

X-TRAP 50 LED

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Excels in controlled testing



Test report

Reportedly more environmentally friendly than historical fluorescent tube traps, LED traps have begun taking the lead.

The X-Trap 50 LED is one of the models of this new generation of LED fly trap. Competitive tests have now shown that it outperforms competition.

An evaluation of three different LED Fly killers (EFK)



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HYGIENE

WADE ENVIRONMENTAL

**Evaluation of three Electronic Fly
Killer (EFK) variants against:**

**The House fly, *Musca domestica*
The Greenbottle, *Lucillia serricata***

Alex Wade

20/9/21

Certification.

Reference; WE-PF-EFK010203-0921

All data obtained by this report, including both raw data and a copy of the final document, will be held at Wade Environmental LTD, for a minimum period of five years unless specified otherwise.

This report has been written to the guidance set in;

- Internal SOP's on the testing of insecticides

Declaration

The data in this report is a true and accurate record of all data obtained.

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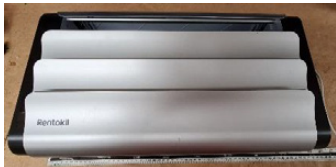

Study Information

Simulated use bioassay to determine the efficacy of three LED Electronic Fly Killers against *Musca domestica* and *Musca domestica* over a period of 24hours.

- | | |
|------------------------------|-------------------------------------------------------------------------------------------|
| i. Testing facility: | Wade Environmental LTD
Preston Farms
Preston Candover
Hampshire.
RG25 2DS. |
| ii. Sponsor: | Unit 1-3 Cedar Park .
30 Terminus Road,
Chichester
West Sussex
PO19 8GT
UK |
| iii. PelGar Reference: | WE-PF-EFK010203-0921 |
| iv. Experimental start date: | 10/9/2021 |
| v. Experimental end date: | 15/9/2021 |
| vi. Interim report date: | 20/09/2021 |
| vii. Study end date: | 20/09/2021 |
| viii. Study Director: | Alexander Wade |
| ix. Primary personnel: | Alexander Wade |

EVALUATION OF THREE ELECTRONIC FLY KILLERS (EFK)

x. Candidate Materials:

Test Unit	Photograph	Physical Description of test unit.	Unit Batch/Model	Bulb Batch/Model	Item Code:
X-Trap		Twin LED unit measuring 540mm in width. Hinges open from the side. Paper is reloaded from the side.	2004.0027	2.04.0500	WE-PF-0001
Rentokil - Lumnia		Twin LED unit measuring 540mm in width. Hinges from the bottom with the paper loaded from the front. Had multiple SMART setting. For this test the unit was set to a non-adaptive setting and on HIGH intensity.	304771	304816	WE-PF-0002
Brandenberg - Cobra		Twin LED unit measuring 500mm in width. Opens by removal of translucent front cover. Sticky pads at loaded into the top behind a metal screen.	CLT218-M-44-02	180-100	WE-PF-0003

Experimental Synopsis.

A simulated use test was performed to assess the efficacy of the of three Electronic Fly Killer (EFK) variants against the following two species of fly.

- *Musca domestica*
- *Lucillia serricata*

The EFK units supplied kill/capture the insects through the use of a sticky board placed behind an array of lights designed to lure insects to them.

The shape of the units, size and placement of the sticky board and composition of the lights all differ leading to a variability in efficacy. The purpose of this experiment therefore is to determine how effective these EFK configurations are at luring and capturing two species of fly over a period of 24 hours.

For this efficacy test, insects were separated into groups of approximately 50 flies per species per EFK unit (exact numbers can be seen in the raw data). Test groups were released into the environment at a point equidistant from the test unit and a control light source within a test arena measuring 6x2.5x2.5 meters (LxWxH).

Both light sources were left on continuously for the duration of the test.

Data was recorded through external visual inspection of the units every 15minutes over the first hour, then hourly until six hours had elapsed, then a final reading taken at 24 hours.

Methodology

Test insects:

Musca domestica, *Lucillia serricata*, have all been maintained by Wade Environmental LTD, and have been maintained within captive lab cultures for greater than 10 years.

