

Report

Efficacy evaluation of “Flyght Duo Light Trap” against the housefly, *Musca domestica* Linnaeus (Insecta: Diptera: Muscidae)

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1. Test subject

Efficacy evaluation of “Flyght Duo Light Trap” against the housefly, *Musca domestica* Linnaeus (Diptera: Muscidae) under simulated trial of room set up for light trap and housefly release.

2. Objective

To test the attractiveness and performance of housefly catching under simulated condition under several condition.

3. Materials and Methods

3.1 Equipment

- a. Flyght Duo ILT with Bio-VE+ Board, mounted on the wall with the height of 1.5m
- b. Cover sheets to create total darkness in the testing room
- c. Net-mesh container for housefly release
- d. Electric Fly swatter, used to kill those escape houseflies after each trial
- e. Electric Fan, used to chase away all the remaining houseflies after each trial
- f. Temperature and RH meter
- g. Extension socket for power connection with light trap

3.2 Insects

The housefly, *Musca domestica* Linnaeus (Diptera: Muscidae)

3.3 Trial Room

- (1) Large Room with the size of 90 - 100 m³
- (2) Medium Room with the size of 60 m³
- (3) Small Room with the size of 30 m³

3.4 Assessment

The net-mesh containers with 100 houseflies (3 – 7 days old) were prepared for each trial. Each trial duration was set as 2 hours or whenever 100% capture been achieved; or extended to 4 hours if less than 50% capture rate.

The number of houseflies trapped onto the light-trap glue-board was recorded at the following interval:

- 10 mins, 30 mins, 60 mins, 120 mins (2 hours trial duration)
- 10 mins, 30 mins, 60 mins, 120 mins, 180 mins, 210 mins and 240 mins (if extended to 4 hours trial duration)

In total, 36 set of trials were carried out in four consecutive days from 16th October 2023 to 10th November 2023 as follow:

1) Flyght Duo ILT – Device A

- a. 3 set of trial for Large Room with Flyght Duo ILT under light condition
- b. 3 set of trial for Large Room with Flyght Duo ILT under dark condition
- c. 3 set of trial for Medium Room with Flyght Duo ILT under light condition

- d. 3 set of trial for Medium Room with Flyght Duo ILT under dark condition
- e. 3 set of trial for Small Room with Flyght Duo ILT under light condition
- f. 3 set of trial for Small Room with Flyght Duo ILT under dark condition

2) Flyght Duo ILT – Device B

- a. 3 set of trial for Large Room with Flyght Duo ILT under light condition
- b. 3 set of trial for Large Room with Flyght Duo ILT under dark condition
- c. 3 set of trial for Medium Room with Flyght Duo ILT under light condition
- d. 3 set of trial for Medium Room with Flyght Duo ILT under dark condition
- e. 3 set of trial for Small Room with Flyght Duo ILT under light condition
- f. 3 set of trial for Small Room with Flyght Duo ILT under dark condition

The room temperature and relative humidity were recorded during the trial period. The Light trap was mounted on the wall with the height of 1.5 m and switched on at one side end of the trial room. In the beginning of each trial, houseflies inside the net-mesh containers were left in the center of trial room center for acclimatization for 10 minutes before the release.

The houseflies were released from the net-mesh container on the center floor with (the height of trial room is 2.5 m height). The distance from the center (housefly release) to the side end (light trap) was set at 1.5 m.

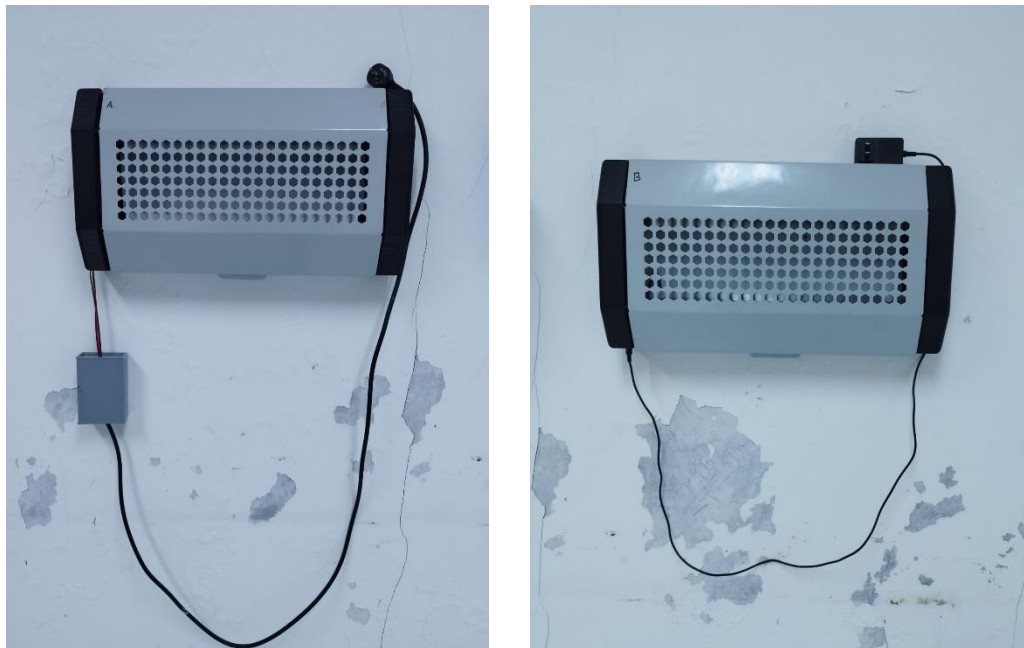


Figure 1 Flyght Duo ILT: Device A (*Left*) and Device B (*Right*)

4. Results

4.1 Flyght Duo ILT – Device A

The results of efficacy evaluation Flyght Duo ILT – Device A against the houseflies (*Musca domestica*) under dark and light condition are presented in Table 1 and 2, respectively. Relative humidity was recorded on 55 – 56 %, while the temperature was 28 – 29 °C.

