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CONTROL OF VARIOUS TYPES OF TRAPS FLIES IN PASAR AUR DURI JAMBI CITY

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ABSTRACT
The background of flies as a mechanical vector of flies can spread disease, through germs (seeds of disease) attached to the legs, feathers, wings, body of flies so that flies can be dangerous to humans. The purpose of this study was to determine the control of various types of fly traps in Pasar Aur Duri Jambi City. This research method is quasi-experimental with a post test only design with control group with a statistical test approach ANOVA. The location of the study was on the stalls of fish traders, vegetable traders, and chicken traders in Pasar Aur Duri Jambi City. There are three types of traps, namely fly trap blowers, fly traps, and glue traps. Repetition in the study 9 times. The results of the study The number of flies trapped with fly trap blowers as fly control in Stall 1 (fish traders), Stall 2 (chicken meat traders) and stall 3 (vegetable traders) Pasar Aur Duri Jambi City showed that in the 1st to 9th repeats, the average number of flies trapped to the fly trap blower was 6 flies with flies trapped in *Chrysomia megachepala* as many as 116 flies. While the number of flies in the fly trap trapped was 54 flies, the average fly was 2 flies, and for the fly glue trap showed as many as 121 flies with an average of 3 flies, the type of fly trapped was *Chrysomia megachepala*. The results of one-way ANOVA analysis showed that there was a significant difference in the number of flies trapped between Fly trap blowers, Fly traps, and Glue flies with $F = 71.86$; $p < 0.001$. Post-hoc analysis with the LSD method also showed that the Fly trap blower ($M = 6.00$; $SD = 0.866$) had significantly more flies than fly traps ($M = 2.00$; $SD = 0.50$) and Glue flies ($M = 4.44$; $SD = 0.73$), $p < 0.001$. While glue flies have a significantly greater number of flies trapped than fly traps ($p < 0.001$). The highest number of flies with a total of 334 flies with the effectiveness of trapping tools is Fly trap blowers and the most common type of fly *Chrysomia megacephala*. Suggestions for fly control in Pasar Aur Duri Jambi City should be to increase the full power of the portable flytrap blower that is easy to carry and place anywhere.

INTRODUCTION

Flies as mechanical vectors are called because flies in spreading disease, germs (seeds of disease) attach to the legs, feathers, wings, body, and spread where flies fly and perch. If flies land on food, then seeds of disease (germs) will be left on the food and if eaten by humans, they will get sick (Cirillo, 2006). All parts of the fly's body act as a means of transmitting disease, namely the body, hair on the hands and feet and feces, and vomit (Alim, Marselina, & Rais, 2020).

Fly density is a very important problem, because flies are vectors of disease mechanically (mechanical transport). The density of flies in the market as mechanical vactors in spreading disease, germs (seeds of disease) attach to the legs, feathers, wings, body, and also spread where flies fly and perch. If flies land on food, then seeds of disease (germs) will be left on the food and if eaten by humans then humans will get sick (Sparagano et al., 2018).

There are many fly breeding sites found in fly populations, one of which is in the market, the density of flies in this place needs to be secured (Moon, 2019). The habit of living flies in less sanitary places, caused by a lot of food, can also be used for breeding flies. The high population of flies can be used as an indicator of the state of sanitation in the community. This is due to the happy living system of flies in places that do not meet sanitary requirements, one of which is in a dirty market environment (Lancione & McFarlane, 2016).

Flies perch on feces, food, and the surface of the soil that humans encounter every day. There are many methods that have been used to monitor housefly activity, and these can be categorized according to the type of control device as well as sampling period (Sousa et al., 2018) In contrast, fly control methods provide a measure or index of housefly activity related to the density of flies at the sample site and the frequency of fly behavior, such as perching and flying, which the fly changes with the control tool.

Fly control efforts should not only be aimed at fly populations close to humans, but also at sources of breeding flies (Zhang, 2020). The environment is classified as dirty, very much swarmed by flies (Moon, 2019). To minimize fly breeding, it is necessary to carry out fly control efforts. Often control efforts against flies tend only to kill flies which in a relatively short time the fly population will decrease. However, flies that still exist or are neglected for population breeding, will be able to create a new population so that control efforts will be futile. (Simberloff, 2014).

A model of a flytrap consists of a plastic container or can for bait, a wooden or plastic lid with a small gap and a cage over the cover (Owens, Nuessly, Kendra, Colquhoun, & Seal, 2017). A gap of 0.5 cm wide between the cage and the cover gives flies leeway to move. The installation of wire gauze can catch flies that will enter through doors and windows. This is easy to do and can be useful for a long time when large or dense flies can be caught through a fly trap. An attractive place for flies to breed and forage are dark containers. If flies try to eat and fly, they will be caught in traps placed at the mouth of the open container. This method is only suitable for use outside the home (Maftuhah, 2022).

