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NOTES ON THE ESTIMATION OF ALATE APHID POPULATIONS USING MOERICKE YELLOW TRAYS[1]

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A two-year period of sampling for alate aphids using Moericke water-filled yellow trays at two sites at the Davao Experiment Station of the Bureau of Plant Industry yielded a collection of 4,609 adults representing 26 species. Of this total number, 3,699 (80.26%) were caught by ground level trays and 910 (19.74%) were collected by trays situated 152 cm above the ground. Of the species caught at ground level, the dominant species were *Aphis gossypii* (55.7%), *A. craccivora* (22.44%), *A. spiraecola* (11.4%), and *Tetraneura nigriabdominalis* (4.94%), accounting for 94.55% of the total catches at that level (Table 1). Similarly, the dominant species caught by Moericke trays 152 cm above ground were *Aphis craccivora* (37.14%), *A. gossypii* (33.63%), *A. spiraecola* (11.21%), and *Tetraneura nigriabdominalis* (4.07%), followed by *Toxoptera citricidus* (3.41%) and *T. aurantii* (3.19%), accounting for 92.65% of the total catch at that level.

Of the ten most common species encountered, five are recognized vectors of important plant virus diseases in the Philippines, namely, *Aphis glycines, A. gossypii,* and *Toxoptera citricidus* (for abaca mosaic virus); *Pentalonia nigronervosa* (for abaca bunchy-top); *Aphis gossypii, Toxoptera aurantii,* and *T. citricidus* (for citrus tristeza); and *Aphis gossypii* (for banana mosaic virus) (Eloja *et al.* 1966; Gavarra and Eloja 1964, 1966; Celino 1940; Ocfemia 1926 Celino *et al.* 1965; Eloja, personal communication, respectively).

The annual aphid catches differed distinctly between the first and second years. Generally, more aphids were caught in the first year (62.39%) than in the second year (37.6%). Likewise, certain species tended to be more numerous at one given year than in another. *Aphis craccivora* and *Tetraneura nigriabdominalis,* for instance, had more individuals caught in the second year than in the first. On the other hand, more individuals of *Aphis gossypii* and *A. spiraecola* were observed in the first year. Such uneven numbers of aphid catches and occurrences of species are perhaps influenced strongly by pre-

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vailing climatic conditions, e.g., rainfall, wind velocity, as well as the abundance and distribution of preferred or alternate hosts at any given time.

Table 2 shows the combined average catches, for the 2-year period, of the three dominant species at ground level. *Aphis gossypii* was caught more frequently in February, May, June, and August, becoming relatively scarcer at other months, especially in September. On the other hand, *A. craccivora* appeared to be more numerous in April, August, and September, and less so for the rest of the year, especially January and March. *Aphis spiraecola* was abundant only in September and became scarce for the rest of the months, especially October and December.

Similarly, table 3 shows the combined average catches, for the 2-year period, of the same three species caught 152 cm above ground. More individuals of *Aphis gossypii* were caught in September and October, less for the other months, particularly January, February, and March. A higher peak

TABLE 1. **Total and percentage catches of the ten major aphid species from two trap heights.**

SPECIES	Numbers caught from				Percentage of the combined catches
	Ground Level		Elevated 152 cm.		
	Total	Per Cent	Total	Per cent	
Aphis craccivora Koch	830	22.44	338	37.14	25.34
Aphis glycines Mats.	31	0.84	2	0.22	0.72
Aphis gossypii Glover	2,063	55.77	306	33.63	51.40
Aphis spiraecola Patch	422	11.40	102	11.21	11.37
Brachycaudus helichrysi (Kalt.)	30	0.81	5	0.55	0.76
Melanaphis pyrarius (Pass.)	23	0.62	7	0.77	0.65
Pentalonia nigronervosa Coq.	29	0.78	8	0.88	0.80
Tetraneura nigriabdominalis (Sas.)	189	4.94	37	4.07	4.90
Toxoptera aurantii (B. de P.)	16	0.43	29	3.19	0.98
Toxoptera citricidus (Kirk)	17	0.46	31	3.41	1.04
Others[1]	52	1.41	45	4.94	2.10
Grand Total	3,699	99.90	910	100.01	100.06

[1] Other minor species caught at either or both trap levels, *Aphis nerii* 2; *Aphis sp.* 1; *Asiphonella dactylonii* 8; *Greenidea sp.* 1; *Hysteroneura setariae* 1; *Liphaphis orysimi* 5; *Myzus persicae* 3; *Oregmini* (*-Astegopteres, Cerataphis, Ceratovacuna, Theraphis*) 21; *Pentalonia gavarri* 5; *Rhopalosiphum maidis* 9; *R. rufabdominales* 4; *Schizaphis cyperi* 7; *S. graminum* 12; *S. minuta* 1; *Tetraneura radicicola* 1; *Tinocallia kahawaluckalani* 12; and 4 undetermined.

for *A. craccivora* was observed in August, the lowest numbers being in January, February, March, June, and December. Generally, much fewer individuals of *A. spiraecola* were encountered for most of the year, being slightly more in October, but still the least dense of the three species.

The effectiveness of Moericke yellow trays in generating reliable estimates of alate aphid populations still raises some doubts. For one thing, the negligible presence of *Rhopalosiphum maidis* in the collecting trays (only 9 individuals for 2 years), despite the presence of its known hosts in the study area and its prevalence within the vicinity, leads us to conclude that this particular species — perhaps many other aphid species — are not positively attracted to such traps. Earlier workers (Eastop 1955, 1957; O'Loughlin 1962) have indeed observed that Moericke yellow trays attracted some species more strongly than others, appearing to favor dicotyledon-feeding aphids and at the same time seemingly ineffective for grass- and sedge-feeding species. And because of the built-in limitations of these traps, we have refrained from further interpretation of the data gathered. Further aphid population studies will definitely require additional sampling methods/techniques that will definitely complement the Moericke yellow tray technique. Only until such time can the generated data be justifiably interpreted along with prevailing factors expected to influence population changes in aphids.

TABLE 2. **The monthly average number of** Aphis gossypii, A. craccivora **and** A. spiraecola **caught per trap at ground level for a 2-year period.**

MONTHS	APHID SPECIES		
	Aphis gossypii	*Aphis craccivora*	*Aphis spiraecola*
January	58.0	14	10.0
February	133.5	27.5	25.0
March	78.5	13.5	23.0
April	83.5	76.0	20.5
May	152.0	34.0	11.0
June	122.0	23.0	18.0
July	87.0	38.0	11.5
August	128.0	76.0	19.0
September	19.0	57.5	52.0
October	46.0	33.0	9.0
November	84.0	32.5	22.0
December	84.5	24.0	8.5

TABLE 3. **The monthly average number of** Aphis gossypii, A. craccivora **and** A. spiraecola **caught per trap at 152 cm above ground for a 2-year period.**

MONTHS	APHID SPECIES		
	Aphis gossypii	*Aphis craccivora*	*Aphis spiraecola*
January	7.0	4.0	2.0
February	7.0	7.0	3.0
March	7.5	5.0	5.0
April	14.0	19.5	2.0
May	10.0	10.0	5.0
June	19.0	7.0	8.0
July	16.0	17.5	1.0
August	14.0	40.5	2.5
September	21.0	19.5	7.5
October	22.0	20.5	10.0
November	10.5	15.5	6.0
December	17.0	8.0	4.0

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