For a review of specific rearing and handling methods an SOP can be provided.

Insects were selected using CO2 to sedate them, then allowed a minimum of 1-hour post-handling recovery before the initiation of each test. All test organisms were checked to be free of symptoms of disease or poor health prior to testing.

EFK Material Breakdown.

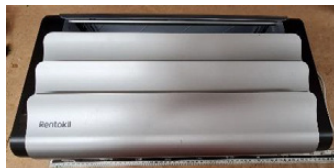
EFK 1 – X - Trap



Name	X-Trap
Dimensions	540mm width.
Number of Bulbs	2
Bulb Description	2 Encapsulated bulbs orientated with the LEDES facing out.
Bulb Wattage.	11W as stated on each bulb

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EFK 2 – Rentokil Lumnia



Name	Rentokil Lumnia
Dimensions	540mm width.
Number of Bulbs	2
Bulb Description	2 non encapsulated bulbs orientated with LED's facing out
Bulb Wattage.	20W as stated as (assumed) combined total on unit

EFK 3 Brandenburg - Cobra



Name	Brandenburg Cobra
Dimensions	500mm width
Number of Bulbs	2
Bulb Description	2 non encapsulated bulbs orientated with LED's facing in
Bulb Wattage.	14W as stated as (assumed) combined total on unit

Pre-exposure procedures: -

Test Arena preparation.

Prior to trial start the arena was checked to ensure that it is free of extraneous light sources and that all points of ingress and exit are suitably sealed as to ensure all insects remain within the testing arena throughout the duration of the trial. All doors have insect proof mesh installed to allow for easy access into the chamber without risking the escaping of test insects.

The control light was a standard fluorescent bulkhead light bought and used specifically for this test; the bulbs used was 38W with a luminosity of 6400K.

Temperature inside the container is not controlled but will be recorded with an RC5 Elitech Datalogging temperature monitor.

Establishment of UV levels.

A Solar Spectrometer Version 6.5 was used to measure light and UV intensity (A+B Combined) against the UV Bulbs supplied with the EFK's to ensure that they were functioning and that the control unit was not producing UV light.

Testing procedure:

Efficacy test procedure.

Efficacy of the units was established using the following procedure and criteria.

1. Units will be tested one at a time over a 24-hour period against a common control.
2. Test and control units will be placed on opposite walls,
 - Units were placed a minimum of 1.8m from the ground.
 - Units were placed so that they were level to the ground.
 - Units were placed onto identical a vertical surface (untreated plywood).
3. Test insects were selected from mass rearing cages using a mechanical pooter and then CO₂ sedation before being placed into the plastic pots and allowed sufficient time to recover.
4. When test insects had sufficiently recovered, they were released into the test arena at a point equidistant from the control and test unit.
5. Measurements of control/entrappment will be taken every 15minutes over the first hour, then hourly until six hours had elapsed, then a final reading taken at 24 hours.
6. At the end of the trial, the units were switched off, the boards removed and the environmental cleared of any remaining flies.

The completion of this process will count as a single test.

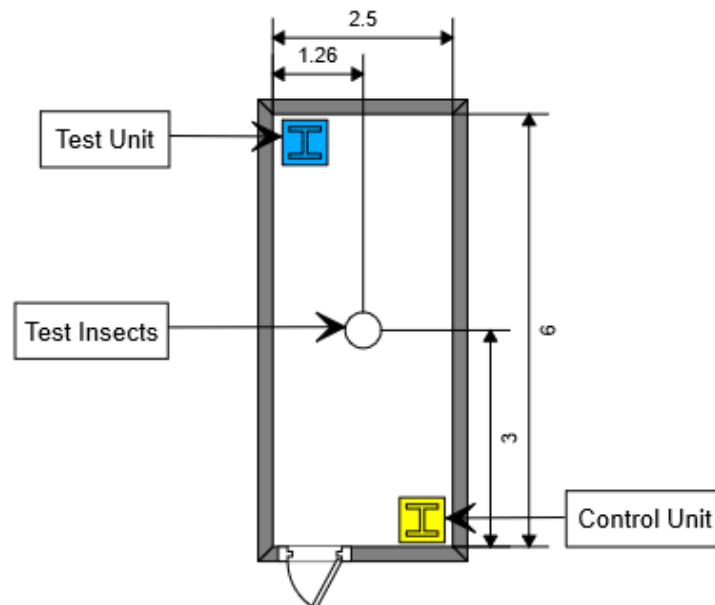


Figure 1; Arena layout and dimensions.

