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FIELD TRIALS TO EVALUATE THE SUCCESSIVE SPRAYING WITH NATURAL MATERIALS ON *Tetranychus urticae* KOCK IN FESTING SOYBEAN PLANTS AT QALIOBIA GOVERNORATE

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ABSTRACT

Two field experiments were conducted to study the effect of foliar application with different concentration of different types of organic materials on the mobile stages of *Tetranychu surticae* infesting soybean plants. The experiments were conducted in randomized complete block design with13treatments during the two successive seasons (2013& 2014) at Qalubiya Governorate. The soybean plants were sprayed with 6 successive sprays, 15 days between each spray.The three *lupines terms* extract (L.T.Ex.) concentrations (0.01; 0.02 & 0.03%) gave good effects against the mobile stages of *T. urticea*.Also, results show that the bio organic liquid tea manure (M.Tea) with two concentration (5 & 10%) gave good effects against the mobile stages of *T. urticae*.On the other hand, mixed of *lupines terms* extract with three concentrations and M.Tea with two concentrations, gave good effects against the mobile stages of *T. urticae* comparing with unmixed compounds and its concentrations and recommended compound (Vertimic).Data show that the highest reduction of the mobile stages of *T. urticea* was 97%, as mean value, by M.Tea at the rate of 10% + L.T.Ex. at concentration of 0.02% or 0.03% when comparing with control. Vertimic gave 96% after 6 successive sprays against the mobile stages of *T. urticae*. In the second year, similar results are obtained with some exceptions. Statistical analysis show significant differences between the 12concentrations of the tested natural compounds and recommended compound (Vertimic) against the mobile stages of *T. urticae*.

Keywords: Soybean, Vertimec 1.8%, *Lupinus* terms (L.T. Ext.), biogas tea manure (M.Tea).

INTRODUCTION

Soybean,*Glycine max* (L.) is a major legume crop in tropical and subtropical areas all over the world, it received a great attention because it's value as an animal feed crop and for its edible and industrialises. Its meal is the protein choice for livestock and poultry producers' worldwide(Mohamed *et al.,* 2007).It is considering as very important source of edible vegetable oil and protein, where seeds contains about 40% protein and 20% edible vegetable oil as well as 30% carbohydrates, 10% total sugar and 5% ash (IITA, 1993). The soybean meal is rich in minerals, particularly calcium, phosphorus and iron (IITA, 1992)and also has good content of the vitamins, thiamins, riboflavin and niacin (Tiamigu and Idowu, 2001). The oil is rich in essential fatty acid**s** and devoid of cholesterol and also increasingly being used for biodiesel (Acikgoz*et al.,* 2009**)**. In Egypt, soybean is considered one of the relatively new crops introduced into Egyptian agriculture, which contributes to reduce the shortage in oil production and to reduce the gap for the protein and oil. So, all efforts are being exerted to improve and increase its seed yield and

quality, among these planting the best cultivar with suitable plant density and distribution(Seadh and Abido, 2013).Soybean crop attacked by many insects such as spider mites, aphids, cotton leaf worm, and many pests (Chaudhary, 2003).The two-spotted spider mite, *T. urticae*Koch is the most important pest. Its phytophagous nature, high reproductive potential and short life cycle rapid resistance developmentto many acaricides often after a few applications. On the other hand, the great reliance on chemical pesticides had its serious drawbacks, manifested in resistance problems and high residue levels in food products (fruits, vegetables, grains and seeds) that may hinder its marketing (Gamal *etal.,* 2007).Anaerobic transformation of organic wastes is a process which involves many different groups of bacteria, such as hydrolysing, acidifying, acetogenic and methanogenic bacteria (Demirel and Scherer, 2008).

Ferry *et al.,* (2007)found that, dimethyl disulfide (DMDS) in a biocontrol strategy against *Delia radicum*is attractive for the main natural enemies of the fly . and parasitoids of the fly pupae. Also found DMDS was to be an ovipositor repellent for the fly . These two coupled effects (repel the pest and attract the predators) may offer a great advantage in comparison to other strategies using info chemicals targeting only one of the two. Also, (Jixiu-Lin, 2006) reported that ,biogas slurry can control 23 kinds of diseases and 14 tapes of pests from 13 kinds of agronomic crops . With the slurry clarification and filtration spray directly can prevent the pests of yellow and red spiders of citrus. In General, red and yellow spiders' mortality reached 98.5% .

