EFFECTIVENESS STICKY TRAP COLORED FOR MONITORING GREEN PEACH APHIDMYZUS PERSICAE SULZ. (HOMOPTERA : APHIDIDAE) AT RED PEPPER (CAPSICUM ANNUUM L.) IN FIELD

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ABSTRACT

Effectiveness Sticky Trap Colored For Monitoring Green Peach Aphid Myzus persicae Sulz. (Homoptera : Aphididae) At Red Papper (Capsicum annuum L.) In Field. This study was conducted at the farm of farmer, Dusun I Desa Celawan Kecamatan Pantai Cermin Kabupaten Serdang Bedagai. The purpose of this study was to find out the effectiviness of the use several colour of sticky trap for monitoring M. persicae at chili planted. This study employed the Non-Factorilal Group Random Design Method with 5 treatments and 4 repetitions namely green trap (W_1), yellow trap (W_2), red trap (W_3), white trap (W_4) and blue trap (W_5). The result of this study showed the colour of sticky trap had a significant influence on the population of M. persicae of trapped but can not push down on attack intensity of M. persicae. In general, the average number of M. persicae can be able trapped in many colour of sticky trap, but yellow trap which at most response by M. persicae.

Keywords : *Red pepper, M. persicae, Yellow sticky trap.*

A. INTRODUCTION

Capsicum (Capsicum annuum l.) is one of the horticultural crops have important economic value of production needs to be improved. Venture increased production of chili has done with the expansion and intensive entrepreneurial include use of seeds, fertilization, setting the granting of water, how to farm, as well as the control of the organism's bully plants, including insect pests that attack plant chili. Based on the Central Bureau of Statistics and the Directorate of Horticulture (2015) that the production, productivity and broad red pepper harvest to North Sumatra Province from years of 2010-2014 experience the productivity gap between rill at the level of the farmer and potential productivity of chili that can reach 12-15 tonnes/ha[6].

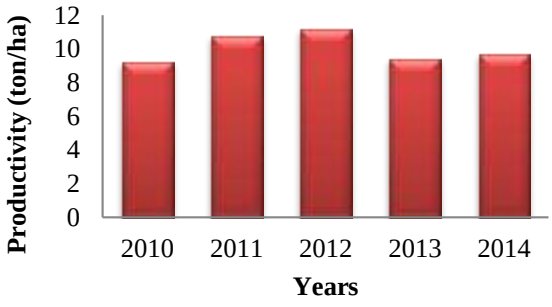

Figure 1. Red pepper statistics in North Sumatra (BPS, 2015).

One of the important pests attacking the crop were aphids to peach pepper m. persicae Sulz. It eats all kinds of pest plants (polifag). More than 100 kinds of host plants, including crops of chili.

Pepper plants are attacked by way of sucking up the fluid at the tip, stalk, leaves, flowers, or other plant parts. A heavy attack causes the leaves of curly, curved, dappled yellowish (chlorosis), and finally the loss so chili production declined[5].

Insects use a number of visual cues or chemical cues to locate hosts in the form of fruit or vegetables. One of these visual cues is the color. Yellow color favored by the pests are active during the day especially aphids on vegetable plants [3].

M. persicae aphids is a greenish yellow or reddish. M. persicae there are winged and winged things are not. Black-winged insect size 2-2.5 mm while no winged red, yellow or green-sized body 1.6 – 2.3 mm [7].

These aphids suck the leaves by way of sticking them stiletnya, then sucking plant cell tissue, so only plants that are the most preferred software. At the plants around the activities of aphids is visible the presence of black mold, namely Capnodium sp which grows on dung or secretions of aphids in the form of honey dew. Sometimes around the colony there are ants also like this insect secretion that is produced [7].

The population density of m. persicae and extent of damage to the leaves by m. persicae have relation with the lost red chili results. The results showed that the level of damage to the leaves of 78.75% crop damage by a coefficient of 1.577 g/percent damage to the leaves when the initial growth phase and 79.18% coefficient of 3.72 g/damage percent damage leaves the time phase flowering [6].

The use of pesticides in an attempt to overcome this pest is already very intensive

scheduled and conducted in high doses. This not only increases the cost of production but also unsafe for humans and the quality of the environment. These aphids pest control can be done by spraying insecticides, when population is high (threshold) that is more than 50 tails on young plants, plant relocation, almost harvest [4].

The use of artificial pest trap is one example of the technique of pest control physical and mechanical. The use of artificial traps pest control is a way that is practical, inexpensive and compatible with the way the other control and does not pollute the environment. This method utilizes the properties of insects that are attracted to light, color, aroma or smell a certain food such as pheromones. The trick is to induce insects to gather and resting on the trap so that finally the insect cannot fly and die [3].

