

APHIDS IN BENGUET AND MOUNTAIN PROVINCE, PHILIPPINES¹

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ABSTRACT

Fourteen years of intermittent collecting in Benguet and Mountain Province have yielded fifty-six aphid species and one form. Twenty two are economically important; seventeen on vegetable crops and five on cereals. All are recorded as virus vectors. The other thirty-four species are presently of less importance and infest ornamentals, forest trees and other agricultural crops.

The host plants and seasonal occurrence of each species are given. In addition, species that may be mistaken for the green peach aphid, *Myzus persicae* (Sulzer), if only cursory examination of uncleared specimens is made, are enumerated.

Key words: Aphids, host plants, seasonal occurrence, virus vectors, *Myzus persicae* (Sulzer), Benguet, Mountain Province.

INTRODUCTION

Benguet and Mountain Province, considered the 'salad bowls' of the Philippines, grow quite a number of temperate vegetables, a few cereal crops, fruit trees and exotic ornamentals. Their floral diversity and mild climate make these two provinces abounding for collecting aphids and other insects.

METHODS

Many of the aphids were collected directly from their host plants and the rest were catches from yellow pan traps.

The usual methods described by Hille Ris Lambers (1950) and Eastop and van Emden (1972) of collecting aphids, preserving in lactic acid alcohol (ethyl alcohol, 2 volumes and 75% w/w lactic acid, 1 volume) and processing for mounting on slides were followed.

RESULTS

Fourteen years of intermittent collecting have yielded a considerable number of interesting and economically important species of aphids. Fifty six species and one form (Table 1) have been definitely identified among the 180 collection lots

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made from 1964 to 1978. Also examination of very recent collections revealed species not encountered before.

Of the fifty six species, 22 are economically important; 17 on vegetables and 5 on cereal crops (Table 2). All these species are virus vectors having been recorded to transmit two or more viruses (Kennedy et al., 1962). The other 34 species are presently of less importance and infest ornamentals, forest trees and other agricultural crops. The ability of each species to transmit viruses has not been established but large populations debilitate plants by withdrawing sap, impeding photosynthetic processes and encouraging the development of secondary fungal infections. Investigation on their involvement in virus transmission might, however, reveal actual or potential vectors.

One species, *Myzus persicae* (Sulzer), has received more attention than all other species because of its wide host range, direct damage and notoriety in transmitting well over 100 virus diseases on about thirty different plant families including many major crops such as beans, sugar beet, sugar cane, brassicas, potato, tobacco, and citrus (Kennedy et al., 1962).

M. persicae is variable and its variation is both inherent and environmentally induced. There is a group of similarly looking *Myzus* species difficult to distinguish from *M. persicae* (van Emden et al., 1969) These species are not as economically important as *M. persicae* and failure to recognize them could render control efforts useless. Although evidences, so far, have shown the absence of these species in Benguet and Mountain Province, their future introduction is not unlikely considering the increase a thousand-fold of facilities for air transport.

There are other species, however, belonging to nine genera (Table 3) that might be confused with *M. persicae* if only cursory examination is made on uncleared specimens and depending solely on a single character, the presence of a dorsal black patch. This character is also present in the winged morph of the nine species listed in Table 3. Although, the dorsal black patch is a common feature, cleared specimens will show remarkable differences in chaetotaxy, antennal sensoriation, siphuncular and caudal shapes and sculpturing. Identification, therefore, that are based on live and uncleared specimens are most often unreliable unless the identifier is quite familiar with these aphids.

The host range of aphids collected in the two provinces is distributed in about sixty five plant families and 250 species (Table 4). The cotton aphid, *Aphis gossypii* Glover, for instance, infests 90 plant species distributed in 28 families excluding varieties and cultivars of agricultural crops and ornamentals. The cowpea aphid, *Aphis craccivora* Koch ranks second in the number of host plants. Collecting more intensively might add more hosts for *M. persicae*.

Many of the economically important aphid species virtually occur throughout the year because present agricultural practices provide a continuous chain of crops suitable for colonization. Other species, however, start to appear only when young shoots of their hosts emerge.