On the other hand, Plants synthesize several substances to protect themselves against predators , including many secondary metabolites as well as a battery of defense proteins . Alkaloids are considered useful for this purpose. Quinolizidine alkaloids, pure or in mixtures of plant extract, can be used to protect plants against noxious insects.. (Gulewicz, and Trojanowska, 1995) .

The main alkaloid present in *L.termis*is (dl)-lupanine (Fig. 1), but other alkaloids have beenreported in lesser or trace amounts (Mohamed,M.H. , *et al.,* 1991) ; Mohamed, M.H.& El-Shorbagi, A-N.A., 1993) .

The aim of the present study was to study the effect of aqueous extract of lupine seeds (white lupine socked water) and bio organic liquid tea manure (bio gas animal liquid manure) on soybean plants to reduce the infestation with *T.urticae*and finally possibility of reducing or eliminate chemical pesticides to produce high quality and clean food product.

MATERIALS AND MEHODS

Field spraying:

Two field experiments were conducted in privet farm at Qaluobiya Governorate, E*gyp*t during the two growing summer seasons of 20013/2014.The experiments were designed in randomized complete block design with four replications. Each plot designed as rows. Each

experimental unit area included 88 rows,70 cm width and 4 m lengtheach.The 13 concentration of four materials as follows :Vertimec 1.8 (40cm³/100LW); *lupines terms*extract(L.T. Ex.) with three concentrations (0.01; 0.02 & 0.03%); Bio organic liquid tea manure (M. Tea) with two concentration (5 & 10%). Mixed of *lupines terms* extract and tea manure (M.Tea 5% + L.T.Ex. 0.0 1%; M.Tea 5% + L.T. Ex. 0.0 2% &M.Tea 5% + L.T. Ex.0.0 3%) and (M.Tea10% + L.T. Ex. 0.0 1 %; M.Tea10% + L.T. Ex. 0.0 2 % &M.Tea10% + L.T. Ex.0.0 3 %) and control treatment (water). The experimental field was prepared as normal method . In Egypt, soy bean fields needs about (150 kg /fed calcium superphosphate 15.5% P_2O_5) was applied during soil preparation . Soybean seeds were mixed with Rhizobium bacteria (*Brady rhizobium japonicum*) then sown in hills on 19 and 18May and Soybean seeds were harvest at 7 and 10 of Sep. in the first and second seasons, respectively.

Preparation of Bio Organic Liquid Manures (Bio gas manure tea):

It is prepared using animal farm dung as base material. The basic principle is to allow a mixture of animal residues intextile Bag and immersed in water with rate of 1: 2 (w/v)to ferment over a certain periods in a plastic water container and then closed and stirred every 3 days for 28 day. The biomass in the textile bag will get fully fermented passes Demirel and Scherer, 2008&Ntaikou*et al.,* 2010).

During the fermentation process samples of the fermented manure at the start (three days)and after 7 days was analysis and recorded.The liquid manure would ready in 10 : 20 days for usewhichsieved and diluted with water before spraying. The standard dilution is one part liquid manure in ten parts water and sprayed on the foliage(Thimmaiah, 2010). Spraying should be done in the evening or cool sunshine hours.

Preparation of *Lupinu stermis* Extract (De-bittering process) :

Alkaloids are the source of bitter in *Lupinustermis*L .seeds **.** De-bittering process involving soaking and washing with water several times.

Nearly 500 g of lupineterms seeds socked in 3 L/Tap water for 24 hours and then filtered soaked and saves the filtrate in the refrigerator after that, the seeds were boiled in 3 L/Wfor one hours at 70°C and then allowed to cool and drain the filtrate and added to the previous filtrate and kept in the refrigerator after that re-socked the seeds in 4 liters of water for 2 days then filtered and the filtrate was added to the former to be one liter filtrate which containstotal alkaloids resulted from the de-bittering process. After that the seedsdried to separate and determine the total alkaloids remaining after the de-bittering process .