Fly control with semi-automatic fly traps modified to cover by collecting the diversity of flies of *Chrysomia megacephala*, *Musca domestica, Sarcophaga*, with peak afternoon activity between 12:00 -18:00. Electric current control as a fly trap is very promising for fly control (Otabil et al., 2018).

Fly traps are placed every day during the observation period (per week/month/year). Flies that enter the trap will be counted every day, so that a daily fly density figure can be obtained. The results of this measurement will be obtained the number of fly density (Mann, Brar, Mann, & Mudahar, 2016). Efforts to overcome the above problems are formulated implementation steps, including controlling the

impact of flies. This requires serious attention, because one of the stalls that still has a high density of flies based on an initial survey dated April 12, 2023, the density of flies in the market area at temporary landfills is the High category, which is > 20 flies. One of the goals is to reduce the presence of stalls in the Aur Duri market, so researchers are interested in researching the control of various flytraps as fly traps for fly control in the Aur Duri Market in Jambi City.

Based on the initial survey that the problem is that there are 3 locations first in the market area which are divided into stall 1 (fish traders), Stall 2 (chicken meat traders), and stall 3 (vegetable traders) flies that are widely present and the types of flies found are *Musca domestica sp* and *Chrisyomyia megacephala sp* flies in the working area of the Aur Duri Health Center in Jambi city, the density of flies > 20 categories is very high according to Permenkes no.50 of 2017. Risk factors from the very high category of health can be dangerous for humans.

RESEARCH METHODS

This type of research is quasi-experimental research (quasy experiment). This uses a post only design with control group design, which observes the same current outcome variables against the treatment group and the control group, after the treatment is given to the group (Sugiyono, 2016).

The form of the Research Design can be described as follows:

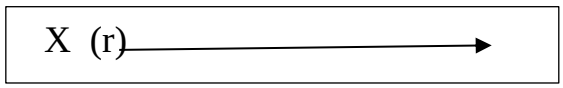

Image captions

X : Treatment

O : Number of Flies caught

r : Repetition 9 times

Research location

This research was carried out at Pasar Aur Duri Jambi City

Population and sample

The population in this study was all flies in Pasar Duri Jambi City. The sample in this study was a non-random selection of stalls in the Aur Duri market of all flies trapped in fly trap blowers, fly traps, and glue flies before treatment and flies trapped with or with treatment. with the formula (t-1) (r-1) ≥15 which obtained the result of repetition r = 9 Description: t = Type of Trap as much as 3 and r = repetition as much as 9 (Sugiyono, 2015)

Preparatory Stage

The preparation stage is assembling tools and materials and use and continued with the operational stage as follows:

1. Plastic box measuring Length: 40 Cm. Height: 10 cm and Width: 25 Cm
2. 12V DC mini blower fan
3. 5-meter-long power cord
4. Fittings

Fly trap blower assembly stage:

1. Mini blower fan is glued in the plastic box on the part with a cover
2. Then glued the long power cord

Operational stage of fly trap

1. fly trap blower is described as suction (fly) from the outside area (Outlet let) and go into (in let) plastic box with DC electric power 12 V.
2. Then the 12 V DC electric power is turned on and can press the outside air inward so that flies as objects can be sucked by dripping fishy aroma from used fish water.
3.Trapped flies can be counted and identified

The Course of Research

1. Preparatory stage.

a. Manage research permits and collect secondary data.
b. Determine the sampling place of all types of flies caught in the Aur Duri Market.
c. Preparing tools for fly traps.

2. Implementation Phase

a. Fly traps are used to catch flies at the location of Pasar Aur Duri placing 8 fly traps each at 3 locations, namely at Stall 1 (fish traders), Stall 2 (traders), and Stall 3 (vegetable traders) by doing 9 repetitions.
b. Flies caught are calculated based on fly traps placed on each 8 sheets of fly glue adhesive paper 3 points of location, namely at Stall 1 (fish trader), Stall 2 (trader) and Stall 3 (vegetable trader) by doing 9 repetitions.
c. Then flies are also identified directly in the field using a loupe (magnifying glass)
Analisa data

1. Univariate

This analysis aims to get an overview in the form of a frequency distribution table for each variable studied, both independent and dependent variables.

2. Bivariate

This analysis aims to determine whether there is a difference between the independent variable and the dependent variable with the ANOVA statistical test. To see the statistical calculations used 0.05 degrees of freedom with details:

If P < 0.05 then Ho is rejected and Ha is accepted, meaning there is a relationship between the variables. If P > 0.05 then Ho is accepted and Ha is rejected, meaning there is no relationship between the variables.