Table 1. Aphids collected in Benguet and Mountain Province

1. <i>Aphis citricola</i> van der Goot	28. <i>Chaetosiphon fragaefolii</i> (Cockerell)
2. <i>Aphis craccivora</i> Koch	29. <i>Hyperomyzus carduellinus</i> (Theobald)
3. <i>Aphis gossypii</i> Glover	30. <i>Indomegoura indica</i> (van der Goot)
4. <i>Aphis nerii</i> B. de Fonscolombe	31. <i>Lipaphis erysimi</i> Kaltentbach
5. <i>Aphis veratrii</i> Walker	32. <i>Macrosiphoniella sanborni</i> (Gillette)
6. <i>Toxoptera aurantii</i> (B. de Fonscolombe)	33. <i>Sitobion takahashii</i> Eastop
7. <i>Toxoptera citricidus</i> (Kirkaldy)	34. <i>Micromyzus judenkoi</i> Carver
8. <i>Toxoptera odinae</i> (van der Goot)	35. <i>Matsumuraja calorai</i> Calilung
9. <i>Hyalopterus amygdali</i> (Blanchard)	36. <i>Myzus ornatus</i> Laing
10. <i>Hysteroneura setariae</i> (Thomas)	38. <i>Pentalonia nigronervosa</i> Coquerel
11. <i>Melanaphis sacchari</i> (Zehntner) <i>Melanaphis sacchari</i> forma <i>indosacchari</i> David	39. <i>Rhodobium porosum</i> (Sanderson)
12. <i>Rhopalosiphum maidis</i> (Fitch)	40. <i>Shinjia orientalis</i> (Mordvilko)
13. <i>Rhopalosiphum nymphaeae</i> (L.)	41. <i>Sinomegoura rhododendri</i> (Tak.)
14. <i>Rhopalosiphum padi</i> (L.)	42. <i>Sitobion ibarae</i> (Matsumura)
15. <i>Rhopalosiphum rufiabdominalis</i> (Sasaki)	43. <i>Sitobion graminis</i> Tak.
16. <i>Schizaphis graminum</i> (Rondani)	44. <i>Sitobion smilacifoliae</i> (Tak.)
17. <i>Schizaphis minuta</i> (van der Goot)	45. <i>Uroleucon formosanum</i> (Tak.)
18. <i>Schizaphis rotundriventris</i> (Signoret)	46. <i>Uroleucon orientale</i> (van der Goot)
19. <i>Acyrtosiphon magnoliae</i> (Essig & Kuwana)	47. <i>Utamphorophora montanus</i> (Tak.)
20. <i>Acyrtosiphon pisum</i> (Harris)	48. <i>Vesiculaphis caricis</i> (Fullaway)
21. <i>Amphorophora ampullata</i> Buckton	49. <i>Eutrichosiphum heterotrichum</i> (RayChaudhuri)
22. <i>Aulacorthum circumflexum</i> (Buckton)	50. <i>Greenidea formosana</i> (Maki)
23. <i>Aulacorthum solani</i> (Kaltenbach)	51. <i>Mollitrichosiphum tenuicorpus</i> (Okajima)
24. <i>Brachycaudus helichrysi</i> (Kaltenbach)	52. <i>Cinara piniformosana</i> (Tak.)
25. <i>Capitophorus hippophaes</i> <i>mittegoni</i> Eastop	53. <i>Pyrolachnus pyri</i> (Buckton)
26. <i>Cavariella araliae</i> Tak.	54. <i>Cerataphis palmae</i> Ghesquiere
27. <i>Chaetosiphon minor</i> (Forbes)	55. <i>Tetraneura nigriabdominalis</i> (Sasaki)
	56. <i>Uichancoella gabrieli</i> Calilung

Table 2. Economically important species

1. <i>Aphis citricola</i> *	13. <i>Brachycaudus helichrysi</i> *
2. <i>Aphis craccivora</i> *	14. <i>Capitophorus hippophaes</i>
3. <i>Aphis gossypii</i> *	<i>mittegoni</i> *
4. <i>Hysteroneura setariae</i> **	15. <i>Chaetosiphon minor</i> *
5. <i>Melanaphis sacchari</i> **	16. <i>Chaetosiphon fragaefolii</i> *
6. <i>Rhopalosiphum maidis</i> **	17. <i>Lipaphis erysimi</i> *
7. <i>Rhopalosiphum nymphaeae</i> *	18. <i>Macrosiphoniella sanborni</i> *
8. <i>Rhopalosiphum padi</i> **	19. <i>Myzus persicae</i> *
9. <i>Schizaphis graminum</i> **	20. <i>Myzus ornatus</i> *
10. <i>Acyrtosiphon pisum</i> *	21. <i>Rhodobium porosum</i> *
11. <i>Aulacorthum circumflexum</i> *	22. <i>Sitobion takahashii</i> *
12. <i>Aulacorthum solani</i> *	