Determined The quantity of Total Alkaloids In Lupine Seeds Socking Water :

Total alkaloid in dried lupine seeds were determined quantitatively before and after socking using Harborne (1983)method.

$$\% \text{ Total alkaloid} = \frac{W2 - W1}{W \text{ of sample}} \times 100$$

Where : W1 = Weight of empty filter paper,
W2 = Weight of filter paper + Alkaloid ppt
W = Weight of sample

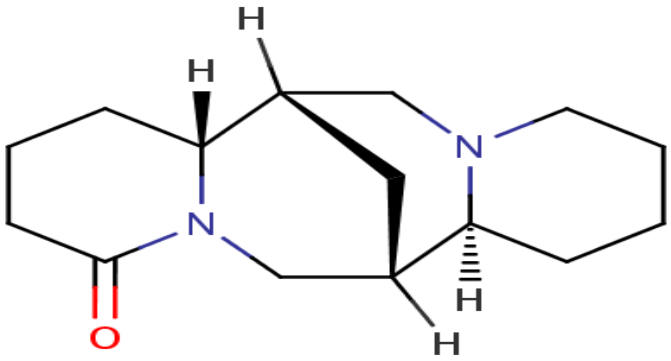

Fig. (1). Lupanine, main . Quinolizidine alkaloids found in *Lupinustermis* seeds (quinolizin-1-yl]methanol).

Statistical analysis:

The percent reduction of infestation was statistically calculated according to the equation of **(Henderson and Tilton 1955)**, the data were subjected to analysis of variance (ANOVA) and the means were compared by L.S.D. test at 0.05 level, using SAS programme**(SAS Institute, 1988)**.

RESULTS AND DISCUSSION

Integrated pest management (IPM) is the use of all available means to maintain pestpopulations below levels that would cause economic loss while minimally impacting theenvironment. Several tactics could be utilized in IPM programs as chemical, cultural, physical and biological control (Vreysen *et al.,* 2007).

First season (2013):

In the first season (2013), the average pre-spraying counts of the mobile stages of *T. urticae*were 75.3-132.3/10 leaves (Table 1).

Results in Table (1) indicate that in first year (2013), the soybean plants were sprayed 6 successive sprays; 15 days between each spray .

In the first spray the three concentrations (0.01; 0.02 & 0.03%)ofL.T. Ex. gave 87, 88 and 91% reduction of the mobile stages of *T. urticae*, respectively. In the second spray the three concentrations gave 89, 91 and 95% reduction of the mobile stages of *T. urticae*, respectively. While, in the third spray the three concentrations (0.01; 0.02 & 0.03%) of L.T. Ex. gave 93, 95 and 97% reduction of the mobile stages of *T. urticae*, respectively. Whereas, in the fourth spray the three concentrations gave 96, 98 and 98% reduction of the mobile stages of *T. urticea*, respectively. the decreases of the mobile stages of *T. urticae*, after 4th spray, ranged from 95% by M.Tea at rate of 5% to 99% when Vertimec or mixture of M.

Tea at 10% and L.T. Ex.at any rate used in this study .In the fifth spray the three concentrations (0.01; 0.02 & 0.03%) of L.T. Ex. gave 93, 96 and 97% reduction of the mobile stages of *T. urticea*, respectively. In the sixthspray the three concentrations (0.01; 0.02 & 0.03%) of L.T. Ex. gave 78, 84 and 90% reduction of the mobile stages of *T. urticae*, respectively. Finally, the six uccessivespraysgave 89, 92 and 95%reduction with the three concentrations (0.01; 0.02 & 0.03%)ofL.T. Ex.against the mobile stages of *T. urticae*, respectively.

Lupine terms extract appeared high biological activity against the phytphagus mite, *T. urticae*since it caused high reduction of mites population throw their three concentration, its effect due to the quinolizidine alkaloids content in the lupine terms seeds which may be effects on the mites and insects nerves' system and on the feeding behaviors. Furthermore, the mixures with the bio organic manure tea caused rises in mites reduction. The effect of lupine extract due to its quinolizidine alkaloids content (Krzymanska, 1967)who reported that, scientific data has shown that quinolizidine alkaloids play a role in the resistance of some lupine varieties to the pea aphid (*Acyrthosiphonpisum* Harris) due to their ability to inhibit the development of this pest population and add that alkaloidal extracts have an important influence on the feeding and development of larvae of potato beetle mortality(Gulewicz and Trojanowska, 1995).

Respect of the bio organic liquid tea manure (M.Tea), results in Table (1) indicate that this treatment with two concentration (5 & 10%) gave good effects against the mobile stages of *T. urticea*.