Table 1. Efficacy evaluation of “Flyght Duo ILT – Device A” in dark condition

Trial Room	Trial	Houseflies age	The number of trapped houseflies (minute interval)*						
			10	30	60	120	180	210	240
Large Room (90 - 100 m ³)	Replication #1	6 days old	17	27	37	53	-	-	-
	Replication #2	6 days old	38	46	60	72	-	-	-
	Replication #3	4 days old	46	68	69	73	-	-	-
Medium Room (60 m ³)	Replication #1	5 days old	39	45	51	62	-	-	-
	Replication #2	5 days old	56	69	75	75	-	-	-
	Replication #3	5 days old	46	72	82	89	-	-	-
Small Room (30 m ³)	Replication #1	7 days old	47	62	71	80	-	-	-
	Replication #2	7 days old	43	57	71	81	-	-	-
	Replication #3	5 days old	59	80	92	100	-	-	-

*The trial duration was set as 2 hours or whenever 100% capture been achieved; or extended to 4 hours if less than 50% capture rate

Table 2. Efficacy evaluation of “Flyght Duo ILT – Device A” in light condition

Trial Room	Trial	Houseflies age	The number of trapped houseflies (minute interval)*						
			10	30	60	120	180	210	240
Large Room (90 - 100 m ³)	Replication #1	2 days old	1	3	4	7	10	14	15
	Replication #2	3 days old	4	7	15	23	29	34	38
	Replication #3	4 days old	6	14	23	34	42	46	52
Medium Room (60 m ³)	Replication #1	6 days old	8	12	16	30	51	62	69
	Replication #2	3 days old	6	12	18	26	39	42	46
	Replication #3	5 days old	8	18	30	44	50	58	62
Small Room (30 m ³)	Replication #1	3 days old	8	15	25	35	40	43	43
	Replication #2	5 days old	1	10	24	48	62	66	72
	Replication #3	5 days old	20	46	61	80	-	-	-

*The trial duration was set as 2 hours or whenever 100% capture been achieved; or extended to 4 hours if less than 50% capture rate

4.2 Flyght Duo ILT – Device B

The results of efficacy evaluation Flyght Duo ILT – Device B against the houseflies (*Musca domestica*) under dark and light condition are presented in Table 1 and 2, respectively. Relative humidity was recorded on 55 – 56 %, while the temperature was 28 – 29 °C.

Table 1. Efficacy evaluation of “Flyght Duo ILT – Device B” in dark condition

Trial Room	Trial	Houseflies age	The number of trapped houseflies (minute interval)*						
			10	30	60	120	180	210	240
Large Room (90 - 100 m ³)	Replication #1	6 days old	24	41	44	59	-	-	-
	Replication #2	6 days old	35	43	51	67	-	-	-
	Replication #3	4 days old	50	59	65	67	-	-	-
Medium Room (60 m ³)	Replication #1	5 days old	47	53	66	76	-	-	-
	Replication #2	5 days old	31	45	53	63	-	-	-
	Replication #3	5 days old	29	42	55	68	-	-	-
Small Room (30 m ³)	Replication #1	7 days old	29	51	61	71	-	-	-
	Replication #2	7 days old	28	47	63	84	-	-	-
	Replication #3	5 days old	40	57	67	82	-	-	-

*The trial duration was set as 2 hours or whenever 100% capture been achieved; or extended to 4 hours if less than 50% capture rate

Table 2. Efficacy evaluation of “Flyght Duo ILT – Device B” in light condition

Trial Room	Trial	Houseflies age	The number of trapped houseflies (minute interval)*						
			10	30	60	120	180	210	240
Large Room (90 - 100 m ³)	Replication #1	2 days old	1	4	7	13	19	21	22
	Replication #2	3 days old	5	10	21	29	35	38	42
	Replication #3	4 days old	0	8	18	29	42	48	56
Medium Room (60 m ³)	Replication #1	6 days old	10	13	21	37	56	63	66
	Replication #2	3 days old	7	17	25	63	-	-	-
	Replication #3	5 days old	14	26	38	56	-	-	-
Small Room (30 m ³)	Replication #1	3 days old	13	27	32	47	51	59	60
	Replication #2	5 days old	10	27	48	67	-	-	-
	Replication #3	5 days old	9	20	33	56	-	-	-

*The trial duration was set as 2 hours or whenever 100% capture been achieved; or extended to 4 hours if less than 50% capture rate

5. Results Documentation

The results documentation can be found on the following link: https://bit.ly/houseflies_test

Bogor, 14th November 2023

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