* On vegetable crops

** On cereal crops

Table 3. Species that may be confused with *Myzus persicae*

1. <i>Aulacorthum circumflexum</i>	6. <i>Capitophorus hippophaes</i>
2. <i>Aulacorthum solani</i>	7. <i>Cavariella araliae</i>
3. <i>Brachycaudus helichrysi</i>	8. <i>Hyperomyzus carduellinus</i>
4. <i>Chaetosiphon minor</i>	9. <i>Myzus ornatus</i>
5. <i>Chaetosiphon fragaefolii</i>	

Table 4. Host plants and monthly occurrence of aphids in Benguet and Mountain Province.

Aphid Species/Host Plants		Monthly Occurrence
<i>Aphis citricola</i> van der Goot		Jan., April, May, July and Dec.
<i>Ageratum conyzoides</i> L.	<i>Ipomoea triloba</i> L.	
<i>Catharanthus roseus</i> (L.) Don	<i>Ixora</i> sp.	
<i>Cestrum nocturnum</i> L.	<i>Mikania cordata</i> (Burm. f.) B.L. Rob.	
<i>Coldenia procumbens</i> L.	<i>Pyrus communis</i>	
<i>Cosmos caudatus</i> H.B.K.		

Table 4 cont'd...

Aphid Species/Host Plants	Monthly Occurrence
<i>Aphis craccivora</i> Koch	Throughout the year
<i>Ageratum conyzoides</i> L.	<i>Nicotiana tabacum</i>
<i>Amaranthus spinosus</i> L.	<i>Pennisetum polystacyon</i>
<i>Amherstia nobilis</i> Wall	<i>Phaseolus aureus</i> Roxb.
<i>Antigonon leptopus</i>	<i>Phaseolus lathyroides</i> L.
Hook & Arn.	<i>Phaseolus lunatus</i> L.
<i>Arachis hypogaea</i> L.	<i>Phaseolus radiatus</i> L.
<i>Brassica actinophylla</i>	<i>Phaseolus vulgaris</i> L.
End.	<i>Portulaca oleracea</i>
<i>Bougainvillaea</i>	<i>Psidium guajava</i>
<i>spectabilis</i>	<i>Psophocarpus tetra-</i>
<i>Cajanus cajan</i> (L.)	gonolobus (L.) DC.
Millsp.	<i>Saluot corehorus</i>
<i>Calliandra</i> sp.	acutangulus
<i>Cantharospermum</i>	<i>Sesbania grandiflora</i> (L.)
<i>scarabaeoides</i> (L.) Bail	Pers.
<i>Cassia fistula</i> L.	<i>Strongylodon macrobotrys</i>
<i>Cassia occidentalis</i> L.	A. Gray
<i>Cassia tora</i> L.	<i>Tephrosia vogelli</i>
<i>Cassia</i> sp.	<i>Trianthoma portulacastrum</i>
<i>Centrosema plumieri</i>	L.
(Turp & Pers.)	<i>Tribolus cistoides</i>
<i>Centrosema pubescens</i>	<i>Vigna sesquipedalis</i> Fruw.
Benth.	<i>Vigna sinensis x sesqui-</i>
<i>Citrus madurensis</i> L.	pedalis
<i>Cananga odorata</i> Hook. f.	<i>Vigna sinensis</i> (L.) Ser.
& Thomas	<i>Wikstroemia indica</i> (L.)
<i>Clitoria ternatea</i> L.	C.A. Mey
<i>Crotolaria bracteata</i>	<i>Wikstroemia</i> sp.
Roxb.	<i>Zinnia</i> sp.
<i>Dolichos lablab</i> L.	
<i>Gliricidia sepium</i> (Jacq.)	
<i>Luffa</i> sp.	
<i>Mimosa invisia</i> Marth.	
<i>Mimosa pudica</i> L.	
<i>Moringa oleifera</i> Lam.	

