APHIDS ON SOME MEDICINAL PLANTS IN SALT LAKE, KOLKATA

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Aphids are small homopteran insects of family Aphididae which are of considerable agricultural importance, because of their polyphytophagism, reproductive habits, polymorphism, and remarkable ability of transmitting some viral diseases among various plant species. Out of 4702 aphid species so far known worldwide (Remaudiere & Remaudiere, 1997), about 1015 species occur in the oriental region. Of these, 653 species belonging to 200 genera represent Indian aphids. Indian aphids constitute about 16% of the world fauna including large number of endemic species. Out of the total recorded 650 species, a maximum number of 414 species have so far been known from Northeast India (Ghosh & Ghosh, 2000). It is known that 90 species/subspecies of aphids infest medicinal plants of 95 species under 50 plant families. The present communication includes a list of medicinal plants (arranged alphabetically with family name) infested by aphids in the target area. The plants considered here as medicinal plants, are according to ICMR publication (1976, 1987) and after Chopra et al. (1956).

The Salt Lake area is located in West Bengal at 22.58 degree N 88.42 degree E, adjacent to megacity Kolkata. It has an average elevation of 11 meters (49 feet). Average populated urban area, though being a hub of economic and social expansion; greenery is beautifully planned and can be observed all over the area. It has the most non polluted and eco friendly environment in Kolkata. Climate remains mostly humid; up to 70% to 80%, summer ranges between 27 degree to 37 degree Celsius, rainfall averages between 1,550-1,590mm and winter experiences a minimum of 7 degree to 8 degree Celsius. Maximum infestation of aphids was recorded in the month of February, when temperature lies between 27-28 degree Celsius. Samples were collected from various ecological niches of the study area.

Methodology

Aphids were generally removed from their host plants with a soft brush soaked in alcohol and fixed either in 70% alcohol or in fluid of 2 volumes of 70% alcohol and 1 volume of lactic acid. Another technique is to collect the aphids alive in a rather wide glass with a portion of the host plant. The aphids preserved in alcohol were cleaned for mounting and permanent storage on slides. For this purpose aphids were washed in alcohol and boiled in a water bath for 5-7 minutes, after carefully decanting off alcohol. 10% KOH is added to the tube and specimens boiled for 3-5 minutes for clearing. After removing the KOH, specimens are boiled in chloral-phenol solution (saturated) or in carbolic acid solution (Phenol:Xylene=1:1) for about 10 minutes. After clearing, the specimens are mounted in Berlese medium which is composed of chloral hydrate 20m, Gum Arabica 40cc and Glycerol or may be mounted in D.P.X. Well mounted slides of aphids are observed and studied under light microscope. Slides are preserved in slide box for future study.

Aphids recorded on medicinal plants in W. Bengal are mentioned by several workers, including Basu & Banerjee (1958), Raychaudhuri & Ghosh (1958), Ghosh & Singh (2000, 2004) and Chakrabarti & Sarkar (2001).

Observations

Analysis of field data and published records reveal that a total of 15 species of aphids, belonging to family Aphididae, infest 36 species of plants belonging to 23 families (Table 1). Aphid infested mainly young leaves and tender shoots of the plants. Attempts to find root aphids if any, proved futile, that is aphids prefer shoots to roots. It is evident that aphids play important role in damaging medicinal plants to a great extent. Some of the threatened medicinal plants are associated not only with aphids but also with some other group of insects and mites, in the different area of Salt Lake, Kolkata.

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Table 1. List of aphids found on medicinal plants in Salt Lake, Kolkata.

	Name of the Plant	Family	Name of the Aphid
1	*Adhatoda vasica*	Acanthaceae	*Aphis spiracola, Toxoptera aurantii*
2	*Aegle marmelos*	Rutaceae	*Toxoptera aurantii*
3	*Allium cepa*	Alliaceae	*Aphis gossypii*
4	*Alstonia scholaris*	Apocynaceae	*Aphis spiracola*
5	*Brassica nigra*	Brassicaceae	*Lipaphis erysimi*
6	*Calotropis gigantea*	Asclepiadaceae	*Aphis nerii*
7	*Calotropis procera*	Asclepiadaceae	*Aphis nerii*
8	*Carica papaya*	Caricaceae	*Myzus persicae*
9	*Chrysanthemum*	Asteraceae	*Macrosiphoniella sanborni*
10	*Curcuma longa*	Zingiberaceae	*Pentalonia nigronervosa*
11	*Datura metel*	Solanceae	*Myzus persicae*
12	*Eleusine coracana*	Poaceae	*Rhopalosiphum rufiabdominalis, Sitobion miscanthi, Tetraneura nigriabdominalis*
13	*Foeniculum vulgare*	Umbelliferae	*Lipaphis erysimi*
14	*Elettaria cardamomum*	Zingiberaceae	*Pentalonia nigronervosa*
15	*Eupatorium tripilinensis*	Asteraceae	*Aphis gossypii*
16	*Hibiscus rosasinensis*	Malvaceae	*Aphis craccivora, Aphis gossypii, Aphis spiracola, Myzus persicae, Toxoptera aurantii*
17	*Ichnocarpus frutescens*	Apocynaceae	*Aphis nerii, Aphis spiracola, Rhopalosiphum rufiabdominalis*
18	*Lablab purpurus*	Leguiminosae	*Aphis craccivora*
19	*Mangifera indica*	Anacardiaceae	*Aphis craccivora, Aphis gossypii, Toxoptera aurantii*
20	*Mimosa pudica*	Fabaceae	*Aphis craccivora*
21	*Momordica charantia*	Cruciferae	*Aphis gossypii, Aphis spiracola*
22	*Musa paradisiaca*	Zingiberaceae	*Pentalonia nigronervosa, Tetraneura nigriabdominalis*
23	*Ocimum sanctum*	Lamiaceae	*Aphis gossypii*
24	*Paspalum scorbiculatum*	Poaceae	*Rhopalosiphum maidis*
25	*Pisum sativum*	Fabaceae	*Myzus persicae, Sitobion rosaeformis*
26	*Psidium guajava*	Myrtaceae	*Aphis gossypii, Myzus persicae, Rhopalosiphum rufiabdominalis, Greenidea, Trichosiphum formosana formosana*
27	*Punica granatum*	Punicaceae	*Aphis gossypii, Myzus persicae*
28	*Rosa centifolia*	Rosaceae	*Sitobion rosaeformis*
29	*Saccharum officinarum*	Poaceae	*Aphis nerii, Rhopalosiphum maidis, Rhopalosiphum rufiabdominalis, Sitobion miscanthi, Toxoptera aurantii*
30	*Sesamum indicum*	Pedaliaceae	*Lipaphis erysimi*
31	*Solanum melongena*	Solanaceae	*Aphis gossypii, Lipaphis erysimi*
32	*Solanum nigrum*	Solanaceae	*Aphis craccivora*
33	*Terminalia arjuna*	Combretaceae	*Aphis spiracola, Rhopalosiphum maidis*
34	*Triticum aestivum*	Poaceae	*Rhopalosiphum rufiabdominalis, Sitobion miscanthi*
35	*Veronica cinerea*	Asteraceae	*Toxoptera aurantii*
36	*Zea mays*	Poaceae	*Rhopalosiphum maidis, Sitobion miscanthi, Tetraneura nigriabdominalis*