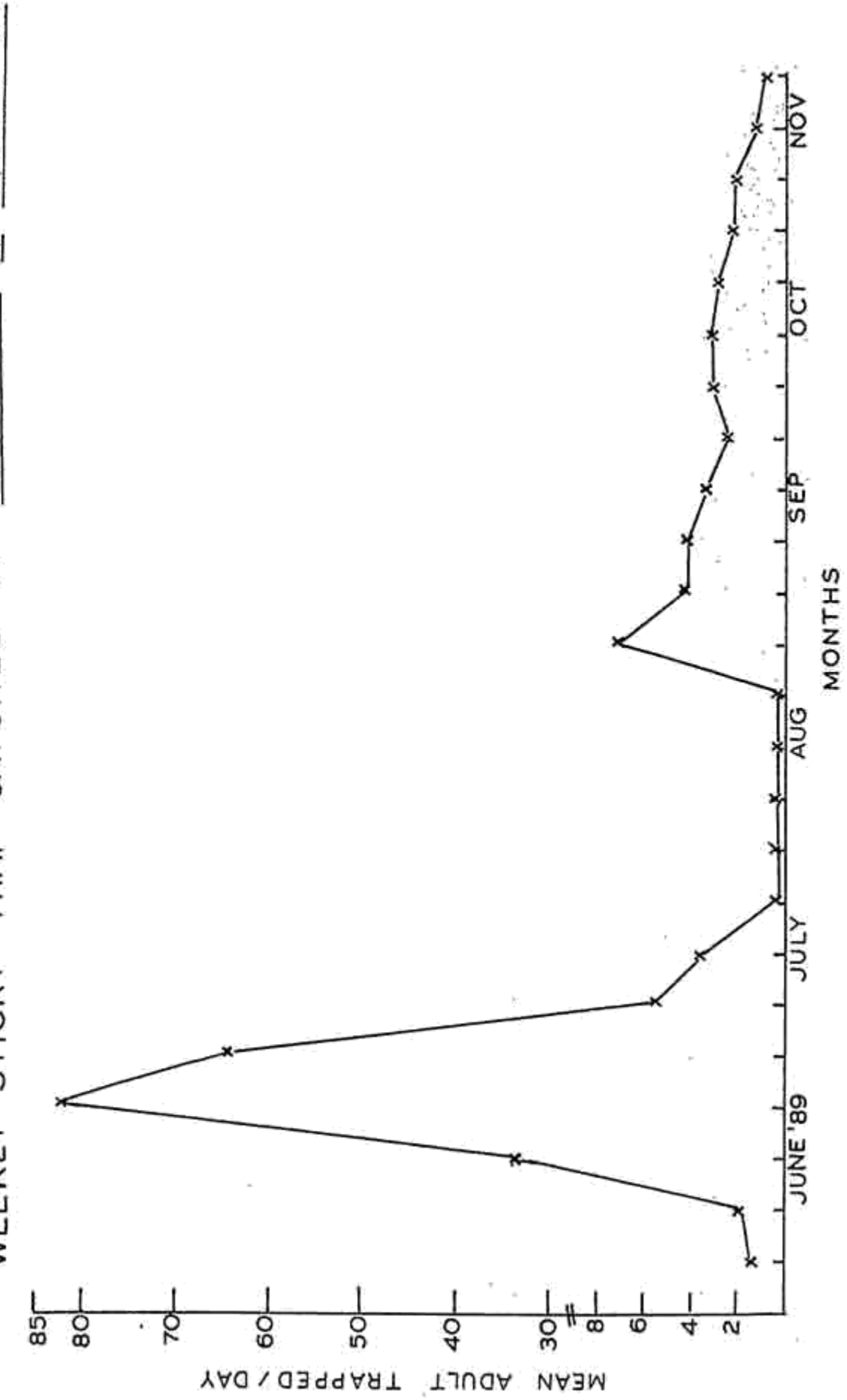
WEEKLY STICKY TRAP CATCHES OF Trialeurodes sp vaporariorum
MEAN ADULT TRAPPED / DAY
85
80
70
60
50
40
30
8
6
4
2
JUNE '89
JULY
AUG
SEP
OCT
NOV
MONTHS

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RELATIONSHIP BETWEEN THE PHEROMONE TRAP CATCHES OF PECTINOPHORA GOSSYPIELLA AND SPODOPTERA LITURA THEIR FIELD INFESTATION AND LARVAL POPULATION

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ABSTRACT

Studies conducted to find out the relationship between the pheromone trap catches field infestation and larval population revealed that there was a positive direct relationship between the trap catches, field infestation and larval population of Pectinophora gossypiella (Saund.) and Spodoptera litura (F.). From the regression equation fitted for P. gossypiella it is clear that a pheromone trap catch of 22.5 adults/trap/week would cause about 27.5% boll damage after two weeks. similarly, a pheromone trap catches of 22.5 months/trap/week would cause about 23.0 larvae/50 bolls after three weeks. For S. litura it was observed that a pheromone trap catch of 161.5/trap week would cause about 52.5% leaf damage after four weeks.

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