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Pests infesting ornamental plants in hilly region of West Bengal

S. Pal and I. Sarkar

Regional Research Station, Uttar Banga Krishi Viswavidyalaya,Kalimpong, Darjeeling, West Bengal-734301, India
E-mail: palsento@gmail.com

A B S T R A C T

The survey was conducted during 2005-07 at the farms of R.R.S., UBKV, Kalimpong; R.R.S.S., UBKV, Pedong and other adjoining areas. The Crops surveyed included gladiolus, carnation, *anthurium*, gerbera, china rose, chrysanthemum, Bird of Paradise, Straw flower. A number of aphid species were found infesting different ornamental plants viz. *Myzus persicae* on Carnation, gerbera and *Anthurium*; *Macrosiphoniella sanborni* on Chrysanthemum; *Aphis gossypii* on China rose. Other sucking pests infesting ornamentals included *Bemisia tabaci* on Gerbera, leafhopper on Gladiolus and scale insect (unspecified) on *Anthurium*. Amongst the thysanopteran pests *Taeniothrips simplex* was very much serious on Gladiolus and another species of thrips (unspecified) was found infesting Carnation. Amongst the lepidopteran pests, gram pod borer *(Helicoverpa armigera)* was found most important inflicting serious damage to Carnation, Gerbera, Gladiolus, Chrysanthemum and Straw flower. The green semilooper, *Plusia orichalcea* caused damage to Gerbera and Gladiolus by feeding on the leaves. The tobacco caterpillar *(Spodoptera litura)* was serious on Gladiolus and *Anthurium*. Cutworm *(Agrotis segetum)* damaged the seedlings of Gladiolus. Among the Coleopteran pests, the Blister beetle *(Mylabris* p) was the most important feeding on the flowers of Gladiolus and China rose. The steel blue beetle, *Altica* p. and white spotted flea beetle *(Monolepta signata)* was found infesting Gladiolus and Chrysanthemum respectively. The serpentine leaf miner *(Liriomyza trifolii)* was recorded on gerbera. Among non-insect pests the red spider mite, *Tetranychus urticae* was very important causing havoc to Carnation, Gerbera and Chrysanthemum during dry summer months.

Ornamental plants are grown widely to enhance the beauty of home gardens and community parks and gardens. But in recent years, a revolutionary change has taken place in floriculture as an enterprise by most of the growers and industrialists. Large scale cultivation of these crops as in case of other commercial crops has been plagued by many limitations. Attack by insects, mites and other pests is one of the important bottlenecks for successful production of these crops. As many as 65 insect pests have been recorded on different ornamental plants in Himachal Pradesh. Pest scenario varies from place to place with the variation in the agro-climatic conditions of the locality. Information on pest complex in a specific agro-ecosystem is very much essential in devising pest management strategies which would not only be economically feasible but also ecologically sound. However, such information on ornamental crops are scanty particularly from this region. Therefore, pest survey and surveillance was conducted for 3 consecutive years to take into account the pest scenario of some ornamental plants in mid-hill conditions of West Bengal.

The survey was conducted at the farms of RRS, UBKV, Kalimpong; RRSS, UBKV, Pedong and other adjoining areas for 3 consecutive years during 2005-07. The ornamental plants like Gladiolus, Carnation, *Anthurium*, Gerbera, China Rose, Chrysanthemum, Bird of Paradise and Straw flower were taken up for the study. The crops were surveyed regularly for recording observations on the incidence of pests. A pocket lens (10X), insect collecting nets, glass vials and polythene bags were used for collection of insect pests for their proper identification in the laboratory with the help of the appropriate technical literature. Some pests were identified on the spot and some of them were brought to the laboratory for detailed study. They were preserved as dry specimen. Some specimens were sent to other institutes for authorized identification. Some specimens are yet to be identified. Based on their mode of occurrence and frequency, the pests were categorized as stray, occasional, sporadic and regular. On the basis of extent of injury made by the particular pests, they were grouped into pests of negligible, minor, moderate and major importance. All information explored from the field survey and surveillance were compiled and presented in the Tables 1 and 2.

Twenty four different pests have been recorded infesting various ornamental plants at places in and around Kalimpong and Pedong. The pests with their systematic position and respective destructive stage have been presented in the Table-1.

Presented data in the Table 1 revealed that eight homopteran, two thysanopteran and a mite pest constituted the sucking pest complex. The order lepidoptera and coleoptera was represented by seven and three pests respectively. In addition to this a dipteran leaf miner, grasshopper and snail were also recorded as pests of ornamental plants during the present study. Most of the pests have been reported for the first time from this region. However, some of the pests have been reported earlier by Satpathi *et al*.

The Table-2 depicts the host range, nature of damage, mode of occurrence and status of pests infesting ornamental plants. Amongst the pests recorded five species i.e. *Macrosiphoniella sanborni, Taeniothrips simplex, Tetranychus urticae, Helicoverpa armigera and Mylabris* sp. have been categorized as major pests on their respective host plants. Earlier *Helicoverpa armigera* has been reported as an important pest of ornamental plants causing serious damage to the flowers (3, 7). The extent of damage in Himachal Pradesh in terms of percent bud infestation ranges from 10 to even 80% in various cultivars of carnation (2). Sohi and Singh (4, 6) have also reported *Helicoverpa armigera* and *Tetranychus urticae* as economically important pests of chrysanthemum. According to Rami Reddy and Janakiram (4) *Macrosiphoniella sanborni* is one of the serious pests of chrysanthemum. The thrips, *Taeniothrips simplex* has been reported as a major pest of gladiolus (1).