Likat traps are widely used in greenhouses, especially in temperate climates. This trap can reduce pest populations that are growing in both places. Traditionally, the yellow trap has been used because it can attract pest insects. Species difference being one of the things that distinguishes against insect attraction toward color traps likat [2.]

Colors and color contrasts are used by insects to discriminate between host plant and the surrounding environment. The color components are very important to distinguish between host plant and the host is not the color, saturation, and brightness. After a test of the correlation between the color and number of arrests then the most high is the color green orange (Citrus green-0.93), then yellow, the color of fresh parsley and ultimately new white color [1.]

B. MATERIALS AND METHODS

Place and time

This research was carried out on land belonging to farmers, in the hamlet of village, Celawan Village, Sukaramai Subdistrict, Regency Mirror Beach Serdang Bedagai, with an elevation of approximately 6-10 m above sea level. The condition of pertanaman bordering the plant owned horticultural farmers, such as: Kale, spinach, eggplant, chilli, rice, beans, soy, and mustard greens. This research starts from March until July 2015.

Materials and Tools

The materials used in this research is the land, the best-selling chili seeds, manure, fertilizer and KCL NPK, water, transparent plastic, plastic sign colors red, blue, white, yellow and green with a size of 20 cm x 15 cm, adhesive, banana leaf, and marker of bamboo.

Tools used in this research is the identification of the pest, microscope, lup, stationery, camera, scissors, machete, hoes, rakes, rope gembor, Raphia, tacks, and calculator.

Metode Penelitian

This research was carried out using Random Design Group (RAK) Non Factorial with the treatment as follows: W1 = Trap Likat green, W2 = Trap Likat yellow, W3 = Trap Likat red, W4 = Trap Likat white, W5 = Blue, Likat Trap number of replicates, where as much as 3 replicates. Number of plants/plot = 8 plants, the number of plots = 20 research plots, the number of sample plants/plot = 4 at the plant, the amount of the plant entirely = 160 plants. Research results in data analysis with Anova, if real results were continued DMRT. The observed parameters is the number of m. persicae are trapped based on the color of the trap, attack Intensity (%) M. persicae, and chili production.

IMPLEMENTATION OF THE RESEARCH

Land Preparation

Land preparation was done with the cleaning of the weeds, the remnants of rooting, hardwood, which is all around the land, pencangkulan to menggemburkan the land and created map with the size 210 cm x 120 cm. Distance between the compartments one with another swath is 50 cm. each map your planting hole made with a distance of 60 cm x 70 cm.

Seeding Seed

The seed sown on top of dike wall already prepared and cleaned of weeds. Be sown rice straw and manure on top of the media for, then watered and covered with rice straw. Once the seedlings mature ± 15 days or have the 4-6 strands of leaves, seedlings were transferred to small polybag each 1 seeds per polybag.

Planting

Chili seeds that have been aged 17-21 days in the seedbed can be directly planted in each planting hole with planting distance 60 cm x 70 cm. Planting was carried out in the afternoon. Next up is done watering every morning or afternoon.

Maintenance

Watering is done at least 2 times a day, in the morning and the afternoon. Watering is done with the goal of keeping undisturbed chili plant growth, and the resulting production became better. The stitching is done for 2 weeks after planting (MST). Next, the installation is done on the plant marker 2 MST. Perempelan the side shoots are also carried out, all the buds are discarded so that plants grow well until "Y" branch was formed. Basic fertilizing manure by as much as 2 sacks (80 kg) and a bit of KCL fertilizer and NPK. Next was given water and KCL fertilizer

NPK marinade as many as 500 cc to 15 liters of water, flushed around the plant rooting.

Making Traps

The trap uses glue mice tacked on clear plastic. The plastic is then affixed a sign of treatment. The size of the trap that is 20 cm x 15 cm. Pitfalls of the marker to be installed in the plant of chili.

The Installation Of The Trap

Traps were installed at random on a swath of Chili with a height of 5-10 cm above the heading plants. Installation trap likat starts at the moment the plant of chili 2 PM MST. The installation is done for 4 days with intervals of 1 week. Trap likat newly installed back in the same position with the same installation time 4 days. The position of laying traps for the purposes of the direction of the Sun's light.

Parameters Of Observation

The number of m. persicae are Trapped by color Trap

Insect trapped on any patch of treatment is calculated the amount, and then identified using the book image identification, pest (PPT) with the help of lup and microscope.

