INFESTATION PATTERN OF *Scirtothrips dorsalis* Hood (THYSANOPTERA : THRIPIDAE) IN DEVELOPING SHOOT AND FLOWER OF MANGO ARUMANIS 143

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INTRODUCTION

- Indonesia is one of the major mango producing countries besides India, China, Thailand, Philippines, Pakistan, Brazil and Australia.
- Arumanis 143, a variety which is very sweet yet fiberless, is the most prefered mango variety of domestic consumers.
- East Java, West Java, Central Java, Bali, West Nusa Tenggara, South Sulawesi and East Nusa Tenggara.
- Peak period of harvesting in Eastern part of Indonesia is from October until December.

Introduction (continued)

- The quantity and quality of Indonesia mango is still low compared to it potential production (25-30 of 55 kg/tree).
- Insect pest infestation poses serious constraint for high mango production and quality standard.
- One of the most damaging pests of mango is thrips *Scirtothrips dorsalis* Hood.

Introduction (continued)

- Thrips punch a hole in the external walls of the tissue and suck the cell contents inside these tissues (Kirk, 1997).
- Once damaged, oxygen fills in the cells resulting to a change in color from silver to brown or black.
- Usually, the cells of leaves are not totally damaged. Undamaged cells that are still capable of developing when combined with damaged cells will lead to curling.
- Undeveloped leaves will dry up and fall.

Introduction (continued)

- *S. dorsalis* is a major concern in many countries for the last decade.
- *S. dorsalis* may remain undetectable until huge populations exist because of minute size, high reproductive potential and keen ability to adapt in new areas (Kumar et al., 2013).

Introduction (continued)

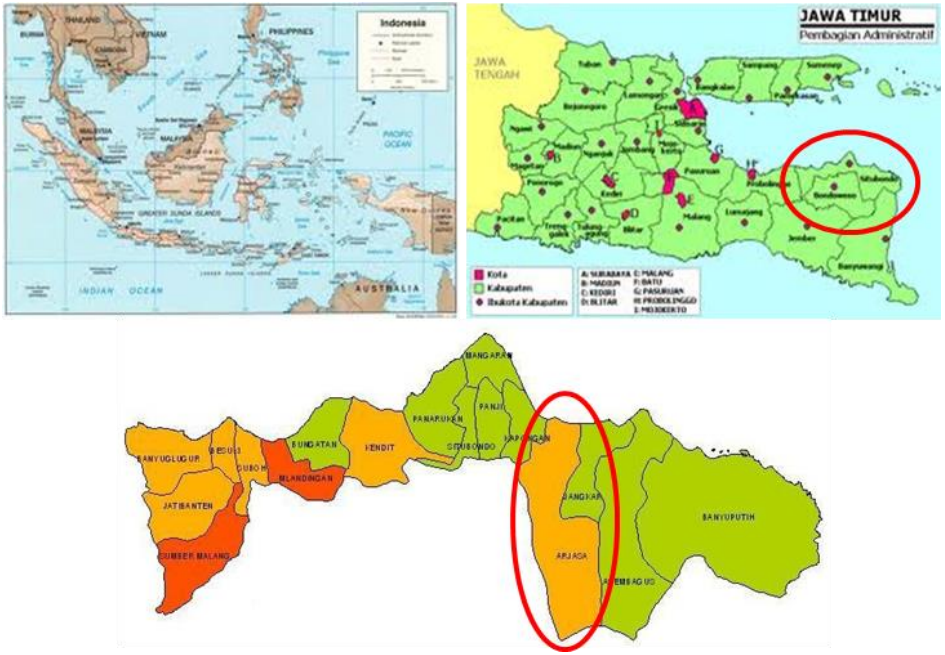
- In order to develop management strategies against *S. dorsalis*, basic information on infestation pattern of *Scirtothrips dorsalis* Hood (Thysanoptera : Thripidae) in developing shoot and flower of mango arumanis 143 is needed.

- The objective of the research was to determine directional preference and time of infestation of *S. dorsalis* associate with flush and flower growth stage of mango.

MATERIALS AND METHODS

Study Site

- The study conducted at PT Trigatra Rajasa, a national private company engaged in the business of plantations and agricultural trading.
- This company is located at Situbondo District in East Java. Situbondo is 220 Km East from Surabaya, the capital of East Java.



Study site

- The site is located 30 m above sea level
- Average rainfall of 780 mm per year.
- The climate has 5.5 wet and 6.5 dry months. These longer dry months with plenty of sunlight and short wet months make this area suitable for Arumanis 143 plantation.
- The plantation having 180 ha, 135 ha of which were planted with mango and the rest with teak plant *Tectona grandis* L.f.
- It had a rolling terrain with mango occupying the prime location and the teak in the marginal areas.
- The mango orchard was surrounded by a hedge of *Leucanea leucocephala* L. and *Acacia tomentose* (Willd.) interrupted occasionally by bamboo in low lying areas.
- It had feeder roads of 5 - 6 m wide to facilitate crop management operations.

Infestation pattern of *S. dorsalis* in shoots and flowers development

- Infestation was monitored using yellow sticky traps.
- The yellow sticky trap was positioned facing eight cardinal directions.
- Traps measure 29.5 x 21 cm.
- The trap was held in the upper canopy using wood pole and positioned 30 cm away from the foliage.