RESULTS AND DISCUSSION

The results of research measuring air temperature and humidity, at 09:00 to 11:00 WIB obtained temperature data of 33^{0}C, humidity 78Yo, so the physical condition of flies can move optimally. The number of people trapped as a whole, namely those trapped in the Aur Duri market in Jambi City, mostly in Stall 1 (fish traders) in the Aur Duri Market in Jambi City is *Chrysomia megacephala*. For more complete data on research results can be seen in the table as follows:

Table .1 Types of Flies Trapped in Fly trap Blowers at Stall 1 (Fish Traders), Stall 2 (chicken meat traders) and Stall 3 (vegetable traders) at Pasar Aur Duri Jambi City

Repetition	Stalls 1, Stalls 2, Stalls 3	Types of Flies Trapped		
		Musca domestica	*Sarchophaga*	*Chrysomia megacephala*
I	18	5	3	10
II	22	5	6	11
III	21	5	4	12
IV	25	6	5	11
V	22	5	5	12
VI	20	5	6	9
VII	26	7	3	16
		4	3	19
VIII	26			
IX	19	4	2	13
Total	199	**46**	**37**	**116**
Average	17,8	**5,1**	**4,1**	**8,5**

Source: Researcher Data 2023

The results of the study table 1 Control of various fly traps as a means of controlling flies in the Aur Duri Market with Types of flies with Fly trap blowers flies in each repetition in Stall 1 (fish traders), Stall 2 (chicken meat traders) and Stall 3 (vegetable traders) are many types of flies are *Chrysomia megacephala* 116 flies with an average of 8-9 flies and on average a few types of flies found in Musca domestica fly species only 37 flies on average 4 flies.

Table .2. Types of Flies Trapped in *Fly traps* at Stall 1 (Fish Trader), Stall 2 (chicken meat trader) and Stall 3 (vegetable trader) at Pasar Aur Duri Jambi City

Repetition	Stall 1, Stall 2, Stall 3	Types of Flies Trapped		
		Musca domestica	*Sarchophaga*	*Chrysomia megacephala*
I	5	2	1	2
II	5	1	1	3
III	7	3	0	4
IV	6	3	1	3
V	6	1	2	3
VI	7	3	1	3
VII	6	3	0	3
VIII	4	1	1	2
IX	6	2	1	4
Total	**52**	**19**	**8**	**25**
Rerata	**5,7**	**2,1**	**0,8**	**2,7**

Source: Researcher Data 2023

Results of the study table .2 Control of various fly traps as a means of controlling flies in the Aur Duri Market with Types of flies with Fly trap flies in each repetition in Stall 1 (fish traders), Stall 2 (chicken meat traders) and Stall 3 (vegetable traders) are many types of flies are *Chrysomia megacephala* 25 flies with an average of 2-3 flies and on average a few types of flies found in *Sarcophaga* fly species only 8 flies with an average of 1 fly tail.

Table .3. Types of Flies Trapped in Glue Flies in Stall 1 (Fish Trader), Stall 2 (Chicken Meat Trader) and Stall 3 (Vegetable Trader) in Pasar Aur Duri Jambi City

Repetition	Stall 1 Stall 2, Stall 3	Types of Flies Trapped		
		Musca domestica	*Sarchophaga*	*Chrysomia megacephala*
I	11	4	2	5
II	15	5	3	7
III	12	3	3	6
IV	15	5	4	6
V	14	4	4	6
VI	13	6	1	6
VII	16	5	2	9
VIII	15	5	3	7
IX	10	3	1	6
Total	**122**	**30**	**23**	**69**
Rerata	**13,6**	**3,3**	**2,5**	**7,6**

Source: Researcher Data 2023

The results of the study table 3 Control of various fly traps as a means of controlling flies in the Aur Duri Market with Types of flies with fly glue in each repetition in Stall 1 (fish traders), Stall 2 (chicken meat traders) and Stall 3 (vegetable traders) are many types of flies are *Chrysomia megacephala* 69 flies with an average of 7-8 flies and on average a few types of flies found in *Sarcophaga* fly species only 23 flies with an average of 2-3 flies fly.

Different types of fly traps are used for fly control in Pasar Aur Duri Jambi City.

