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## Original Article

### Seasonal Abundance and Host Range of Tomato Leaf Miner *Tuta Absoluta* Meyrick (Lepidoptera: Gelechiidae) In Khartoum, Gezira and Kassala States of the Sudan

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#### Abstract

Seasonal abundance and host range of tomato leaf miner *Tuta absoluta* was studied in eight locations distributed in three States of Sudan (Khartoum, Gezira, and Kassala States). Pest survey was done by pheromone (3E, 8Z, 11Z tetradecatrien-1y-1 acetate) traps and characteristic symptoms of infestation in plants (infestation level). The survey covered the important solanaceous hosts; tomato, potato, egg plant and other crops or weeds. The results showed presence of the pest in all location surveyed. The number of infested plants closely matches the traps catches. The highest number of catches and the highest infestation was found on tomato followed by potato, egg plant and alfalfa *Medicago sativa*. The pest was reported for the first time on alfalfa and gubbain *Solanum dubium*. Traps placed in the up wind direction scored the highest catches. Generally the number of adult caught and infestation level increased from mid towards the end of the winter season on tomato and potato while in alfalfa the catches decrease toward the end of the winter season. The highest infestation was found in Gezira State followed by Kassala State and least in Khartoum State. The

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number of catches positively correlated with the increase in temperature and negatively correlated with the relative humidity although effects on the latter were non-significant. Further lines of research were suggested.

**Keywords:** *Tuta absoluta*, Tomato, Sudan, Biology, Management.

## Introduction

The tomato leaf miner *T. absoluta* (Meyrick) (Lepidoptera: Gelechiidae) is one of the most important lepidopterous pests associated with tomato (*Lycopersicon esculentum* L.) (Torres *et al.*, 2001; EPPO 2005). This pest invaded Europe through the Mediterranean coast, being first cited late 2006 in the Iberian Peninsula (Urbaneja *et al.*, 2007). In August 2007, the first affected tomato plantation was detected in the south of Catalonia, NE, and Spain (Batalla *et al.*, 2010). The pest was later detected in France, Italy, United Kingdom and the Netherlands (EPPO, 2009) where it became a significant problem in greenhouses and in open fields' all over the European countries. The main host plant of *T. absoluta* is tomato (*L. esculentum*), but this moth has also been reported from several solanaceous weeds, including *Solanum nigrum* and *Datura stramonium*. Damage has been also reported on eggplant (*Solanum melongena*) and pepper (*Capsicum annuum*). On potato (*Solanum tuberosum*) the larvae feed on the plant parts over the soil. Under appropriate climatic conditions and high population density, it becomes a major pest of potato as well (Tosevski *et al.*, 2011). Tomato leaf miner may multiply during summer months in outdoors but it is not expected to survive winter conditions because its development stops between 6 and 9°C (Barrientos *et al.*, 1998). Most likely the different developmental stages can survive in greenhouse conditions. Alternative host plants, especially *S. nigrum*, may play a very important role in rapid and continuous spreading of this pest in agro-ecosystems (Tosevski *et al.*, 2011). *Tuta absoluta* is considered a devastating insect pest of tomato and larvae prefer leaves, stems, buds, or the calyx (sepals of a flower) of tomato fruits. The larvae mine the leaves producing large galleries (blotch mines) and feed on mesophyll tissue. Dark granular excrement (frass) is often found near the entrance holes (FERA, 2009; and Desneux *et al.*, 2010). The larvae can destroy up to 100% of the leaf surface and damage 50–100% of fruits in severely attacked and untreated fields (EPPO, 2005). Al-Zaidi (2009) reported that *T. absoluta* can be found all the year round in greenhouses and in locations with mild winters. The use of pheromone traps is considered as a reliable method for timely detection of male moths of *T. absoluta* (Al-Zaidi, 2009; Baniameria and Cheraghian, 2012).

The tomato leaf miner *T. absoluta* was first detected in Sudan in 2010 from sex pheromones traps in Khartoum state (Mohamed *et al.*, 2012). Since then the pest was spread quickly to all tomato growing areas in Sudan destroying tomatoes in open fields and greenhouses. Mohamed *et al.* (2012) reported that the damage by *T. absoluta* can reach up to 80% in open filed and might reach 100% in greenhouses. The importance of this pest stems from its ability to affect all stages of the plant and can invade other Solanaceous crops, like potato, eggplant and wild species (Assaf *et al.*, 2013). Limited studies on this pest were done in the Sudan (Mohamed *et al.*, 2015). Therefore, the aim of this study is to shed light on the seasonal abundance and host range of the pest in Khartoum, Gezira and Kassala States of the Sudan.

