The Journal of Plant Protection Sciences, **2**(2) : 95-96, 2010

Short Communication

Field efficacy of some insecticides against whitefly infesting mulberry, *Morus alba* L.

M. Patnaik , P. Mitra, N.K. Das, K. Mondal and A.K. Bajpai
Central Sericultural Research and Training Institute,Central Silk Board, Berhampore-742101, Murshidabad, West Bengal, India
E-mail : manoja_ctp@rediffmail.com

The whitefly, *Dialeupora decempuncta* Quaintance & Baker (Homoptera: Aleyrodidae), is a polyphagous pest, started causing severe damage to mulberry *Morus alba* L since 1994. They suck leaf sap causing chlorosis, dryness of leaves, leaf curl and sooty mould disease and give effect to a culminating loss in leaf yield to the tune of 10-24%, especially during major silkworm cocoon crop seasons. Synthetic and plant-derived chemicals are not only economical but also easily available, safer, biodegradable, non-toxic products and potentially suitable for use in Integrated Pest Management systems (1). Thus development of specific management practice based on botanicals or new group of insecticides has become imperative. Though several chemical insecticides were recommended earlier for the control of whitefly in mulberry, continuous reliance on those for control of whitefly in other agricultural crops has given rise to several problems like development of pesticide resistance and increase in environmental pollution leading to health hazards. So efforts were made to avoid the environmental pollution by adopting some newer insecticides viz. thiamethoxam (Actara 25% WG), diafenthiuron (Pegasus 50% WP) and clothianidin (Dantap 50% WDG) which are less toxic, economic, biodegradable and easily available. The LC90 values of these three insecticides were worked out as 0.0131%, 0.0635% and 0.0046% respectively (5). Hence it was felt necessary to study the field efficacy of these insecticides against *Dialeuropora decempuncta.*

The experiment was conducted at Central Sericultural Research & Training Institute, Berhampore, West Bengal during August to November 2009. It was laid out in a randomized block design with 3 blocks (replications) of 9 plots each to accommodate 9 treatments. These are foliar spray of 2 doses each of three insecticides e.g. thiamethoxam (0.015%, 0.020%), diafenthiuron (0.0633%, 0.070%) and clothianidin (0.0047%, 0.005%), and one each sprayed with water and dichlorvos (0.01%) and other without any spray (untreated). Each plot measured 18'x12' and contained 54 plants at a spacing of 2x2. Pest population was initially recorded just before the application of treatments. The post treatment population was recorded after 1st, 3rd, 5th, 7th and 14th days of spray. The number of whitefly adults per leaf was recorded between 6 am to 7 am. The adults lying on the ventral surface of the leaves were counted by gently turning the leaf. Data were recorded from 10 randomly selected plants of each plot following the standard method of Nileson (4). The data, thus obtained were subjected to comparative efficacy of all treatments through Analysis of Covariance.

The findings of the study indicated that amongst the three insecticides tested, thiamethoxam at 0.015% reduced the population of whitefly on mulberry by 99.81% followed by diafenthiuron

at 0.0633% by 99.62% and clothianidin at 0.0047% by 99.07% in 1st day of spray and 99.81%, 99.19% and 99.07% on 3rd day of spray respectively (Table 1). On 5th day of spray clothianidin at 0.005% reduced the population by 98.59% followed by thiamethoxam at 0.015%, by 96.82%, diafenthiuron at 0.070% by 96.70%. The data of 7th day of spray revealed that diafenthiuron at 0.0633% reduced the population by 97.47% followed by clothianidin at 0.0047% by 96.83%, thiamethoxam at 0.015% by 96.82% as compared to control. The Analysis of Covariance indicated significant variations among different concentrations of different treatments and also between different days after spray. Field efficacy of diafenthiuron 50% WP was evaluated against whitefly *Bemicia tabaci* on brinjal by Saradha & Nachiappan (6). They showed that diafenthiuron at 800 g.a.i./ha had maximally reduced the whitefly population. Bhaskaran *et al*. (3) fine tuned the dose of diafenthiuron (300 g.a.i./ha) against spiraling whitefly (*Aleurodicus disperses* Russell) on guava plants that was previously reported by Babu & David (2). Based on this field efficacy study the biosafety of these insecticides on silkworm rearing as well as their effect on natural enemies of whitefly will be evaluated for finally recommending them at farmers' level for its effective management.

Table 1.
Reduction percent in pest population over different days after spray (DAS)

	1 DAS	3 DAS	5 DAS	7 DAS
T1= Thiamethoxam at 0.015%	99.81	99.81	96.82	96.82
T2= Thiamethoxam at 0.020%	97.05	98. 43	95.31	95.23
T3=Diafenthiuron at 0.0633%	99.62	99.19	96.5	97.47
T4= Diafenthiuron at 0.070%	98.77	97.35	96.7	95.07
T5= Clothianidin at 0.0047%	99.07	99.02	96	96.93
T6= Clothianidin at 0.005%	92.31	95.04	98.59	96.33
T7= Water	70.3	72.47	70. 08	75.45
T8= Dichlorvos at 0.01%	96.43	93.51	91.28	95.13

Literature Cited

1. Alkafahi A Rupprecht JK Anderson JE Melanghlin JL Mikoiajezak KL Scoot BK. 1989 In *Insecticides of Plant Origin, ACS symposium series 387* (Eds Arnason JT Philogene BJR Morand P) American Chemical Society, Washington D.C. pp 25-43.

2. Babu BG David PMM. 1999. *Pestology* **26**: 61-65.

3. Bhaskaran V Reddy DJ Subbratnam GV Reddy SA Nath VVN Kumar VDVNH. 2003. *Pestology* **27**:16-19.

4. Nileson MW. 1957 Sampling technique studies on the spotted alfalfa aphid. *Journal of Economic Entomology* **43**: 204-06.

5. Patnaik M Santhakumar MV Das NK Mitra P Mondal K Bajpai AK. 2009. *Journal of Crop and Weed* **5** (1): 251-53.

6. Saradha C Nachiappan RM. 2003. *Pestology* **27**: 12-14.