Table 4 Differences in the number of flies trapped in flytrap variations.
at (stall 1, stall 2) and stall 3 at Pasar Aur Duri Jambi City

Types of traps	n	Mean	Stand. Deviation	F	p-value
• Fly trap	9	6.00	0,866	71,86	0,000
blower	9	2.00	0,500		
• Fly trap	9	4.44	0,726		
• Fly glue					

The results of Anova's one-way analysis showed that there was a significant difference in the number of flies trapped between fly trap blowers, fly traps, and glue flies with $F = 71.86$; $p < 0.001$. Post-hoc analysis with the LSD method also showed that the Fly trap blower ($M = 6.00$; $SD = 0.866$) had significantly more flies than fly traps ($M = 2.00$; $SD = 0.50$) and Glue flies ($M = 4.44$; $SD = 0.73$), $p < 0.001$. While glue flies have a significantly greater number of flies trapped than fly traps ($p < 0.001$).

The results of the study were carried out to control various types of fly traps, namely fly trap blowers, fly traps and glue flies in the Aur Duri market Jambi City, the highest number of trapped flies is *Chrysomia megachepala* in the area of Stall1 (fish traders) and stall 2 (chicken meat traders) and stall 3 (vegetable traders' stalls) where there are piles of waste left over from the activities carried out by traders in the Aur Duri market, and in line with research reported that the flies caught were *Chrysomia megacephala* collected from the northeastern part of Thailand more found in garbage heaps from the activities of traders who sell wet organic merchandise especially fish, meat and vegetables. especially from the market, research there are differences in research according to namely by using electric traps that are given attractants to attract flies, while the flies trapped are *Musca sp* and *Chrysomia sp* the design of the fly trap bottle hole above with sugar water bait traps more house flies (Musca domestica) than other bait designs and variations as well as research catching flies with 4 traps and the type of fly caught is wrong one is *Musca domestica*.

Types of fly traps are fly trap blowers, fly traps and glue flies that trap flies on (fish traders' stalls) the number caught is very large, on average 6 flies with a percentage of 50% are in the fly trap blower, for fly traps the average fly is 2 flies with a percentage of 16.7%, and glue flies 4 flies with a percentage of 13.3% for fly trap blowers, tools used use electric current without killing flies in line with research Stating that the electric current fly trap fly density can be reduced by 42.87%. Five commercially available fly traps were tested in the laboratory with Musca domestica kept in captivity for 15 minutes, to determine the size and number of inhalable particles produced during fly catching. Four of the five traps electrocuted flies, while one used sticky trap.

Flies like fishy smelling places and there are fish droppings left from stall 1 (fish traders), perch on the fish section looking for food to set fly traps and trapped flies, in the opinion Sanitation is probably the most important component in removing odors that attract flies. Source reduction applies if larval habitats can be identified and eliminated. Exception means to expel flies from buildings. Despite all the efforts made, flies will successfully enter the human environment, so the exceptions are air curtains, fans, shielded windows, and doors. Ultraviolet

light traps attract and paralyze, while window traps lure flies into traps that trap them.

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House flies or Musca domestica are also trapped in fly trap blowers, fly traps and glue flies in Stall 1 (fish traders), Stall 2 (chicken meat traders) few flies found in stall 3 (vegetable traders) in the Aur duri market Jambi City, because the market is a gathering place for various kinds of people so that Musca domestica has an important role in health, namely disease transmission and is a mechanical vector that can also transmit various diseases and so does there Opinions Common house flies are mechanical vectors of transmission of pathogens including parasites, bacteria, fungi, and viruses. A combination of various methods of control and prevention or eradication of house flies should be applied to stop the disease in humans or animals. In high-risk areas, health education, good environmental sanitation, and personal hygiene are highly recommended.

Sarcophaga trapped a lot in fly trap blowers, fly traps, glue flies in Stall 1 (fish traders) and stall 2 (chicken meat traders) while *Sarcophaga* few flies found in stall 3 (vegetable traders) in the Aur Duri market Jambi City in line with research the number of flies trapped by *Sarcophaga* sp is the least found in vegetable traders in the market then this study also shows variations in fly density by temperature, humidity and time

The average density of flies measured at Stall 1 (fish traders), Stall 2 (chicken meat traders) is a few flies found in stall 3 (vegetable traders) in the Aur duri market Jambi City average fly density 6 - 20 where according to the quality standard of Vector Control no.50 is included in the category of high density and needs control, in line (Xia et al., 2008). Flies' densities and populations vary by season and breeding environment, with temperature, breeding environment and control measures being the main influencing factors. Integrated control measures should be taken with top priority given to environmental management, plus chemical control to reduce fly density and control the prevalence of infectious diseases.

CONCLUSION

The highest number of flies with a total of 334 flies with the effectiveness of trapping tools is the Fly trap blower and the most common type of fly *Chrysomia megacephala*. Suggestions for fly control in Pasar Aur Duri Jambi City should be to increase the full power of the portable flytrap blower that is easy to carry and place anywhere.

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