## MATERIAL AND METHODS

### The Study areas

The study was conducted during two consecutive seasons 2011/2012 and 2012/2013 in Khartoum and Gezira States and for one season 2012/2013 in Kassala state. Three sites were chosen in Khartoum (Karary, Elezergab and Almahas-Kotrang) and Gezira States (Fadasi, wad ballal and Hantoob) whereas two sites were chosen in Kassala States (Gammam and Mastora). Four crops (potato, eggplant, tomato and alfalfa) were chosen to conduct the survey in Khartoum State, while tomato alone was surveyed in Gezira and Kassala States (Table 1 and fig 1). The survey was carried out to determine the presence, seasonal abundance and infestation levels of *T. absoluta* in surveyed crops.

### Survey of the pest

The presence of the pest was surveyed by two methods; Synthetic pheromone traps and infestation level

#### Synthetic pheromone traps:

Synthetic pheromones were used to monitor the presence of *T. absoluta* males in the studied crops. Tuta optima pheromone traps produced by Russell IPM London, UK, was used. This trap provide Constant and steady release of pheromones up to six weeks. The traps were loaded with 0.8 mg of the sex pheromone (3E, 8Z, 11Z tetradecatrien-1y-1aceate).

#### Installation of the traps

Water traps were prepared locally using plastic containers, 25 cm diameter with a capacity of approximately 5 liters of water. Drops of liquid soap were added to the water to reduce the surface tension. The lure was secured inside small - perforated vial fixed with a metal wire (plate 1). Each trap was placed 0.3 m above ground level. The distance between traps was 25 m in all experimental sites. Two traps were used per sites in Khartoum State whereas three traps per site were used in Gezira and Kassala States.

#### Data collection

The traps were checked after 24 hours in each week. Ten readings for ten weeks were taken in each season in all experimental sites. The number of adult males of *T. absoluta* per trap was counted and recorded. The average catch per trap per site per 24 hours every week was recorded.

#### Assessment of infestation level

Ten plants of each crop (tomato, potato and eggplant) were selected randomly to assess the infestation levels of *T. absoluta* in each site. Selected plants were checked

for the presence of tuta mines. The average number of infested plants (contains one or more mines) per site every week was recorded.

### **Influence of Climatic Factors on population of *T. absoluta***

Following the studies of Ye and Liu (2005); Chen and Ye (2007), the correlation analysis was done for means of males captured per trap and means of major climatic factors; temperature (Temp.) and relative humidity (RH) in all seasons. Regression analysis was used to select which climatic factors influenced the population of *T. absoluta* males in all studied sites. The meteorological data used in this study were brought from the Sudan Meteorological Authority (SMA), Khartoum, Sudan. SPSS software version 19; SPSS Inc., Chicago, USA was used for data analysis.

### **Statistical Analysis**

The obtained data was statistically analyzed using analysis of variance using SAS program (2006). The means were separated using Duncan Multiple Range Test.

**Table1. Area, host plant and traps per site surveyed**

State	Season	Site	Area(ha)	Host plant	Traps/ site
Khartoum	2011/2012	Karary	1	Potato	2 Traps
		Khartoum North	1.2	Egg plant	2 Traps
		Almahas-Kotrang	2.5	Tomato	2 Traps
Gezira	2011/2012	Wad balal	0.8	Tomato	3 Traps
		Fadasi	2	Tomato	3 Traps
		Hantoob	1.2	Tomato	3 Traps
Kassala	2013/2014	Gammam	0.8	Tomato	3 Traps
		Mastora	1	Tomato	3 Traps



**Fig 1. Map showing the location of the site surveyed in each State**





**Plate 1: Water pheromone trap used for monitoring of *T. absoluta* males**

## RESULTS

### Catches of traps and infestation level in Khartoum State

The results of the trap catches and infestation levels showed that *T. absoluta* is present in all locations surveyed. The infestation levels closely match the trap catches (Table2). The infestation level ranges from 8%-28% whereas the catches ranges from 39-194 adult male/site in season 2011/2012, on the other hand in season 2012/2013 the infestation level ranges from 9%-28% whereas the catches ranges from 45-205 adult male/site. The average number of male caught per traps in season 2011/2012 ranges from 68-378 in tomato, 31-256 in potato, 13-78 in eggplant and 9-139 in alfalfa, while the average infestation level ranges from 10%-50% in tomato, 0-50% in potato and 0-30% in eggplant (Fig2 and Fig4). On the other hand the average number of males caught per traps in season 2012/2013 ranges from 67-442 in tomato, 44-156 in potato and 27-64 in eggplant, while the average infestation level ranges from 10%-70% in tomato, 0-30% in potato and 0-20% in eggplant (Fig3 and Fig5). The highest level of infestation and catches per traps was recorded in Almahas-Kotrang while the lowest was recorded in Elezergab. First and second season data of the catches and infestation follow a similar trend, however the levels were higher in the second season. The highest numbers of males were captured in traps placed near the up wind borders.