Establishing effect.

- Test insects which are stuck to boards or are perished within catchment trays will be counted as controlled/entrapped.
- Insects which are found perished less than 50cm of the unit will be noted.
- Insects which are found perished greater than 50cm of the unit will be noted.

Success of the units will be determined through the speed with which they clear flying insects from the environment.

Storage and handling of test materials.

Items; WE-PF-0001, WE-PF-0002, WE-PF-0003.

Upon arrival, all test material is placed into storage on shelving in ambient environmental conditions. Each unit will be clearly labelled. Each label contained (but was not limited too) the following Information:

- Name of the unit.
- Unique ID code (generated by Wade Environmental).
- Manufacturers Batch Code
- Date of manufacture for any bulbs supplied their dimensions and wattage.
- Any relevant safety information.

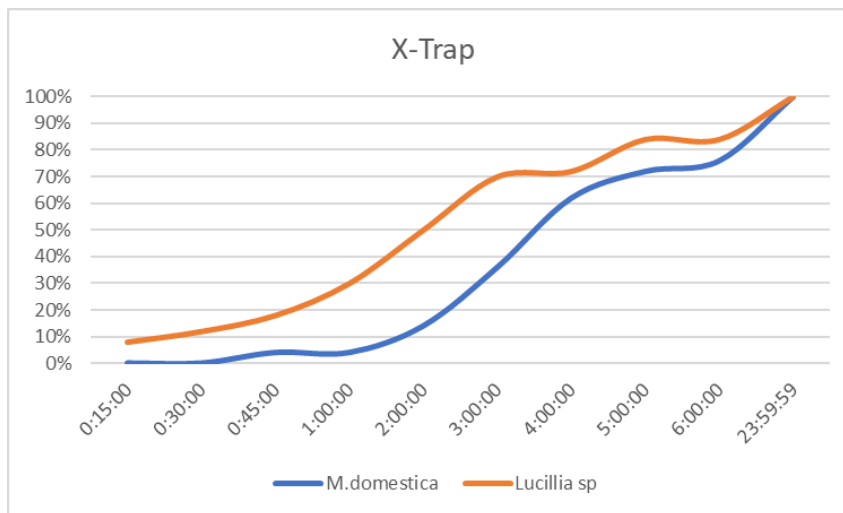
At the end of the trial any EFK units (used or unused) will be returned to the Project Sponsor at their cost, unless otherwise specified.

Results and Conclusion.

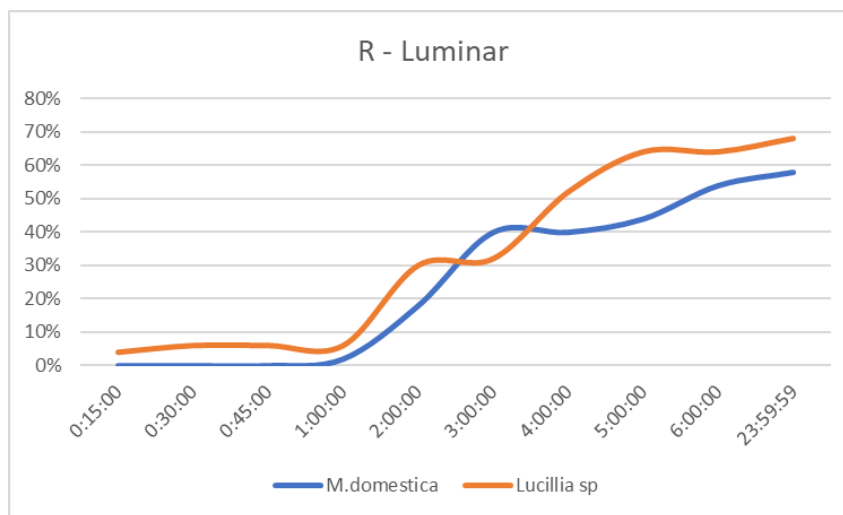
EFK Speed.