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Table 1
Pests infesting ornamental plants in hilly region of West Bengal

Common name	Scientific name	Order	Family	Destructive stage of the pest
Green peach aphid	*Myzus persicae* Sulz.	Homoptera	Aphididae	Adult & nymph
Chrysanthemum aphid	*Macrosiphoniella sanborni* (Gillette)	Homoptera	Aphididae	Adult & nymph
Anthurium black aphid	Unspecified	Homoptera	Aphididae	Adult & nymph
Gladiolus aphid	Unspecified	Homoptera	Aphididae	Adult & nymph
Cotton aphid	*Aphis gossypii* Glover	Homoptera	Aphididae	Adult & nymph
Hard Scale	Unspecified	Homoptera	Diaspididae	Adult & nymph
Whitefly	*Bemisia tabaci* Genn.	Homoptera	Aleyrodidae	Adult & nymph
Leaf hopper	Unspecified	Homoptera	Cicadellidae	Adult & nymph
Gladiolus thrips	*Taeniothrips simplex* Morison	Thysanoptera	Thripidae	Adult & nymph
Carnation thrips	Unspecified	Thysanoptera	Thripidae	Adult & nymph
Red spider mite	*Tetranychus urticae* Koch.	Acarina	Tetranychidae	Adult & nymph
Grasshopper	Unspecified	Orthoptera	Acridiadae	Adult & nymph
Gram pod borer	*Helicoverpa armigera* (Hub.)	Lepidoptera	Noctuidae	Larva
Tobacco Caterpillar	*Spodoptera litura* (Fab.)	Lepidoptera	Noctuidae	Larva
Green Semilooper	*Plusia orichalcea* Fab.	Lepidoptera	Noctuidae	Larva
Leaf Webber	Unspecified	Lepidoptera	Unspecified	Larva
Leaf Webber	*Lamprosema indicata* (Fab.)	Lepidoptera	Pyralidae	Larva
Bagworm	Unspecified	Lepidoptera	Psychidae	Larva
Cutworm	*Agrotis segetum* (Schiff)	Lepidoptera	Noctuidae	Larva
Blister beetle	*Mylabris* sp.	Coleoptera	Meloidae	Adult
White spotted flea beetle	*Monolepta signata* Oliv.	Coleoptera	Chrysomelidae	Adult
Steel blue beetle	*Altica* sp.	Coleoptera	Chrysomelidae	Adult
Serpentine leaf miner	*Liriomyza trifolii* (Burgess)	Diptera	Agromyzidae	Maggot
Giant African Snail	*Achatina fulica* Bowdich	Pulmonata	Achatinidae	Adult

Table 2

Host range, nature of damage, mode of occurrence and status of pests infesting ornamental plants

Common name	Host plants infested	Nature of damage	Mode of occurrence	Pest status
Green peach aphid	Carnation, Gerbera, *Anthurium*	The adults & nymphs suck sap from leaves, tender shoots & flower buds	Regular	Minor
Chrysanthemum aphid	Chrysanthemum	The adults & nymphs suck sap from tender leaves, apical shoots & flower buds	Regular	Major
Anthurium black aphid	*Anthurium*	The adults & nymphs suck sap from tender leaves & flower buds	Regular	Moderate
Gladiolus aphid	Gladiolus	The adults & nymphs were found feeding mainly on the unopened flower buds	Occasional	Negligible
Cotton aphid	China rose	The adults & nymphs were found predominantly on the unopened flower buds & tender apical shoots	Regular	Moderate
Hard Scale	*Anthurium*	Populations were observed on older leaves mainly along the midribs & on stems	Regular	Moderate
Whitefly	Gerbera	The insects were seen feeding on the under surface of leaves	Regular	Moderate
Leaf hopper	Gladiolus	The adults & nymphs infests the leaves	Stray	Negligible
Gladiolus thrips	Gladiolus	The adults & nymphs were observed feeding on flowers	Regular	Major
Carnation thrips	Carnation	The adults & nymphs were observed feeding on flowers	Regular	Minor
Red spider mite	Carnation, Gerbera, Chrysanthemum	The adults & nymphs were seen on leaves, flower buds & flowers by forming webs in severe cases	Regular	Major
Grasshopper	Gladiolus	The adults & nymphs were found scrapping the green matter of leaves	Sporadic	Minor
Gram pod borer	Carnation, Gerbera, Gladiolus, Chrysanthemum, Strawflower	The larvae were found boring inside the buds devouring the inner content as well as on the flower petals	Regular	Major
Tobacco Caterpillar	Gladiolus, *Anthurium*	The larvae were found feeding on the leaves	Sporadic	Minor
Green Semilooper	Gerbera, Gladiolus	The larvae were found feeding on the leaves & flowers	Sporadic	Minor
Leaf Webber	Carnation	The larvae were seen webbing the leaves & feeding inside	Stray	Negligible
Leaf Webber	Chrysanthemum	The larvae were found feeding on the leaves	Regular	Minor
Bagworm	Carnation, Bird of Paradise	The larvae were found defoliating while residing inside the bags	Stray	Negligible
Cutworm	Gladiolus	The larvae were observed cutting the plants at collar region	Sporadic	Moderate
Blister beetle	Gladiolus, China rose	The adult beetles were found feeding on the flowers	Regular	Major
White spotted flea beetle	Chrysanthemum	The adult beetles made numerous holes on leaves	Stray	Negligible
Steel blue beetle	Gladiolus	The adults were found feeding on the leaves	Sporadic	Minor
Serpentine leaf miner	Gerbera	The maggots formed serpentine mines on leaves	Regular	Moderate
Giant African Snail	*Anthurium*	The adults damaged mainly the older leaves laying close to the ground	Sporadic	Minor