### Host preference

Tomato was the highest infested plant with high catches of male during the two seasons, followed by potato, alfalfa and eggplant (Fig2 and Fig3). The average catches of the first season (2011-2012) in tomato, potato, eggplant and alfalfa were; 256, 82, 378 and 139 adult males/trap/week respectively. However the respective means for the

second season were 442, 156 and 64 for tomato, potato and eggplant. The highest infestation of leaves in the first season (2011-2012) occurred in tomato (50%) and potato (50%) followed by eggplant (20%), on the other hand the highest infestation of leaves in the second season (2012-2013) occurred in tomato (70%) followed by potato (30%) and eggplant (20%) (Fig4 and Fig5). *T. absoluta* was also found in *Solanum bubium* gubain in the Gezira and Khartoum States. (Plate 2).

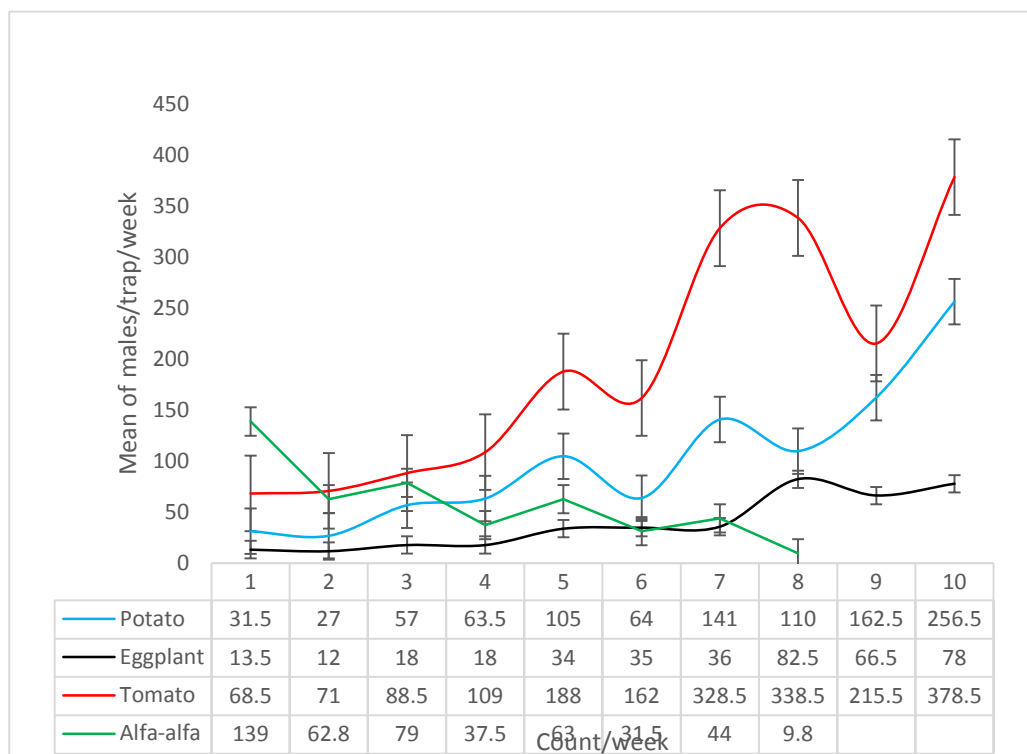
**Seasonal abundance**

Results in Fig 4 and 5 showed the infestation levels of leaves in all crops and seasons increased from med to end of the winter season. Tomato crop recorded the highest infestation level than the other crops during both seasons. The populations of *T. absoluta* increased from 4<sup>th</sup> to 10<sup>th</sup> week from mid January to end February of winter season in tomato, potato and egg plant, while in alfalfa it decreased from 3<sup>rd</sup> to 8<sup>th</sup> week from end April to mid March (Fig 2 and 3).