Table 4 cont'd...

Aphid Species/Host Plants	Monthly Occurrence
<i>Aphis gossypii</i> Glover	Throughout the year
<i>Abelmoschus esculentus</i> L. Moench	<i>Coffea arabica</i> L.
<i>Abutilon indicum</i> L.	<i>Colocasia esculentum</i> . (L.) Schott
<i>Acalypha hispida</i> Burm. f.	<i>Commelina</i> sp.
<i>Acalypha stipulacea</i>	<i>Crossandra infundibuli-</i> <i>formis</i> (L.) Nees
<i>Aegeratum conyzoides</i> L.	<i>Cucurbita maxima</i> Duch.
<i>Antigonon leptopus</i> Hook & Arn.	<i>Cucumis melo</i> L.
<i>Aphelandra aurantiaca</i> Roetzlii	<i>Cucumis sativus</i> L.
<i>Arachis hypogaea</i> L.	<i>Cytandra</i> sp.
<i>Asystacea gangetica</i> (L.)	<i>Dimorphoteca</i> sp.
T. Anders	<i>Dolichos lablab</i> L.
<i>Benincasa hispida</i> (Thum.)	<i>Euphorbia hirta</i> L.
<i>Beta vulgaris</i> L.	<i>Euphorbia pulcherrima</i> Willd.
<i>Borreria articularis</i> (L.f.) F.N. Williams	<i>Gliricidia sepium</i> (Jacq.)
<i>Brassica chinensis</i> L.	<i>Glycine soja</i>
<i>Brassica integrifolia</i>	<i>Gossypium hirsuta</i>
(West) O.E. Schultz	<i>Gossypium</i> spp.
<i>Brassica oleracea</i> var. <i>capitata</i> L.	<i>Helianthus annuus</i> L.
<i>Brassica oleracea</i> var. <i>italica</i> Plenck.	<i>Hibiscus rosa-sinensis</i> L.
<i>Breynia rhamnoides</i> (Retz.) Muell. Arg.	<i>Hibiscus sabdariffa</i> L.
<i>Cajanus cajan</i> (L.) Millsp.	<i>Ipomoea batatas</i> (L.) Poir
<i>Caladium bicolor</i> (Ait.)	<i>Ixora chinensis</i> Lam.
Vent.	<i>Lactuca sativa</i> L.
<i>Calendula officinalis</i> L.	<i>Lagenaria siceraria</i> Standl.
<i>Calliandra portoricensis</i> (Jacq.) Benth.	<i>Lochnera rosea</i> (Linn.)
<i>Campsis anuum</i> L.	<i>Luffa</i> sp.
<i>Campsis radicans</i>	<i>Lycopersicon esculentum</i>
<i>Capsicum frutescens</i> L.	Mill.
<i>Catharanthus roseus</i>	<i>Lycopersicon lycopersicum</i>
	(L.) Karsten
	<i>Momordica charantia</i> L.
	<i>Mussaenda erythrophylla</i>
	<i>Mussaenda</i> spp. & cultivars
	<i>Persea americana</i> Mill.

Table 4 cont'd...

