The Journal of Plant Protection Sciences, **3**(2) : 53-56, December, 2011 **Short Communication**

Relative susceptibility of two high yielding mulberry (*Morus alba* L.) cultivars to whitefly and thrips

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Mulberry (*Morus alba* L.) is grown for its foliage to feed the silkworm, (*Bombyx mori* L.) for silk production. In India 1.84 lakh ha is under mulberry cultivation of which 30935 ha are in West Bengal (1). One of the important contributing factors for the development and expansion of sericulture is the adoption of high yielding mulberry variety in different agro-climatic regions of India. Since the eastern and northeastern regions of India are experienced with varied altitude and agro-climatic conditions, it was felt necessary to evolve the region specific mulberry varieties. After thorough evaluation trials two high yielding mulberry cultivars S1 and S1635 were introduced during 1960's and 1990's respectively and were widely adopted and become popular amongst farming community in this region. S1 is a diploid cultivar with erect, bushes open type, leaf yield ranges from 27 - 29 mt/ha/yr and 16-18 mt/ha/yr in irrigated and rainfed gardens respectively. Another cultivar S1635 is a triploid with erect branches, leaves are rough with serrate margin, leaf yield ranges between 40-45 mt/ha/yr and 20-23 mt/ha/yr in irrigated and rainfed gardens(18). Due to prevalence of hot and humid conditions in the Eastern and North Eastern parts of India, insect pests are serious predicaments for the production of mulberry as it is prone to varied pests during March-November, which covers three rearing seasons, including the most productive autumn (November) crop.

Among the pests, thrips and whitefly are of major concern in Eastern and Northeastern India. Thrips incidence prevails in mulberry eco-system during February-June. Over 22 species were reported to infest mulberry (15,16,17) among which *Pseduodendrothrips mori* is predominant in West Bengal (5,7) accounts for loss of 25% leaf yield, depletes chlorophyll a/b ratio and protein contents (8).

Two species of whitefly, *Dialeuropora decempuncta* (Quaintance & Baker) and *Aleuroclava petatuberculata* (Sundarraj & David) (Homoptera : Aleyrodidae) were reported infesting mulberry (2,3), renders it unfit for silkworm rearing and causes about 24% leaf loss (4). Degree of susceptibility to pests in different cultivas was reported in various crops (9, 11). It paves the way to choose the specific cultivar that is less susceptible to the prevalent pests of the area. In the present study, efforts were made to find out the relative susceptibility against thrips & whitefly in two ruling mulberry cultivars i.e., S1 and S1635.

The study was conducted during 2005-2008 in the mulberry field of Central Sericultural Research and Training Institute, Berhampore (West Bengal) under irrigated conditions. For each cultivar three sub-plots with 40 plants (60x60cm spacing) were maintained with recommended package of practices except plant protection measures. Pest incidence data was recorded at weekly interval during the morning hours randomly from 10 plants in each sub plot in accordance with the recommended methodology (12,13,14). The data obtained was subjected to test of significance (Paired t-test).

Thrips were found to infest both S1 and S1635 during February -June during the study period (Fig.1). During 2005, the maximum incidence of thrips was observed in S1635 with a population of 106.24 per leaf during third week of July, whereas in S1 it was 29.95 per leaf during the same period. During 2006, the maximum incidence of thrips was observed with 38.12 per leaf during third week of June in S1635 followed by S1 (17.04 per leaf) during the same period. During 2007, the maximum population (39.35 per leaf) of thrips was observed in S1635 during 2nd week of April followed by S1 (39.33 per leaf) during third week of June (Fig.–1). Difference between the mulberry cultivars S1 and S1635 in respect of thrips incidence, it was found that mean population of thrips was significantly ($P<0.01$) higher in S1635 (21.17) than in S1 (12.02). Reddy & Narayanaswamy (17) have studied incidence pattern of thrips in three mulberry cultivars and observed population level varies among them and indicated that the thrips infestation is negatively correlated with high density of epidermis, higher number of trichomes and wax material.