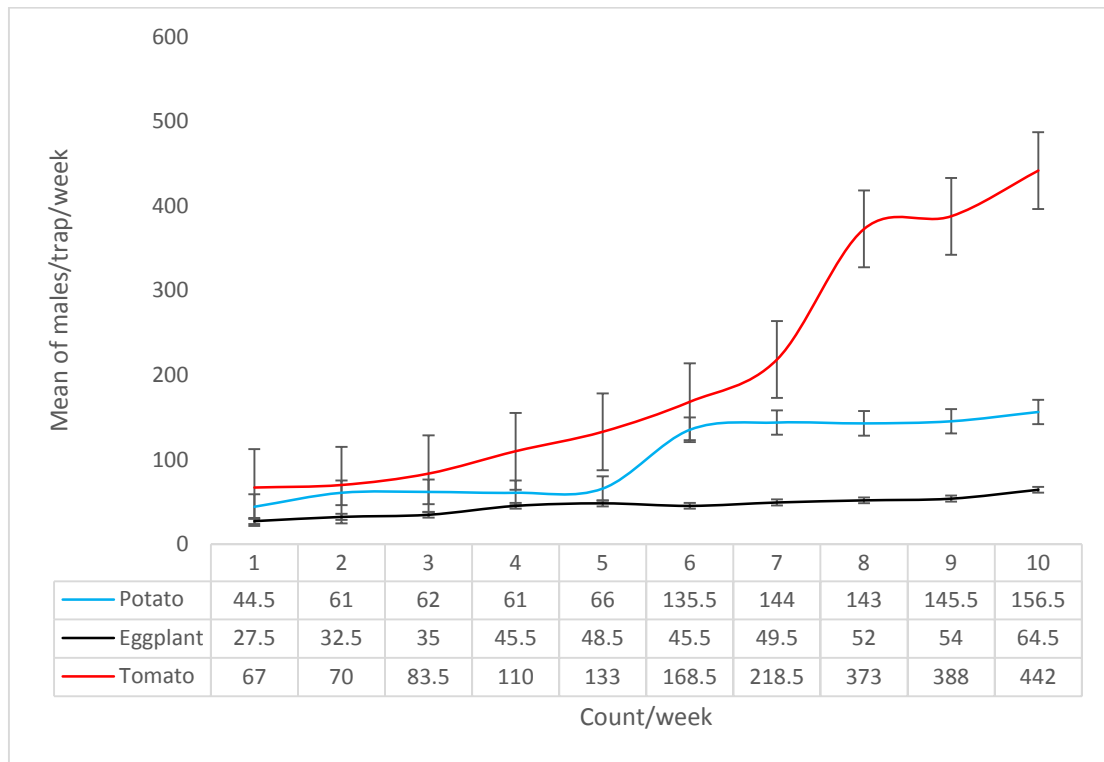
**Table2. Trap catches and infestation level of *T. absoluta* in Khartoum State**

Site	Crop	Total mean of males caught per trap		Infestation(%) level	
		1 <sup>st</sup> season	2 <sup>nd</sup> season	1 <sup>st</sup> season	2 <sup>nd</sup> season
Karary	Potato	101.8	101.9	22	15
Elezergab	Eggplant	39.4	45.5	8	9
Elmahas-Kotrang	Tomato	194.8	205.4	28	28
West Omdurman	Alfalfa	58.3	NDC	NDC	NDC