Kill efficacy

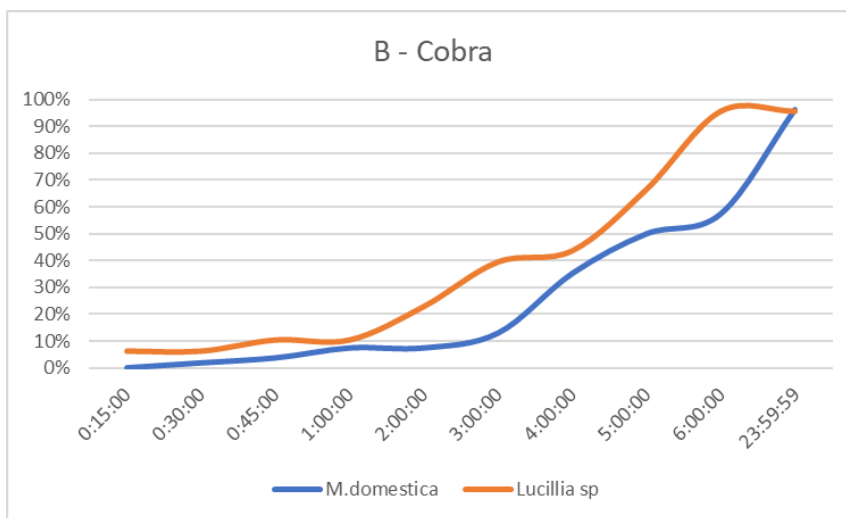
Results were taken at defined intervals. Results were obtained through a visual inspection of each unit without undergoing significant dismantling of the EFK unit. These data are then plotted to show the frequency with which they capture the test insects.



Graph 1 – X-Trap



Graph 2 – Rentokil Lumnia

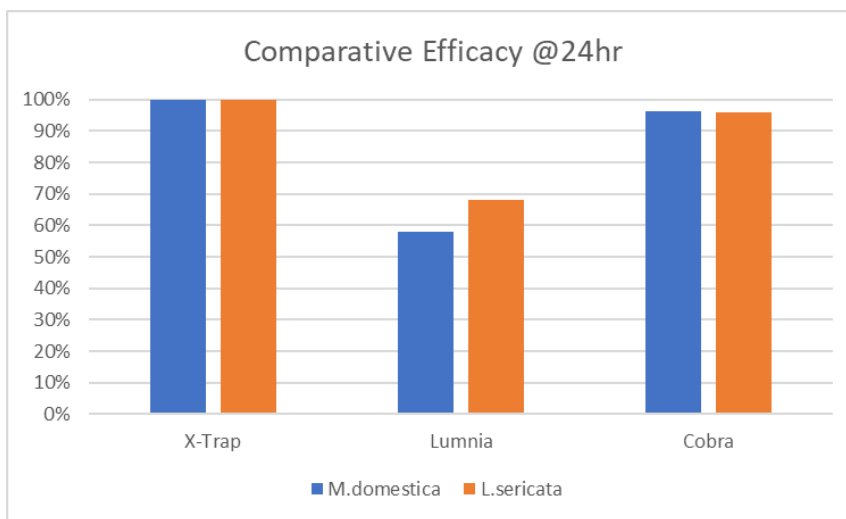


Graph 3 – Brandenburg Cobra

EFK Total Control

Total Control Efficacy.

Results taken from the 24-hour final count were used to establish the total control efficacy. This data has been collated to view the comparative efficacy of each unit over the 24-hour period.