The intensity of the attack m. persicae (%)

The intensity of the attack aphids were observed only on the plant sample. In each instance, observed 10 leaves. Aphids attack intensity observations began 3 MST with intervals of 1 week. The intensity of the attacks of aphids is calculated using the following formula:

$$IS = \frac{\sum(n \times v)}{(Z \times N)} \times 100\%$$

Description:
IS : the intensity of the attack
n: number of leaves from each category of the attack
v: the value of the category of attack
Z: the value of the highest attack categories
N: number of leaves were observed

Table 1. Aphid Attack Categories

The value of the	Category
0	There is no attack on the leaves
1	1/8the broad leaves of the stricken
2	¼ wide leaves stricken
3	½ wide leaves stricken
4	½ stricken broad leaf

Source : Sudarjat, 2008

Table 2. The Scale Of The Damage Value

Value Scale	Extent Of Damage Crop (%)	Category
0	0%	Not stricken
1	≤ 25%	Very light intensity
2	> 25 – 50%	The intensity of the light
3	> 50 – 75%	Medium intensity
4	> 75%	Heavy Intensity

Source: Directorate of plant protection, 2008

Chili Production

Calculated results of the chilies with the way weigh fruit on each plot to 2 times the harvest. The observations obtained data ditabulasikan thus obtained average value.

C. RESULTS AND DISCUSSION

1. The number of m. persicae are Trapped by color Trap

Observation data number of m. persicae are trapped at any time starting from observations observations 2-8 MST can be seen in Appendix 1-7.

From the results of the analysis of the multiform fingerprints can be seen that the real effect colored likat traps against the number of m. persicae are trapped. The influence of color trap against a number of m. persicae are trapped can be seen on Tabel 3.

Table 3. Number of m. persicae Rataan trapped on any Treatment of Observations 2-8 MST

Treatment	Observations (MST)						
	2	3	4		6	7	8
W_1	0.00	0.00	0.00 c	0.25 b	1.25 b	1.75	1.25 bc
W_2	0.00	0.00	3.00 a	4.75 a	4.25 a	5.00	4.25 a
W_3	0.00	0.00	0.00 c	0.25 b	0.75 b	2.00	1.50 bc
W_4	0.00	0.00	1.75 ab	1.00 b	2.50 ab	3.25	2.00 b
W_5	0.00	0.00	0.50 bc	0.00 b	0.50 b	1.75	0.75 c

Description: a value that is followed by the same letter in the same column shows the influence of the different unreal at α = 5% on Test DMRT.

Table 3 shows that the number of m. persicae on 4 and 6 MST, W2 different unreal against real, but different W4 against W1, W3, W5 and. On 5 and 8 PM MST, W2 shows different result against real W1, W3, W4 and W5. From these results it is known that the yellow color can contain m. persicae trap more of the other colors. This is because the color yellow is more effective in the monitor and control of insects.

In addition, the yellow color favored by the pests are active during the day. Based on a test of the correlation between the color and the number of arrests, Dibiyantoro (1998) States that the most high is the color green orange (citrus green-0.93), then yellow, the color of fresh parsley and ultimately new white color.

The following graphs the number of m. persicae are trapped based on the color of the trap are presented in Figure 2.

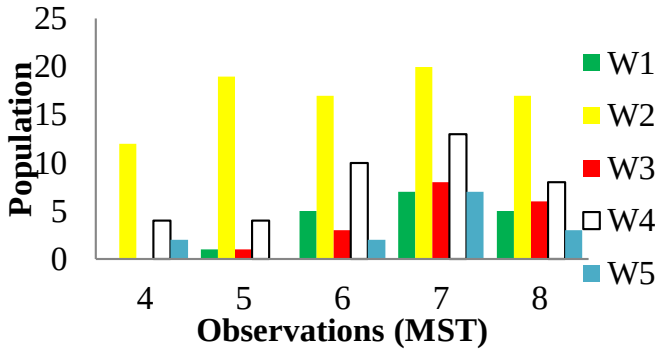

Figure 2. The histogram of the number of m. persicae are Trapped based on the color of the trap and the time of observation.

Based on Figure 2 Note that the highest population of m. persicae are trapped on a W2 and W5 is at its lowest. These results indicate that m. persicae can be caught in the trap of colored likat, however the treatment trap likat yellow and white continued the most responded by insects. In addition, note that the fluctuation in the growth of m. persicae until 8 pm MST is still not showing the highest and lowest point is significant. This occurs because it is a major pest pests that attack in all phases of plant growth of chili.

2. The intensity of the attack *M. persicae* (%)

Observation data offensive intensity m. persicae at each observation time starting from observations 3-7 MST can be seen in Appendix 8-12.