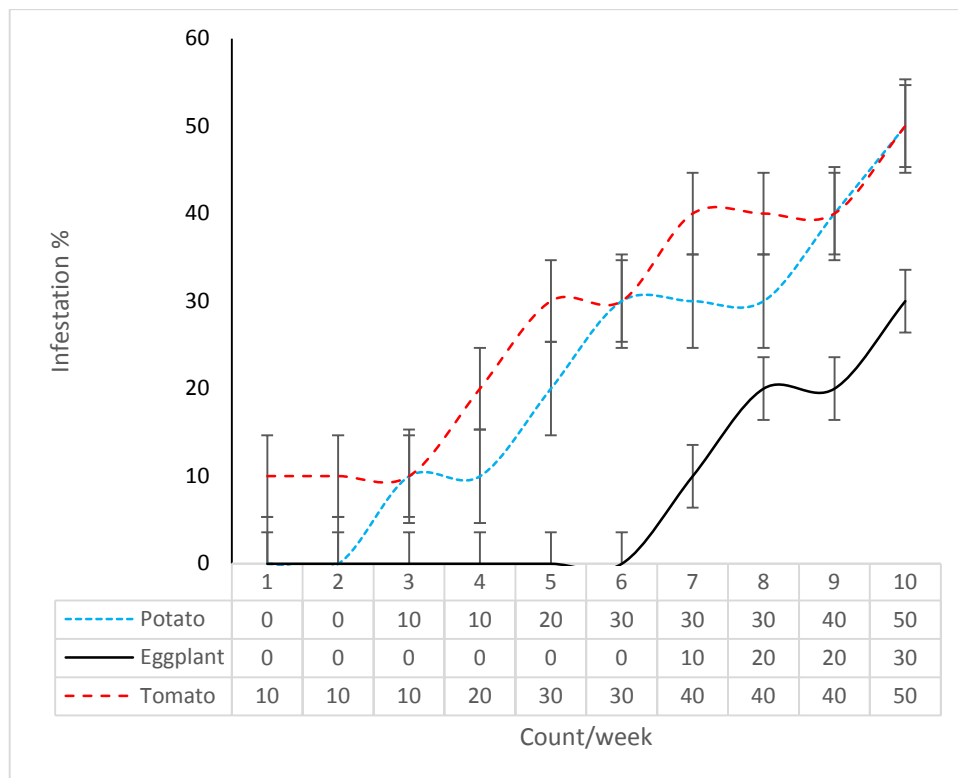
NDC: No data collected



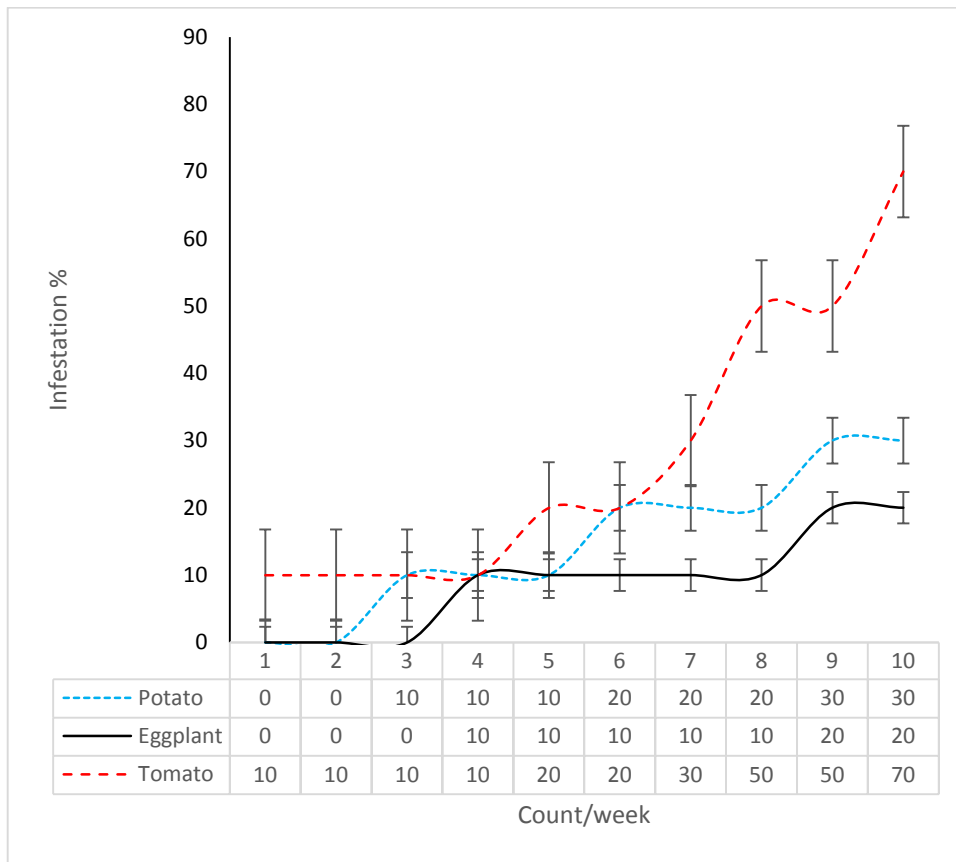
**Fig 2. Host preferences and Seasonal abundance of *T. absoluta* in Khartoum State season 2011-2012**