Material and methods

- The observation was done during the shoots and flower stages of since those stages are the most preferred stages by thrips (Lewis, 1973; CABI/EPPO, 1997; CABI, 2005; Kumar et al., 2013).
- The number of thrips caught was recorded daily for 10 consecutive days with 5 replications
- The counting of thrips trapped in the yellow sticky traps was done in the laboratory using a binocular microscope.
- The wind direction and speed was also recorded.
- Observations from Trap catch were subjected to Analysis of variance (ANOVA) and compared using Least Significant Difference (LSD).

RESULTS AND DISCUSSIONS

- Trap catches showed that there was an influx of *S. dorsalis* from all directions during shoots and flowers development
- Thrips started moving into the tree as early as bud break up to fully expanded leaves or up to fully opened florets
- These thrips moving into the mango, however, could not be ascertained and could be coming from other mango trees or weeds found in the study site

Mean number of *S. dorsalis* thrips in yellow sticky trap installed on eight cardinal directions during shoot development.

Direction	Day of Observations (Flush)										
	1	2	3	4	5	6	7	8	9	10	AVR
W	0,80 a	0,20 c	0,00 c	0,20 b	0,80 a	0,20 a	1,40 ab	2,80 ab	0,60 a	0,20 a	0,72 b
SW	0,80 a	0,20 c	0,40 bc	1,20 a	2,20 a	0,60 a	2,40 a	3,20 ab	0,00 a	0,00 a	1,10 ab
S	0,20 a	0,00 c	1,00 abc	0,40 ab	1,80 a	0,80 a	0,60 ab	0,20 b	0,20 a	1,00 a	0,62 b
SE	0,00 a	0,20 c	1,20 abc	0,00 b	0,80 a	0,60 a	0,20 b	0,60 b	0,40 a	0,20 a	0,42 b
E	0,80 a	2,80 ab	1,80 ab	0,20 b	2,20 a	0,40 a	0,80 ab	3,00 ab	1,00 a	0,20 a	1,32 ab
NE	0,60 a	4,00 a	2,60 a	0,20 b	1,60 a	0,20 a	1,20 ab	5,00 a	0,80 a	1,20 a	1,74 a
N	0,40 a	1,00 bc	1,40 abc	0,20 b	0,60 a	0,80 a	0,80 ab	3,20 ab	0,20 a	0,80 a	1,04 ab
NW	1,20 a	0,00 c	0,20 bc	0,00 b	1,00 a	0,40 a	0,20 b	3,00 ab	1,00 a	0,20 a	0,72 b
Total	4.80 bc	9.40 bc	8.60 bc	2.40 c	11.00 b	4.00 bc	7.60 bc	21.00 a	4,20 bc	3.80 bc	

Means value in each column with the same letter is not significantly difference (p = 0.05) based on Least Significant Difference (LSD) test
W = West SW = South West S = South SE = South East E = East
NE = North East N = North NW = North West

Mean number of *S. dorsalis* thrips in yellow sticky trap installed on eight cardinal directions during flower development.

Direction	Day of Observations (Flower)										
	1	2	3	4	5	6	7	8	9	10	AVR
W	0,00 a	0,00 a	0,40 a	0,60 a	0,60 ab	1,00 a	2,40 a	0,20 b	0,60 a	1,00 a	0,68 a
SW	0,20 a	0,20 a	0,60 a	0,20 a	0,20 ab	1,60 a	1,00 ab	0,20 b	0,80 a	0,60 ab	0,56 a
S	0,80 a	1,20 a	2,00 a	2,00 a	2,20 a	1,00 a	0,60 ab	0,00 b	0,40 a	0,00 b	1,02 a
SE	0,20 a	1,00 a	1,40 a	0,40 a	0,80 ab	1,60 a	0,20 b	1,40 a	0,40 a	0,40 ab	0,78 a
E	0,20 a	0,80 a	1,20 a	0,60 a	0,40 ab	0,60 a	0,60 ab	0,60 ab	1,00 a	0,00 b	0,60 a
NE	0,60 a	0,20 a	0,60 a	1,80 a	1,60 ab	0,40 a	0,20 b	0,20 b	0,80 a	0,60 ab	0,70 a
N	0,40 a	0,40 a	1,80 a	1,80 a	0,00 b	0,60 a	0,60 ab	0,20 b	0,80 a	0,20 ab	0,68 a
NW	0,20 a	1,40 a	1,40 a	0,20 a	0,40 ab	0,40 a	1,00 ab	0,40 b	0,40 a	0,20 ab	0,60 a
Total	2.60 d	5.20 abcd	9.40 a	7.60 ab	6.20 abcd	7.20 abc	6.60 abcd	3.20 bcd	5.20 abcd	3.00 cd	

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The daily development of leaves from shoot emergence to fully expanded leaves.

The daily development of flower from panicle elongation to full bloom stage.

CONCLUSIONS

North-East cardinal direction was the most preferred by *S. dorsalis*. It started to move into mango canopy since early shoot emergence and began to lean in certain direction in the second day of observation and peak number presented at day eight which total 21.00 adults were trapped per tree. *S. dorsalis* did not prefer certain direction of flower growth stage and peak number existed at day three (9.40 adults/per tree).

RECOMMENDATION

Further study is needed on the following: Movement *S. doralis* in mango orchard to ascertain the migration from others alternate host to mango and vice versa.

Thank you