Aphid Species/Host Plants	Monthly Occurrence
(L.) Don <i>Ceiba pentandra</i> (L.) Gaertn. <i>Citrullus vulgaris</i> Schrad <i>Citrus aurantium</i> L. <i>Citrus aurantifolia</i> (Christm.) Swingle <i>Citrus grandis</i> Osb. <i>Citrus nobilis</i> Lourd. <i>Clerodendron quadriloculare</i> (Blco.) Merr. Rubiaceous plant <i>Saraca declinata</i> Miq. <i>Secchium edule</i> Sw. <i>Securinega flexuosa</i> Muell. Arg. <i>Sida</i> sp. <i>Solanum melongena</i> L. <i>Solanum tuberosum</i> L. <i>Sorghum halapense</i> L. <i>Spathodea campanulata</i> Beauv. <i>Tectona grandis</i>	<i>Petrea volubilis</i> <i>Phaseolus</i> spp. <i>Pisum sativum</i> L. <i>Polia sorsogonensis</i> <i>Portulaca oleracea</i> <i>Premna odorata</i> Blco. <i>Pseudolychantopus spicatus</i> <i>Psidium guajava</i> L. <i>Psophocarpus tetragonolobus</i> (L.) DC. <i>Raphanus sativus</i> L. <i>Triplaris cumingiana</i> Fisch. <i>Tridax</i> sp. <i>Vernonia cineria</i> <i>Vigna sesquipedalis</i> Fruw. <i>Vigna sinensis</i> (L.) Ser. <i>Zea mays</i> L. <i>Zinnia</i> sp. Easter lilies
<i>Aphis nerii</i> B. de Fonscolombe	May & Oct.
<i>Calotropis gigantea</i> (L.) Dryand. <i>Mikania cordata</i> (Burm. f.)	<i>Nerium indicum</i> Mill
<i>Aphis veratrii</i> Walker	April
<i>Veratrum malayanum</i>	
<i>Toxoptera aurantii</i> (B. de Fonscolombe)	Throughout the year
<i>Achras sapota</i> <i>Anona muricata</i> L. <i>Antidesma frutescens</i>	<i>Gardenia florida</i> <i>Gardenia jasminoides</i> Ellis.

Table 4 cont'd...

Aphid Species/Host Plants		Monthly Occurrence
<i>Antidesma bunciis</i> (L.) Spreng	<i>Lansium domesticum</i> Correa	
<i>Aphanomixis cumingiana</i> (C. DC.) Harms	<i>Maesa cumingii</i> Mez.	
<i>Buchanania arborescens</i>	<i>Manilkara sapota</i> (L.) van Royen	
<i>Calliandra portoricensis</i> (Jacq.) Benth.	Orchid	
<i>Castanopsis castanea</i>	<i>Persea americana</i> Mill.	
<i>Cestrum nocturnum</i> L.	<i>Polyscias fructicosa</i> (L.) Harms	
<i>Citrus grandis</i> Osb.	<i>Phyllanthus</i> sp.	
<i>Coffea arabica</i> L.	<i>Saccharum officinarum</i>	
<i>Dendrobium anosmum</i>	<i>Saraca declinata</i> Miq.	
<i>Flacourtia</i> sp.	<i>Semicarpus</i> sp.	
<i>Ficus pumila</i> L.	<i>Theobroma cacao</i> L.	
<i>Toxoptera citricidus</i> (Kirkaldy)		January, Feb. May, Oct. & Dec.
<i>Chromolaena odorata</i>	<i>Citrus reticulata</i> Blco.	
<i>Citrus nobilis</i> Lour.	<i>Ixora chinensis</i> L.	
<i>Mikania cordata</i> (Burm. f.) B.L. Rob.	Tomsuey tree	
<i>Mussaenda philippica</i>	<i>Triphasia tripolia</i> (Burm. f.) P. Will	
<i>Nerium indicum</i> Mill.		
<i>Toxoptera odinae</i> (van der Goot)		Mar., Apr., Nov.
<i>Anacardium occidentale</i> L.	<i>Mussaenda philippica</i> A. Rich.	
<i>Hydnocarpus anthelmintica</i> Pierre	<i>Mussaenda erythrophylla</i> Schum. & Thorn.	
<i>Mangifera indica</i> L.	<i>Polyscias fructicosa</i> (L.) Harms	
<i>Mussaenda philippica</i> cv. Doña Aurora		
<i>Hyalopterus amygdali</i> (Blanchard)		May

Table 4 cont'd...