Graph 4

Conclusion,

In conclusion this report finds that the X-Trap unit and the Brandenburg Cobra unit were comparable in efficacy with the X-Trap unit being the only unit to achieve a total clearance of the room within 24hrs. Both the X-Trap and the Cobra significantly outperformed the Rentokil Lumnia Unit; however, this may be as a result of lower environmental temperature noted on that day compared to the other two testing periods (although at no time did the temperature exceed either the higher or lower tolerances for fly survival within the experimental timeframe. This assumption can be corroborated with a greater number of test replicates if required.

It must also be noted that the Cobra unit had at each recording interval during the first 6 hours, a notable number of flies sitting on the metal cover plate rather than coming into direct contact with the sticky pad proper, in fact over 80% of the flies captured by the Cobra unit were on the lower pad rather than the backing pad. The metal cover plate of the unit also made removal of the pad problematic due to its close proximity.

EVALUATION OF THREE ELECTRONIC FLY KILLERS (EFK)

Appendix I - RAW DATA.

Test ID	PF-XLU-MdLs-0921	Test Replicate	1
Date	10/09/2021		50
Species	M.domestica		
Time	Unit		
	1	%	Control
0:15:00	0	0%	0
0:30:00	0	0%	3
0:45:00	2	4%	1
1:00:00	2	4%	4
2:00:00	7	14%	2
3:00:00	18	36%	2
4:00:00	31	62%	2
5:00:00	36	72%	1
6:00:00	38	76%	0
23:59:59	50	100%	0
Species	Lucillia sp		
Time	Unit		
	1	%	Control
0:15:00	4	8%	0
0:30:00	6	12%	1
0:45:00	9	18%	3
1:00:00	15	30%	2
2:00:00	25	50%	3
3:00:00	35	70%	1
4:00:00	36	72%	0
5:00:00	42	84%	0
6:00:00	42	84%	0
23:59:59	50	100%	0

EVALUATION OF THREE ELECTRONIC FLY KILLERS (EFK)

Test ID	PF-LUM-MdLs-0921	Test Replicate	1
Date	13/09/2021		50
Species	M.domestica		
Time 10.30	Unit		
	1	%	Control
0:15:00	0	0%	0
0:30:00	0	0%	0
0:45:00	0	0%	0
1:00:00	1	2%	0
2:00:00	9	18%	0
3:00:00	20	40%	0
4:00:00	20	40%	0
5:00:00	22	44%	0
6:00:00	27	54%	0
23:59:59	29	58%	0
Species	Lucillia sp		
Time	Unit		
	1	%	Control
0:15:00	2	4%	0
0:30:00	3	6%	0
0:45:00	3	6%	0
1:00:00	3	6%	0
2:00:00	15	30%	0
3:00:00	16	32%	0
4:00:00	26	52%	0
5:00:00	32	64%	0
6:00:00	32	64%	0
23:59:59	34	68%	0

EVALUATION OF THREE ELECTRONIC FLY KILLERS (EFK)

Test ID	PF-COBR-MdLs-0921	Test Replicate	1
Date	15/09/2021		48
Species	M.domestica		
Time	Unit		
	1	%	Control
0:15:00	0	0%	1
0:30:00	1	2%	0
0:45:00	2	4%	2
1:00:00	4	7%	0
2:00:00	4	7%	7
3:00:00	7	13%	1
4:00:00	19	35%	2
5:00:00	27	50%	0
6:00:00	31	57%	0
23:59:59	52	96%	0
Species	Lucillia sp		
Time	Unit		
	1	%	Control
0:15:00	3	6%	1
0:30:00	3	6%	0
0:45:00	5	10%	2
1:00:00	5	10%	0
2:00:00	11	23%	7
3:00:00	19	40%	1
4:00:00	21	44%	2
5:00:00	32	67%	0
6:00:00	46	96%	0
23:59:59	46	96%	0

Appendix II – Test Insects

Test Insects

Species	Source	Culture History
M.domestica	Blades Biological 2010	Kept in Lab Culture under the supervision of A. Wade – 2010-2021
L.Serricata	Blades Biological 2010	Kept in Lab Culture under the supervision of A.Wade – 2010-2021



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