**Fig 3: Host preference and seasonal abundance of *T. absoluta* in Khartoum State season 2012-2013**



**Fig 4: Infestation levels of *T. absoluta* in Khartoum State season 2011-2012**



**Fig 5: Infestation levels of *T. absoluta* in Khartoum State season 2012-2013**



**Plate 2: Typical Symptoms of infestation of *T. absoluta* on *Solanum dubium* gubbain**



### **Catches of traps and infestation level in Gezira State**

The results of the trap catches and infestation levels showed that *T. absoluta* is present in all locations surveyed. The infestation levels closely matches the trap catches (Table3). The infestation level ranges from 82%-100% whereas the catches ranges from 554-408 adult male/site in season 2011/2012. On the other hand in season 2012/2013 the infestation level ranges from 93%-98% whereas the catches ranges from 572-644 adult male/site (Table3). The average of male caught per traps in season 2011/2012 ranges from 339-666 in Fadasi site, 250-645 in Wad balal site and 360-861 in Hantoob site, while the respective average of infestation level ranges from 60%-100%, 100-100% and 30- 100% (Table 4,5 and 6). Meanwhile the average of male caught per traps in season 2012/2013 ranges from 398-827 in Fadasi site, 372-827 in Wad balal site and 313-763 in Hantoob site, while the average infestation level ranges from 70%-100%,80-100% and 30-100% respectively (Table 4,5 and 6). The highest level of infestation and catches per traps was recorded in Hantoob, while the lowest was recorded Wad balal. The results also indicated that there is a highly significant difference between all location in both seasons except Fadasi location in season one (2011-2012). The highest numbers of males were captured in traps placed near the up wind borders.

### **Seasonal abundance**

Results in (Table4, 5 and 6) showed that the infestation levels of leaves in all locations and seasons increased from med to end of the winter season.

### **Catches of traps and infestation level in Kassala State**

The results of the trap catches and infestation levels showed that *T. absoluta* is present in all locations surveyed. The infestation levels closely matches the trap catches. The infestation level in Gammam site is 72% whereas the corresponding catches is 631 adult male/site, on the other hand the infestation level in Mastora is 82%, whereas the catches is 549 adult male/site. The average of male caught per traps in Gammam site ranges from 369-1309 while in Mastora site 218-1150. The respective average infestation level in these sites ranges from 20%-100% and 40-100% (Table6). The highest level of infestation and catches per traps was recorded in Gammam, while the lowest was recorded in Mastora. Also the result indicated that there a highly significant differences between location surveyed. The highest numbers of males were captured in traps placed near the up wind borders.

### **Seasonal abundance**

Results in Table8 showed that the infestation levels of leaves in Gammam and Mastora increased from med to the end of the winter season, i.e. from (1/2/2013 to 8/3/2013).

**Table 3. Catches and infestation level of males of *T. absoluta* on tomato at Fadasi, Gezira State Season (2011-2012 and 2012-2013)**

Season 2011-2012			Season 2012-2013		
Date	Average of catches/ trap	Infestation(%) level	Date	Average of catches/ trap	Infestation (%) level
28/2/2012	339.7 c	60	24/2/2013	398.7 d	70
6/3/2012	407.3 bc	80	3/3/2013	446.3 cd	80
13/3/2012	433.3 abc	100	10/3/2013	372.0 d	80
20/3/2012	464.3 abc	100	17/3/2013	433.7 cd	100
27/3/2012	525.0 abc	100	24/3/2013	561.7 bc	100
3/4/2012	666.3 a	100	31/3/2013	574.3 bc	100
10/4/2012	526.0 abc	100	7/4/2013	666.0 ab	100
17/4/2012	599.0 ab	100	14/4/2013	701.3 ab	100
24/4/2012	504.3 abc	100	21/4/2013	748.0 a	100
1/5/2012	519.0 abc	100	28/4/2013	827.3 a	100
Overall mean	498.4	93	Overall mean	572.9	93
C.V	26.3		C.V	15.2	
SE	25.6		SE	45.2	
level of significance	N.S		Level of significance	***	

C.V; Coefficient of variation, SE; Standard error, N.S; Non significant, \*\*\*; Significant  $p \geq 0.001\%$   
Means followed by the same letter in the same column were not significantly different at  $p \geq 5\%$ .

**Table 4. Catches and infestation level of males of *T. absoluta* on tomato at Wad balal, Gezira State Season (2011-2012 and 2012-2013)**

Season 2011-2012			Season 2012-2013		
Date	Average of catches/ trap	Infestation(%) level	Date	Average of catches/ trap	Infestation(%) level
28/2/2012	255.7 d	100	24/2/2013	398.7 d	80
6/3/2012	250.7 d	100	3/3/2013	446.3 cd	90
13/3/2012	309.0 cd	100	10/3/2013	372.0 d	100
20/3/2012	387.67 c	100	17/3/2013	433.7 cd	100
27/3/2012	346.7 cd	100	24/3/2013	561.7 bc	100
3/4/2012	409.3 c	100	31/3/2013	574.3 bc	100
10/4/2012	360.7 cd	100	7/4/2013	666.0 ab	100
17/4/2012	533.7 b	100	14/4/2013	701.3 ab	100
24/4/2012	589.0 ab	100	21/4/2013	748.0 a	100
1/5/2012	645.7 a	100	28/4/2013	827.33 a	100
Overall mean	408.8	100	Overall mean	572.9	97
C.V	14.8		C.V	15.2	
SE	37.8		SE	45.2	
Level of significant	***		Level of significant	***	

C.V; Coefficient of variation, SE; Standard error, \*\*\*; Significant  $p \geq 0.001\%$   
Means followed by the same letter in the same column were not significantly different at  $p \geq 5\%$ .