Whitefly incidence was observed from first week of August and continued up to third week of December in both the cultivars. During 2005 (Fig. 2), maximum population of whitefly was observed (85.13 per leaf) in S1635 during first week of October, whereas, in the same period in S1 it was found to be quite low (18.18 per leaf). In 2006, maximum population of whitefly was observed during second week of July (30.12 per leaf) in S1635, whereas, in S1 maximum population (16.68 per leaf) was recorded during third week of September. During 2007, the maximum population of whitefly (39.98 per leaf) was recorded in S1635 during first week of November followed by S1 (37.2 per leaf) during the same period. During 2008, whitefly population started to appear from the second week of July, extended up to the end of the year and maximum population (71.16 per leaf) was recorded in S1 during third week of August followed by 54.16 per leaf in S1635 during the same period. In the present study, significance (Paired t-test) of difference between the mulberry cultivars S1 and S1635 in respect of whitefly population was done based on the collected data in 66 weeks spread over 4 years on their population and mean population of whitefly was found significantly ($P<0.01$) higher in S1635 (13.86) than that of S1 (9.97).

This study revealed that the mulberry cultivar, S1635 is most susceptible to insect pests due to its high nutritive value as it holds higher leaf moisture content, moisture retention capacity, total chlorophyll, sugar content and protein content. Even the bioassay studies of Krishna *et al.* (10) showed that silkworm lots fed with S1635 have recorded higher value in respect to larval weight, shell weight and effective rate of rearing over S1.

It can be concluded that among the two mulberry cultivars, S1635 has recorded significantly higher pest population over S1 due to higher nutritive parameters. To obtain optimum leaf yield of S1635 for about 40 mt/ha/yr necessary crop protection including biological and chemical control measures have to be taken for the effective management of thrips and whitefly before the commencement of commercial silkworm cocoon crop seasons.

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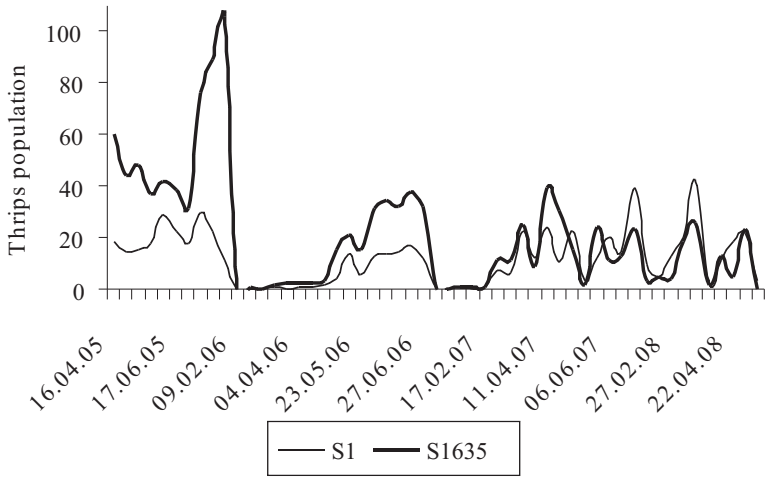

Fig.1 Comparative incidence of thrips leaf in S1 and S1635 mulberry cultivars

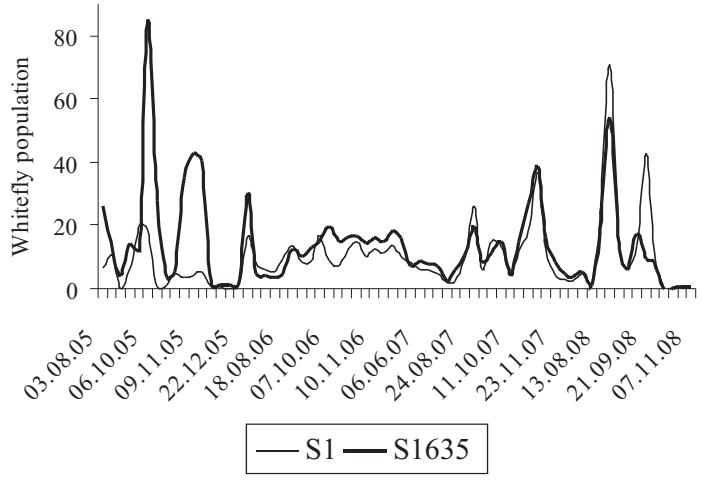

Fig.2 Comparative incidence of whitefly leaf in S1 and S1635 mulberry cultivars