Also, results in Table (1) indicated that in first year (2013), the soybean plants were sprayed six successive sprays; 15 days between each spray; the bio organic liquid tea manure (M.Tea) with two concentration (5 & 10%)gave good effects against the mobile stages of *T. urticae.*

In the first spray with the two concentrations (5&10%) of M.Tea gave 88 and 90% reduction of the mobile stages of *T. urticae*, respectively. In the second spray the two concentrations (5&10%) of M.Teagave 88 and 92% reduction of the mobile stages of *T. urticea*, respectively. While, in the third spray the two concentrations (5&10%) of M.Tea gave 93 and 96% reduction of the mobile stages of *T. urticea*, respectively. Whereas, in the fourth spray the M.Teagave 95 and 98% reduction of the mobile stages of *T. urticea*, respectively. In the fifth spray the two concentrations (5&10%) of M.Teagave 92 and 97% reduction of the mobile stages of *T. urticea*, respectively. In the sixth spray the two concentrations (5&10%) of M.Teagave75 and 86% reduction of the mobile stages of *T. urticea*, respectively. Finally, the six successive sprays gave 89 and 93%reduction with the two concentrations (5&10%) of M.Teaagainst the mobile stages of *T. urticea*, respectively. The minimum reductions of the mobile stages of *T. urticea* were 75% and 86% at the rate % and 10% of M. Tea after sixth spray while the maximum reductions were 95% and 98% after 4thspray.Regarding the matching between L.T.Ex. with three concentrations and M.Tea with two concentrations, data show that the

highest reduction of the mobile stages of *T. urticea* was 97%, as mean value, by M.Tea at the rate of 10% + L.T.Ex. at concentration of 0.02% or 0.03% when combared with control.

On the other hand, results in Table (1) indicate that in first year (2013), the soybean plants were sprayed six successive sprays; 15 days between each spray; mixed of *lupines terms* extract and tea manure with three concentrations (M.Tea 5% + L.T.Ex. 0.0 1%; M.Tea 5% + L.T. Ex. 0.0 2% &M.Tea 5% + L.T. Ex.0.0 3%) and (M.Tea 10% + L.T. Ex. 0.0 1 %; M.Tea 10% + L.T. Ex. 0.0 2 % &M.Tea 10% + L.T. Ex. 0.0 3 %) gave good effects against the mobile stages of *T. urticae*. The six successive sprays gave 90, 93, 95, 93, 97 and 97%reduction with the six concentrations against the mobile stages of *T. urticaea*, respectively.

When comparing with the different natural compounds and its concentrations and recommended compound (Vertimic), it was found Vertimicgave 96% after 6 successive prays against the mobile stages of *T. urticae*.

Results indicated that lupine extract (L.Ext.), bio gas manure tea (M.T.) and their mixtures effected on the most common pest,*Tetranychus urticae* attacks soybean plant and caused great suppression the mites population comparing with recommended compound (Vertimic).

Statistical analysis in (Table 1) for year 2013 show significant differences between the 12 tested natural compounds and its concentrations and recommended compound (Vertimic) agents on the mobile stages of *T. urticae*(F = 2.01, L.S.D. 0.05= 5.68).

The use of bio organic manure tea produced from bio, anaerobic fermentation as new means for mite control as foliar spray gave good effect, also is a save material and have strong effects on the spider mites,caused high suppression when sprayed with high and low concentration.This strong influence may be due to its contents of many active substances, which have varying effects on mite pest either lethal effect or repellent or antifeedant or perhaps all previous influences together.

In addition,aromatic compounds (phenols, indoles and benzoates) are the active ingredient in the liquid Manures (Demirel and Scherer, 2008&Ntaikou *et al.,* 2010).

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Second season (2014):

In the second season (2014), the average pre-spraying counts of the mobile stages of *T. urticae*were 98.0-124.7/10 leaves (Table 2).

Results in Table (2) indicated that in the second season (2014), the soybean plants were sprayed six successive sprays; 15 days between each spray; the three *lupines terms* extract (L.T.Ex.) with three concentrations (0.01; 0.02 & 0.03%)gave good effects against the mobile stages of *T. urticae*. In the first spray the three concentrations (0.01; 0.02 & 0.03%) of L.T. Ex. gave 68, 77 and 82% reduction of the mobile stages of *T. urticea*, respectively. In the second spray the three concentrations gave 75, 82 and 84% reduction of the mobile stages of *T. urticae*, respectively.

While, in the third spray the three concentrations (0.01; 0.02 & 0.03%) of L.T. Ex. gave 94, 96 and 97 % reduction of the mobile stages of *T. urticae*, respectively. Whereas, in the fourth spray the three concentrations gave 95, 98 and 99% reduction of the mobile stages of *T. urticea*, respectively. In the fifth spray the three concentrations (0.01; 0.02 & 0.03%) of L.T. Ex. gave 99, 99 and 99% reduction of the mobile stages of *T. urticae*, respectively. In the sixth spray the three concentrations (0.01; 0.02 & 0.03%) of L.T. Ex. gave 98, 99 and 99% reduction of the mobile stages of *T. urticea*, respectively. Finally, the 6 successive sprays gave 88, 92 and 93%reduction with the three concentrations (0.01; 0.02 & 0.03%)of L.T. Ex. against the mobile stages of *T. urticea*, respectively.