From the results of the analysis of fingerprints, it can be seen that the use of the traps do not affect the real intensity of the attack against M. persicae.

Based on observation data offensive intensity rataan, m. persicae lowest contained on W2 of 80.62%,

while the highest is present on the W1 and W4 of 89.06%, and belongs in the category of Heavy Damage Scale (75%). This happened because at the time of research, there are some limiting factor so that the increasing intensity of the attack. Note that the use of the trap is only effective in a phase of imago and winged. There are winged aphids and not winged, so population density winged aphids that are not either in phase nymph or imago, along with plant growth. In addition, the research also found major pest Thrips which is chili plants. Observation data population of nymphs and imago m. persicae and Thrips can be seen in Appendix 14-17.

Based on observation data, the number of nymphs m. persicae and Thrips are higher compared to a population of imagonya. To be ab able to see the difference, the following figure 3.

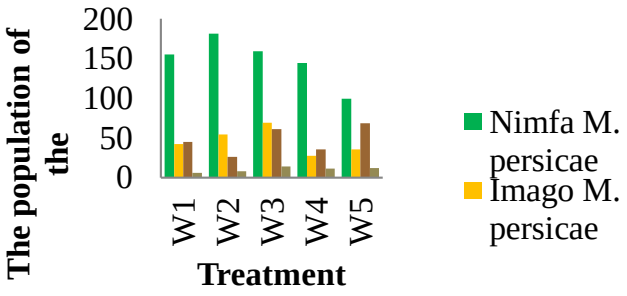

Figure 3. Histogram Population nymph and Imago M. persicae and Thrips

Population density resulting in a large number of nymphs damage young leaves so that To see the difference between the treatment of color against the intensity of the attack m. persicae the leaves become regular (become Wrinkly) facing down, chlorosis, rolling up, and pheasant. at each time of observation can be seen in Figure 4 below

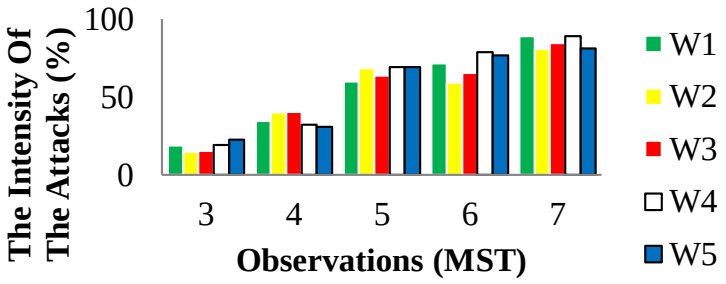

Figure 4. Intensity histograms M. persicae Attacks at any time of the observation.

According to Sudarjat (2008) that the extent of the damage the leaves are strongly influenced by the development of population density so that the extent of the damage the leaves always keep changing along with changes in the level of population density of m. persicae from week to week. Along with the observation, the population density of m. persicae and Thrips began to decline, but the result has been inflicted earlier cannot initiate the growth of shoots so much growth stunted plants, flowers that appear a lot autumn.

Chili Production

Observation data of production plants can be seen in annex 13.

Based on the analysis of fingerprints, use of traps provide no real influence towards crop production. Based on observation data, production is at lowest rataan W5 of 14 g/plot, while the highest is present on the W3 amounting to 102 g/plot. The lack of fruit that is formed by the m. persicae and Thrips, there is a lot of interest. In addition, the branch growth is hampered by the formation of flowers become so stymied.

Population density and degree of damage to the leaves by the main pest has a close relationship with the lost red chili results. When population density is high and is supported with a high intensity then the fruit that is formed is not good, its size is relatively small, and the weight of the fruit. Of research results Sudarjat (2008) in Journal of agrikultura mentioned real relationship between the extent of the damage the leaves, the initial population and time of observations with the loss of red chili pepper results very closely. The chili plant diinfestasikan m. persicae at time of initial growth phase, the results of the damage coefficient chilies posed each one percent of attacks of 1.577 grams.

D. CONCLUSIONS AND SUGGESTIONS

Conclusion

1. From the results of the research, it can be concluded that:
2. Trap likat colored is able to monitor the m. persicae with highest number of trapped is yellow color (W2) of tail.
3. Trap likat colored hasn't been able to suppress the leaf damage by m. persicae.

Suggestion

To control aphids m. persicae, suggested using yellow traps likat, keeping combines with other control techniques. Furthermore, the need for further research to see test the effectiveness of the trap with an altitude of colored likat different places as well as to find out the optimum land area used for installing a trap in pertanaman Chili, likat as well as test the effectiveness of the trap host plants for colored likat others.

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