Aphid Species/Host Plants	Monthly Occurrence
<i>Phragmatis vulgaris</i> (Lam.) Trin.	<i>Saccharum graminum</i> L.
<i>Hysteroneura setariae</i> (Thomas)	Throughout the year
<i>Bambusa</i> sp. <i>Bothriocloa ewartiana</i> (Don.) C.D. Hub. <i>Bracharia distachya</i> <i>Brassica actinophylla</i> Endl. <i>Chloris barbata</i> (L.) Sw. <i>Cocos nucifera</i> L. <i>Cynodon dactylon</i> (L.) Pers. <i>Dactyloctenium aegyptium</i> (L.) Richt. <i>Digitaria saguinalis</i> (L.) Scop. <i>Digitaria longiflora</i> (Retz.) Pers. <i>Echinochloa colonum</i> (L.) Link <i>Echinochloa crusgali</i> <i>Echinochloa cruspavonis</i> <i>Eleusine indica</i> L. <i>Eragrostis pilosa</i> (L.) Beauv.	<i>Eragrotis tenella</i> (L.) Beauv. <i>Ixora chinensis</i> <i>Leptochloa chinensis</i> <i>Oryza minuta</i> Presl. <i>Oryza sativa</i> L. <i>Panicum maximum</i> Jacq. <i>Paspalidum flavidum</i> (Retz.) A. Camus <i>Polytrias amaurea</i> (Busc.) O. Ktze. <i>Polytrias praemosa</i> (Nees) Hack <i>Sporobolus diander</i> (Retz.) Beauv. <i>Thea sinensis</i> L. <i>Triticum aestivum</i> L. <i>Triticum vulgare</i> Vill. <i>Paspalum conjugatum</i> Ber.
<i>Melanaphis sacchari</i> (Zehntner)	March, June and December
<i>Astronia candolleana</i> Cogn. <i>Echinochloa colonum</i> (L.) Link <i>Echinochloa crusgali</i> (L.) <i>Echinochloa cruspavonis</i> <i>Melastoma malabothricum</i> L.	<i>Miscanthus floridus</i> (Labill.) Warb. <i>Saccharum officinarum</i> L. <i>Sorghum halapense</i> <i>Sorghum vulgare</i>

Table 4 cont'd...

Aphid Species/Host Plants		Monthly Occurrence
<i>Melanaphis sacchari</i> forma <i>indosacchari</i> David		May and Oct.
<i>Echinochloa colonum</i> (L.) Link	<i>Panicum colonum</i> <i>Saccharum graminum</i> L.	
<i>Rhopalosiphum maidis</i> (Fitch)		Mar., May, July Oct. and Dec.
<i>Andropogon</i> sp.	<i>Musa textilis</i> Nees	
<i>Digitaria microbachne</i> (Presl.) Nenr.	<i>Saccharum officinarum</i> (L.)	
<i>Echinochloa crusgali</i> (L.)	<i>Sorghum halepense</i> (L.) Pers.	
<i>Echinochloa colonum</i> (L.) Link	<i>Spathoglottis plicata</i>	
<i>Echinochloa</i> sp.	Blm.	
<i>Eleusine indica</i> (L.) Gaertn.	<i>Zea mays</i> L.	
<i>Rhopalosiphum nymphaeae</i> (L.)		April and December
<i>Hydrilla verticillata</i> (Roxb.) Royle	<i>Musa textilis</i> Nees <i>Nymphaea</i> spp.	
<i>Rhopalosiphum padi</i> (L.)		Throughout the year
<i>Avena sativa</i> L. <i>Triticum vulgare</i> Vill.	<i>Zea mays</i>	
<i>Rhopalosiphum rufiabdominalis</i> (Sasaki)		September and December
<i>Nicotiana tabacum</i>	<i>Oryza sativa</i> L.	
<i>Schizaphis graminum</i> (Rondani)		January, March and April
<i>Digitaria</i> sp.	<i>Panicum colonum</i> L.	

Table 4 cont'd...

Aphid Species/Host Plants	Monthly Occurrence
<i>Merremia hederacca</i> (Burm.) R. Hallier	<i>Triticum aestivum</i> L. <i>Triticum vulgare</i> Vill.
<i>Schizaphis minuta</i> (van der Goot)	May, September and December
<i>Cyperus rotundus</i> L.	
<i>Schizaphis rotundiventris</i> (Signoret)	February and December
<i>Cyperus rotundus</i> L.	
<i>Acyrtosiphon magnoliae</i> (Essig & Kuwana)	May
<i>Sambucus canadensis</i>	
<i>Acyrtosiphon pisum</i> (Harris)	July
<i>Pisum sativum</i> L.	
<i>Amphorophora ampullata</i> Buckton	May
Fern	
<i>Aulacorthum circumflexum</i> (Buckton)	March, May and December
<i>Pinus insularis</i> Endl. <i>Solanum tuberosum</i> L.	<i>Lilium</i> sp.
<i>Aulacorthum solani</i> (Kaltenbach)	May and Dec.
<i>Acalypha stipulacea</i> <i>Apium graveolens</i> L. <i>Begonia</i> sp. <i>Brassica</i> spp.	<i>Hibiscus rosa-sinensis</i> L. <i>Solanum tuberosum</i> L.