Also, results in Table (2) indicated that in the second season (2014), the soybean plants were sprayed 6 successive sprays; 15 days between each spray; the bio organic liquid tea manure (M.Tea) with two concentration (5 & 10%)gave good effects against the mobile stages of *T. urticea*.

In the second spray with the two concentrations (5&10%) of M.Tea gave 67 and 77% reduction of the mobile stages of *T. urticae*, respectively. In the second spray the two concentrations (5&10%) of M.Tea gave 74 and 83% reduction of the mobile stages of *T. urticae*, respectively. While, in the third spray the two concentrations (5&10%) of M.Tea gave 95 and 95% reduction of the mobile stages of *T. urticae*, respectively. Whereas, in the fourth spray gave 96 and 98% reduction of the mobile stages of *T. urticea*, respectively. In the fifth spray the two concentrations (5&10%) of M.Tea gave 99 and 99% reduction of the mobile stages of *T. urticae*, respectively. In the 6^{th} spray the two concentrations (5&10%) of M.Tea gave 98 and 98% reduction of the mobile stages of *T. urticae*, respectively. Finally, the six successive sprays gave 88 and 92%reduction with the two concentrations (5&10%) of M.Tea against the mobile stages of *T. urticae*, respectively.

On the other hand, results in Table (2) indicated that in the second season (2014), the soybean plants were sprayed 6 successive sprays; 15 days between each spray; mixed of *lupines terms* extract and tea manure with three concentrations (M.Tea 5% + L.T.Ex. 0.0 1%; M.Tea 5% + L.T. Ex. 0.0 2% &M.Tea 5% + L.T. Ex.0.0 3%) and (M.Tea 10% + L.T. Ex. 0.0 1 %; M.Tea 10% + L.T. Ex. 0.0 2 % &M.Tea 10% + L.T. Ex. 0.0 3 %) gave good effects against the mobile stages of *T. urticae*. The six

successive sprays gave 89, 94, 96, 95, 96 and 97%reduction with the six concentrations against the mobile stages of *T. urticea*, respectively.

When comparing with the different natural compounds and its concentrations and recommended compound (Vertimic), it was found Vertimicgave 93% after 6 successive prays against the mobile stages of *T. urticea*.

Results indicated that lupine extract (L.Ext.), bio gas manure tea (M.T.) and their mixed effected on the most common pest,*T. urticae*attacks soybean plant caused great suppression the mites population comparing with recommended compound (Vertimic) .This strong influence may be due to its contents of many active substances, leading to death or repellent or cause to stop feeding and die.As well as the presence of infocemicals such as dimethyl disulfide (DMDS) as a compound that both attracts predators and repel the pest.The median by products of the fermentation processes rich in active material as (formic, acetic, propionic, butyric, pentanoic), (methanol, ethanol),aldehydes, CO2 &H2in addition to Acetic acid, H2, CO2 and formate and methanol . also Aromatic compounds (phenols, indoles, and benzoates) which are the active ingredient in the liquid Manures as described previously by (Nealson, 1997; Classen et al, 1999 ; Demirel and Scherer, 2008; Ntaikou *et al.,* 2010) ,this are in agreements with Jixiu-Lin, (2006) who reported that biogas slurry can control 23 kinds of diseases and 14 tapes of pests from 13 kinds of agronomic crops such as grain, vegetables, and fruit trees and so on. With the slurry clarification and filtration spray directly can prevent the pests of yellow and red spiders of citrus. In General, red and yellow spiders' mortality reached 98.5% . Also with HuiFenga*et al.* (2011) who mention that biogas slurry can partially substitute pesticides to control pests and diseases. Prevention and combat of pests and diseases with biogas slurry has been confirmed by practical and scientific experiments, it was called biological pesticides as its non-polluting, no residues and non-resistance. And Thimmaiah, (2010)who reported that the solution that is produced after the fermentation in a bio digester can be used for provide nutrients to crops by foliar sprays ,protect crops from pests and diseases ,help to avoid the use of synthetic chemicals like fertilizers and pesticides **.**

Statistical analysis in (Table 2) for year 2014 showed significant differences between the 12 tested natural compounds and its concentrations and recommended compound (Vertimic) agents on the mobile stages of *T. urticae*(F = 3.17, L.S.D. 0.05= 7.24).