**Table 5: Catches and infestation level of males of *T. absoluta* on tomato at Hantoob, Gezira State Season (2011-2012 and 2012-2013)**

Season 2011-2012			Season 2012-2013		
Date	Average of catches/trap	Infestation(%) level	Date	Average of catches/trap	Infestation(%) level
2/3/2012	325.3 e	30	1/3/2013	360.7 c	80
9/3/2012	313.7 e	50	8/3/2013	432.0 c	100
16/3/2012	372.7 e	70	15/3/2013	442.3 bc	100
23/3/2012	468.7 d	80	22/3/2013	581.0 abc	100
30/3/2012	516.7 d	90	29/3/2013	665.7 abc	100
6/4/2012	664.7 c	100	5/4/2013	743.3 ab	100
13/4/2012	681.7 bc	100	12/4/2013	779.3 a	100
20/4/2012	689.3 bc	100	19/4/2013	779.0 a	100
27/4/2012	751.3 ab	100	26/4/2013	803.7 a	100
4/5/2012	763.3 a	100	3/5/2013	861.7 a	100
Overall mean	554.7	82	Overall mean	644.9	98
C.V	7.2		C.V	25.4	
SE	36.0		SE	65.1	
Level of significant	***		Level of significant	***	

C.V; Coefficient of variation, SE; Standard error, \*\*\*; Significant  $p \geq 0.001\%$

Means followed by the same letter in the same column were not significantly different at  $p 5\%$ .

**Table 6: Catches and infestation level of males of *T. absoluta* on tomato at Gammam and Mastora, Kassala State Season (2012-2013)**

Gammam I			Mastora		
Date	Average of catches/trap	Infestation(%) level	Date	Average of catches/trap	Infestation(%) level
4/1/2013	277.0 e	40	4/1/2013	391.3 c	20
11/1/2013	288.7 e	50	11/1/2013	442.3 c	30
18/1/2013	218.7 e	70	18/1/2013	369.0 c	50
25/1/2013	227.3 e	80	25/1/2013	415.7 c	70
1/2/2013	260.0 e	80	1/2/2013	395.7 c	80
8/2/2013	534.3 d	100	8/2/2013	502.3 cb	100
15/2/2013	591.3 cd	100	15/2/2013	633.3 b	100
22/2/2013	679.7 c	100	22/2/2013	662.3 b	100
1/3/2013	1266.7 a	100	1/3/2013	1198.0 a	100
8/3/2013	1150.3 b	100	8/3/2013	1309.0 a	100
Overall mean	549.4	82	Overall mean	631.9	75
C.V	11.1		C.V	14.5	
SE	71.4		SE	63.3	
Level of significant	***		Level of significant	***	

C.V; Coefficient of variation, SE; Standard error, \*\*\*; Significant  $p \geq 0.001\%$

Means followed by the same letter in the same column were not significantly different at  $p 5\%$ .

### Influence of temperature and relative humidity on the abundance of *T. absoluta*

The result in Table 7 showed that there is a positive Correlation between numbers of males caught and temperature in all location surveyed. However these effects were mostly significant in Khartoum followed by Gezira State (Table 7). On the other hand there is a negative correlation between relative humidity and number of adult caught per trap, although the correlations were mostly non significant (Table 7). The effects followed similar trend in various crop surveyed regardless of the location and season, although they were clear in data from Khartoum State.