Table 4 cont'd...

Aphid Species/Host Plants	Monthly Occurrence
<i>Brachycaudus helichrysi</i> (Kaltenbach)	Feb., March, April, May & Dec.
<i>Ageratum conyzoides</i> (L.) <i>Chromolaena odorata</i> (L.) <i>Helichrysum bracteatum</i> Andr. <i>Mikania cordata</i> (Burm. f.) B.C. Rob.	<i>Bidens pilosa</i> L. <i>Progesternon cablin</i> (Blanco) <i>Tephrosia</i> sp. <i>Triumpeta hartramia</i> L.
<i>Capitophorus hippophaes</i> <i>mittegoni</i> Eastop	February, March, April and May
<i>Polygonum</i> sp.	
<i>Cavariella araliae</i> Takahashi	March, July and September
<i>Rubus rosaefolius</i> Vid.	
<i>Chaetosiphon minus</i> (Forbes)	May
<i>Chaetosiphon fragaefolii</i> (Cockerell) <i>Fragaria</i> sp.	
<i>Hyperomyzus carduellinus</i> (Theobald)	Throughout the year
<i>Cestrum nocturnum</i> L. <i>Emilia javanica</i> (Burm. F.) C.B. Rob.	<i>Sonchus</i> sp.
<i>Indomegoura indica</i> (van der Goot)	May, November and December
<i>Belamcanda chinensis</i> (L.) DC. <i>Hemerocallis flava</i> L.	<i>Iris susiana</i> Blco.

Table 4 cont'd...

Aphid Species/Host Plants	Monthly Occurrence
<i>Lipaphis erysimi</i> Kaltenbach	January and February
<i>Brassica chinensis</i> Linn. <i>Brassica</i> spp. <i>Brassica oleracea</i> var. <i>Euphorbia hirta</i> L. <i>capitata</i> Linn. <i>Raphanus sativum</i> L. <i>Brassica oleracea</i> var. <i>italica</i> Linn. 	
<i>Macrosiphoniella sanborni</i> (Gillete)	March, April, Aug. & Oct.
<i>Chrysanthemum</i> spp. <i>Dimorphotheca</i> sp.	
<i>Sitobion takahashii</i> Eastop	December
<i>Phyllanthus amarus</i>	
<i>Micromyzus judenkoi</i> Carver	October
<i>Astilbe philippinensis</i> Henry	
<i>Matsumuraja calorai</i> Calilung	March
<i>Ficus ribes</i> Reinw. Bl. var. <i>cuneata</i> (Miq.) Corner	
<i>Myzus persicae</i> (Sulzer)	January, Feb., May, Nov. and Dec.
<i>Abelmoschus</i> sp. <i>Ixora chinensis</i> <i>Ageratum conyzoides</i> L. <i>Lactuca sativa</i> L. <i>Apium graveolens</i> L. <i>Lagenaria siceraria</i> <i>Brassica chinensis</i> L. Standl. <i>Brassica integrifolia</i> (West) <i>Luffa</i> sp.	

Table 4 cont'd...

