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Development Whitefly Pest Population (*Bemisia tabaci* G.) in Plants Cucumbers in the Village Pupuan, District Tegallalang, Regency Gianyar, Bali

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ABSTRACT

Cucumber (*Cucumis sativus* Linn.) is one plant lots of fresh vegetables consumed Indonesian society. Production your cucumber affected by the attack Whitefly pest (*Bemisia tabaci*). Study this aim for know the presence of whitefly (*B. tabaci*) on plants cucumbers in the Pupuan Village, Tegallalang District, Gianyar Regency. Study this held with observation or exploration in a way directly on the land plant cucumber. Study using 5 grid plots observation. In each plot, 5 clumps were observed plants, determination plant sample done with method diagonal sampling method. Total plants observed cucumber as sampling is 25 clusters plant. Observation held every a week very. Research result shows the *B. tabaci* are found in the field plant cucumbers at 14 Days After Plant with average number of nymphs 0.4 and imago 0.2 / Plant and Number population pest *B. tabaci* on plants cucumber increase from observation I arrived observation to -VIII

Keywords: Bemisia tabaci, Cucumber, Population

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1. INTRODUCTION

Cucumber (*Cucumis sativus* Linn.) is one plant lots of fresh vegetables consumed Indonesian society (Amin, 2015). Cucumber normal utilized in form fruit as fresh vegetables, pickles, pickles and salads. Production cucumbers in Bali according to data from the Central Statistics Agency in 2021 with the amount of 501 Tons/Ha experienced decline in 2022 with _ amount 315 tons/Ha. Decline amount production is caused by several factor among them is attack pests and diseases plant. One of pest plant cucumber is the whitefly (*Bemisia tabaci)* Gennadius (Hemiptera: Aleyrodidae).

Whitefly (*Bemisia tabaci*) is one pest important in plants cucumber. This pest first discovered in Indonesia in 1938 in plants tobacco (Kalshoven, 1981). Symptom attack *B. tabaci* form spotting necrotic and chlorotic leaves caused by damage cells and tissues leaf consequence attack nymphs and insects mature. In circumstances population high, whitefly attack can hinder growth plants (Setiawati, *et al.*, 2006)

All stages *of B. tabaci* live in parts lower leaves to secrete dew released honey fell and didn't dirty his body. Fluid dew honey or dew soot that falls on the surface on leaf will stimulate growing fungus *Capnodium sp*., because fluid dew honey the provide ideal substrate for development fungus (Hoddle, 2003). Dew soot the causes the process of photosynthesis No walk with effective . *B.*

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tabaci is insect pests that can cause damage direct and damage no directly (as vector) disease in plants cucumber. Damage caused by viruses transmitted by *B. tabaci* tend more harm compared with damage straight away caused by pests that alone. Percentage Gemini virus infection is correlated positive with population insect vectors, esp viruliferous insects (Duriat , 2009).

Until moment this 100 types of viruses have been recorded transmitted by *B. tabaci*, including gemini virus (yellow virus), *closterovirus*, *nepovirus*, *carlavirus and potyvirus* (Hendrival, 2011) Based on condition that, then need done study more further purposeful for know existence pest plant cucumbers in the Pupuan Village, Tegallalang District, Gianyar Regency, Bali to prevent whitefly pests can controlled with appropriate.

2. METHODS

2.1 Place and Time

Study this implemented in one plot land owned by farmer an area of 1 ha in the Pupuan Village, Tegallalang District, Gianyar Regency, Bali. Study this held start May arrives with month August 2023.

2.2 Tools and materials

Tools used in research this that is tool write, book identification, and camera for identification insects, meanwhile materials used in study this is plant your cucumbers in the field.

2.3 Procedure Study

Study this held with observation or exploration in a way directly on the land plant cucumber. Study using 5 grid plots observation (extensive Plot 5 x 5 M ^{2}). In each plot, 5 clumps were observed plants, determination plant sample done with method diagonal sampling method. Total plants observed cucumber as sampling is 25 clusters plant. Observation held a week very for know amount population and symptoms attack whitefly pests on plants cucumber.

3. RESULT AND DISCUSSION

The results of observations that have been made done for 2 months with intensity observations once a week on the land is shown in Table 1.

TABLE I
Average Number of Whitefly Pest Populations (*B. tabaci*)

Observation To -	Average Number Whitefly Population (Tail / Plant)										Total number of SNs	Total Number of Imago
	Plot 1		Plot 2		Plot 3		Plot 4		Plot 5			
	S.N	Imago	S.N	Imago	S.N	Imago	S.N	Imago	S.N	Imago		
14 HST	0.2	0	0	0	0	0.2	0.2	0	0.0	0.2	0.4	0.2
21 HST	1,2	0.4	0.8	0.4	1,2	0.8	1.0	0.6	1.0	1.0	5.2	3,2
28 HST	2.6	1,2	2,4	1,2	2.8	1.4	2.6	0.8	2.6	1.8	13.0	6.4
35 HST	5.4	2,4	5.0	2.6	5.8	3,4	5.0	2.0	5.2	3,2	26.4	13.6
42 HST	6,8	3,2	6.4	3.6	6,8	3.6	6.2	3.6	6.6	4.0	32.8	18.0
49 HST	8.2	3.8	8.4	4.0	8.8	4.8	8.4	4.4	9.2	4.8	43.0	21.8
56 HST	8.8	4.4	9.0	4.6	9.8	5.2	8.6	5.2	9.6	5.4	45.8	24.8
63 HST	9.8	6.0	10.2	5.8	10.4	5,6	9.8	6.4	10.8	6.6	51.0	30.4