**Table 7. Correlation between temperature, relative humidity and number of male adults of *T. absoluta* caught in various locations surveyed**

	Site	Season	Mean	Temperature			Relative Humidity		
				Mean	Correlation	Los	Mean	Correlation	Los
Khartoum State	Karary	2011-2012	101.8	22.2	+ 0.49 <sup>NS</sup>	0.1	30	- 0.2 <sup>NS</sup>	0.3
		2012-2013	101.9	23.8	+ 0.49 <sup>NS</sup>	0.1	37.7	- 0.2 <sup>NS</sup>	0.3
	Elezergab	2011-2012	39.4	24.6	+ 0.7*	0.0	27.2	- 0.4 <sup>NS</sup>	0.1
		2012-2013	45.5	24.5	+ 0.8**	0.0	26.3	- 0.1 <sup>NS</sup>	0.4
	Almahas-Kotrang	2011-2012	194.8	24.8	+ 0.6*	0.0	23.0	- 0.05 <sup>NS</sup>	0.4
		2012-2013	205.4	26.3	+ 0.6*	0.0	22.7	- 0.9**	0.0
Gezira State	Fadasi	2011-2012	498.4	30.3	+ 0.4 <sup>NS</sup>	0.1	24.6	+ 0.6*	0.0
		2012-2013	572.9	30.5	+ 0.4 <sup>NS</sup>	0.1	23.7	- 0.4 <sup>NS</sup>	0.1
	Balal	2011-2012	408.8	30.4	+ 0.5 <sup>NS</sup>	0.1	24.6	- 0.2 <sup>NS</sup>	0.3
		2012-2013	572.9	30.5	+ 0.4 <sup>NS</sup>	0.1	23.7	- 0.4 <sup>NS</sup>	0.1
	Hantoob	2011-2012	554.7	31.6	+ 0.6*	0.0	24.2	- 0.3 <sup>NS</sup>	0.2
		2012-2013	644.0	30.8	+ 0.3 <sup>NS</sup>	0.2	22.6	- 0.7*	0.0
Kassala State	Gammam	2012-2013	549.4	27.7	+ 0.5 <sup>NS</sup>	0.1	41.3	- 0.5 <sup>NS</sup>	0.1
	Mastora	2012-2013	631.9	27.7	+ 0.5 <sup>NS</sup>	0.1	41.3	- 0.5 <sup>NS</sup>	0.1

\*Pearson Correlation is significant at the 0.05 level (1 tailed). \*\* Correlation is significant at the 0.01 level (1 tailed). <sup>NS</sup> Not Significant (1 tailed). Los; Level of significant

### Discussion

Tomato leaf miner was observed in all the three states. The infestation was severe in tomato and moderate in potato and eggplant. The study reported for the first time in Sudan the infestation of alfalfa and gubain *Solanum dubium* by *T. absoluta*. The population of tomato leaf miner *T. absoluta* were relatively high in all States compared to the reported action threshold levels of 40-100 males adults/trap/ day (Benvenga *et al.* 2007). As indicated in the obtained results, means number of trapped males was low at the beginning of tomato growing season then increased gradually towards the end of the plant cycle. Generally, the higher numbers of males were captured in traps placed near the up wind borders. These observations are in agreement with, Miranda *et al* (2005), Abbas and Chermiti (2011), Mohamed and



Mahmoud (2013) and Assaf *et al.* (2013), who reported that the average number of trapped males was low at the beginning of tomato growing season and gradually increased during the harvesting period of the crop with higher number of males captured in traps placed near the up wind borders. Further the results also in accordance with those of Miranda *et al.* (1998) and Locordaire and Feuvrier (2010), who reported increase in leaf miner captures during the crop season. The current study showed that *T. absoluta*; prefer warmer climatic conditions as the significant correlation was shown with temperature. These findings agrees with Duric *et al.* (2012), who reported that *T. absoluta* prefer areas with a warmer Mediterranean climate. The result showed a negative correlation, although no significant between traps catches and relative humidity, No data focusing on this relation was found in the available literature.

The means numbers of trapped males was higher in the late sown tomato during March- May in Gezira State when compared with that of Khartoum and Kassala States. These results were in full agreement with Mohamed *et al.* (2012), who mentioned that the number of trapped males was higher in the late sown tomato during March- May at Elbagair East site, Gezira State.

Severe damage was observed on potato during the survey period in Khartoum State. These results agree with Mohamed (2012). The International Potato Centre (CIP, 1996) reported *T. absoluta* as one of the major potato pests that attacks foliage in the warm zones. Pereyra and Sanchez, (2006) suggested that *T. absoluta* could become a real problem to potato under favorable field conditions. However, EPPO, (2005) reported that this pest does not attack potato tubers. Severe damage was observed on leaves of eggplant at Elezergab area in Khartoum State. Similar results were reported by Mohamed (2012), who reared adults of *T. absoluta* on eggplant leaves.

The current result reported for the first time the infestation of alfalfa and gubain by *T. absoluta* in Sudan. No data showing the infestation of these plants by *T. absoluta* was found in the available literature. Since this pest showed wide distribution in three major vegetable producing States in Sudan, the further lines of research should including study of biology of the pest and its possible management practices.

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