Aphid Species/Host Plants	Monthly Occurrence	
E. Schultz <i>Brassica oleraceae</i> L. <i>Benincasa hispida</i> (Thumb.) Cogn. <i>Campsis annuum</i> L. <i>Capsicum frutescens</i> L. <i>Chrysanthemum</i> sp. <i>Chenopodium</i> sp. <i>Citrullus vulgaris</i> Schrad. <i>Citrus</i> sp. <i>Citrus nobilis</i> Lour. <i>Cucumis melo</i> L. <i>Cucumis sativus</i> L. <i>Cucurbita maxima</i> Duch. <i>Dianthus caryophyllus</i> L.	<i>Lycopersicon lycopersicum</i> (L.) Karsten <i>Mamordica charantia</i> L. <i>Mimosa pudica</i> <i>Mussaenda philippica</i> <i>Nerium indicum</i> <i>Nicotiana tabacum</i> L. <i>Ocinum bacilicum</i> L. <i>Pisum sativum</i> <i>Raphanus sativus</i> L. <i>Sesamum indicum</i> <i>Sechium edule</i> Sw. <i>Solanum melongena</i> L. <i>Solanum tuberosum</i> L.	
<i>Myzus ornatus</i> Laing		March
<i>Viola</i> sp.		
<i>Pentalonia nigronervosa</i> Coquerel		Jan., Feb., Mar., July, Sept., Oct., Nov. & Dec.
<i>Caladium bicolor</i> (Ait.) Vent. <i>Colocasia esculentum</i> (L.) Schott (L.) <i>Costus glabra</i> (Schum.) Merr. <i>Musa paradisiaca</i> L. <i>Hedychium coronarium</i> Koenig	<i>Musa testilis</i> Nee <i>Strelitzia reginae</i> (Banks) <i>Zingiber zerumbet</i> Smith	
<i>Rhodobium porosum</i> (Sanderson)		June
<i>Rosa</i> spp.		
<i>Shinjia orientalis</i> (Shinji)		June
<i>Lastrea</i> sp.		

Table 4 cont'd...

Aphid Species/Host Plants	Monthly Occurrence
<i>Sinomegoura rhododendri</i> (Tak.) Holy eyelex	May
<i>Sitobion ibarae</i> (Matsumura) Cultivated roses	Jan., Oct., Nov. & Dec.
<i>Sitobion graminis</i> Takahashi <i>Triticum vulgare</i> Vill. <i>Digitaria</i> sp.	March, April and May
<i>Sitobion smilacifoliae</i> (Tak.) <i>Paspalum</i> spp. and other Gramineae	March and April
<i>Uroleucon formosanum</i> (Tak.) <i>Lactuca sativa</i> L.	Dec. to Feb.
<i>Uroleucon orientale</i> (van der Goot) <i>Blumea balsamifera</i> (L.) DC.	April and December
<i>Utamphorophora montanus</i> (Tak.) <i>Astilbe philippinensis</i> Henry	December
<i>Vesiculaphis caricis</i> (Fullaway) <i>Cyperus rotundus</i>	November
<i>Eutrichosiphum heterotrichum</i> (RayChaudhuri) <i>Lithocarpus</i> sp.	June

Table 4 cont'd...

Aphid Species/Host Plants	Monthly Occurrence
<i>Greenidea formosana</i> (Maki)	Feb., March, May & Dec.
<i>Psidium guajava</i> L. <i>Callistemon citrinus</i> Staff	<i>Syzygium calubcub</i> (C.B. Rob.) Merr. <i>Syzygium malaccense</i> L.
<i>Mollitrichosipum</i> <i>tenuicarpus</i> (Okajima)	May and April
<i>Castanopsis castanea</i> <i>Castania crenata</i> Sieb. & Suec.	<i>Melastoma polyanthum</i>
<i>Cinara piniformosana</i> (Tak.)	March
<i>Pinus insularis</i> Endl	
<i>Pyrolachnus pyri</i> (Buckton)	May
<i>Pyrus communis</i> Tomsuey tree	
<i>Cerataphis palmae</i> Ghesquiere	March and October July & Feb.
<i>Ptychosperma macarthuri</i> Wendl. <i>Cocos nucifera</i> L. & other palms	
<i>Tetraneura nigriadominalis</i> (Sasaki)	Jan., Feb., March, July & August
<i>Andropogon halepensis</i> L.	<i>Echinochloa colonum</i> (L.)

Table 4 cont'd...

Aphid Species/Host Plants	Monthly Occurrence
var. <i>propinqua</i> <i>Cynodon dactylon</i> (L.) <i>Digitaria macrobachne</i> (Pres.) Henr. <i>Digitaria saguinalis</i> (L.) Scop.	<i>Eleusine indica</i> (L.) <i>Leersia hexandra</i> Aw. <i>Oryza sativa</i> L.
<u><i>Uicharcoella gabrieli</i></u> Calilung	June
<i>Lithocarpus</i> sp.	

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