Description : SN: Stadia Ninfa, HST: Day After Plant

Observation results population pest carried out on plots land belongs to one farmer in the Pupuan Village, Tegallalang District, Gianyar Regency, Bali. Existence Whitefly

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pests are found on plants cucumbers at 14 HST (Day After Plant) however the amount still a little the total average number is 0.2 individuals / plant. Study Oktaviany (2014) also found that the whitefly attack plants in age plant still small. That matter in accordance with study Arsi (2020), that exists attack whitefly pest phase vegetative plant cucumber. Phase vegetative is where are the plant organs cucumber still Lots contain fluid so that makes it easier for fleas to suck part leaf plant cucumber. The imago of *B. tabaci* is shown in Figure 1.

Fig. 1 Presence of Whitefly on Leaves Plant Cucumber

Amount pest start increase since observation to III until VIII is shown in Table 1. Peak population nymphs and imago on observation to VIII, namely 63 DAP with the average number of nymphs was 51.0 / plant and the average number of imago was 30.4/plant. His height population pest this caused by cycles pest *B. tabaci* Already develop with good for plants cucumber. Indrayani *et al*., (2005) reported that *B. tabaci* preference tall for put it on the plant the host leaves hairy like plant cucumber. At 63 HST the pest *B. tabaci* already experienced 2 cycles live, where very cycle life pests are needed short time. Hidayat (2020) stated that the average time required for finish One cycle life and stadia length of each instar are good in a way reproduction with copulation nor without copulation in plants need time 18–33 days with an average of 23.19 ± 0.28 days.

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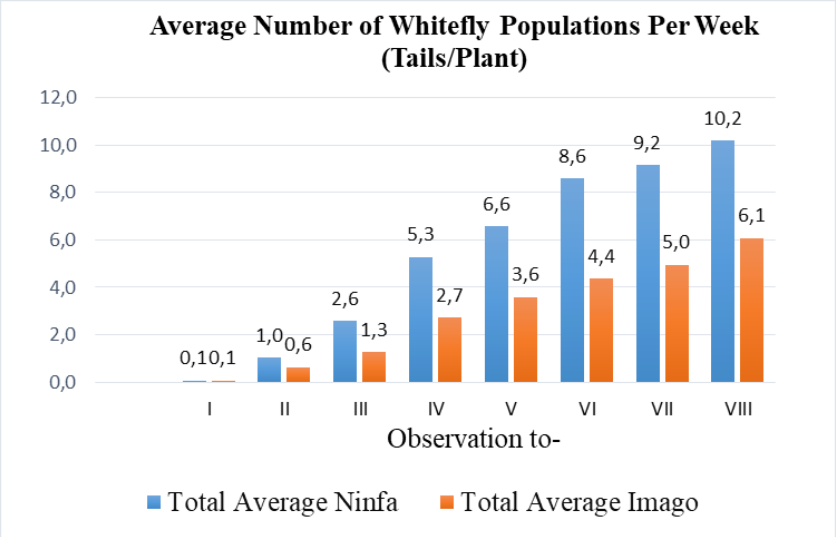

Fig. 2 Whitefly Population on Plants Cucumber

Amount pest *B. tabaci* he discovered existence pests on plants cucumber from 14 DAP to 63 DAP, on observation to –I, namely 14 Days After Planting (DAP) with average number ninfa 0.1 and imago 0.1 head/ planting. There is attack pest *B. tabaci* at the beginning growth plant cucumber because pest this beautiful pest main plant cucumber. This matter in accordance with statement Meilin (2014) that whitefly *B. tabaci* is one of pest important plant cucumber. Found pest imago this is at 14 DAP because the imago is in the form of moth and have wing for move place. Insect mature *B. tabaci* own wings covered with powder/flour, body colored yellow, size body around 2-3 mm (Marwoto *et al*., 2011). Besides that pest *B. tabaci* (Gennadius) is insect polyphag plays a role as pests and virus vectors in various type plant as in plants food, vegetables and plants ornamental. *B. tabaci* attack more of 600 species plant from various family. Whitefly can transmit the virus from weed to plant Budi power (Boss, 1981).

High average number population pests on observation to VII (63 DAP) with the average number of ninfa 10.2 and imago 6.1 Heads / Plant shown in Figure 2. Height amount pest caused by ability reproduction high pests. *B. tabaci* own ability high reproduction so that its population fast increased (Kalshoven 1981) According to study Hidayat (2020) *B. tabaci* in plants cucumber need time 18–33 days with an average of 23.19 ± 0.28 days for finish One cycle his life. Success life descendants *B. tabaci* that reproduces with copulation in plants a little more tall compared to with descendants from a reproductive imago without copulation

4. CONCLUSION

1. *Bemesia tabaci* are found in the field plant cucumbers at 14 Days After Plant with the average number of nymphs is 0.4 and imago is 0.2 individuals / plant
2. Amount population pest *Bemesia tabaci* on plants cucumber increase from observation I arrived observation to -VIII

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