The tested materials i.e. lupine extract (L.Ext.) , bio gas manure tea (M.T.) and their mixed not only caused great suppression the mites population but also affected on the yield parameters hundred seed weight, seed yield /Fedan(Kg) And seed chemical composition as protein (%)&oil (%) .

Seed yield :

Data in table (3) showed that , the reduction in mites population as affected by tested materials effected positively on the seed yield and yield parameters .In non-mixed treatments Manure tea (M. Tea 10%) recorded highest 100 seed weight 18.6 g. , while in the mixed treatments reached to 19.63 g. In contrast 15 g. for control treatment .Tea manure (10 %) recorded highest seed yield (2756.52 Kg.) with (73.3 %)increasing in the yield , followed by , L.T.Ex. (0.03 %) & (M. Tea 5 %) treatments (2715 & 2684 Kg./ Feddan) with (70.41 & 70.2 %) increasing in yield over control,respectively .The mixed of treatments caused higher seed yield than unmixed treatments of all treatments . mixed of manure tea (M. Tea 10 %) with the three concentrations of lupine terms extract (0.01,0.02 & 0.03 %) recorded 2813.034 , 2941.47 and 2971.832 kg./Fed ,respectively. with (75.13 , 82 & 84.8 %) increase in yield over control, In contrast 1618 Kg. for control treatment .

3 - Seeds chemical compositions :

The obtained results of the seeds chemical analysis in table (3) showed increase in protein contents ranged between 2.6 to 11.14,4.4 and 15 % and in oil seed ranged between 0.2 to 19.5 & 5 t0 13.35 % in the two successive seasons 2013 & 2014 ,respectively .

It can be concluded that all of the tested materials under the experiment were superior comparing with chemical pesticides and the control ,and proved high value in pest control and crop production and eco-friendly, no hazardous for human health and environment. it is considered a new promising mean of organic agriculture methods, which can avoid uses of chemical pesticides and fertilizers, leading to safe food production

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تجارب حقلية لتقييم الرش المتعاقب بالمواد الطبيعية على العنكبوت الاحمرالعادى *Tetranychus urticae* Koch الذى يصيب نباتات فول الصويا في محافظة القليوبية .

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اجريت تجربتين حقليتين لدراسة تأثير الرش الورقي المتعدد بعدة تركيزات مختلفة لأنواع من المواد العضوية المختلفة على الاطوار المتحركة للعنكبوت الاحمر العادي *Tetranychus urticae* الذي يصيب فول الصويا. المواد العضوية المستخدمة في هذه الدراسة هي (L.T.EXT)مستخلص الترمس بثلاث تركيزات والسائل الشاي للسماد العضوي الحيوي ( ) M.Teaبتركيزين. اجريت التجارب بتصميم كامل العشوائية من خلال ١٣ معاملة بمحافظة القليوبية خلال عامي (٢٠١٣ و ٢٠١٤) .

اجرى رش نباتات فول الصويا ب ٦ رشات متعاقبة ١٥ يوم بين كل رشة.اشارت النتائج الى ان نبات فول الصويا تأثير بجميع المعاملات, مستخلص الترمس والشاي السماد ومخاليطهم وكذلك بالفيرتميك فى الموسم الاول كان هناك انخفاض فى تعداد المراحل المتحركة *T. urticae* بعد الاسبوع الرابع تراوح الانخفاض من ٩٥% بواسطة (M.Tea 5%)الي ٩٩% عند استخدام المعاملات فيرتميك و M.Tea 10 %ومستخلص الترمس بجميع تركزاته.

وبالنظر الى معاملات المخاليط بين مستخلص الترمس بتركيزاته الثلاثة مع M.Teaبتركيزتة الاثنين, اشارت النتائج الى ان M.Tea ١٠ % + Ext.T.L ٠.٠٢% و ٠.٠٣ % اعطى ٩٧% اعلى متوسط لمعدل انخفاض الآفه مقارنة بمعاملة الكنترول.اشارت النتائج ايضا الى مستخلص الترمس وكذلك السماد الحيوي الشاي ادى الى خفض كبير فيي اعداد الاكاروسات كما حدث في حالة الفيرتيميك.

في الموسم الثاني ادت المعاملة M.Tea 50 % + L.T.Ext.0.03%والمعاملة L.T.Ext.0.02 % + M.Tea 10% الى ٩٦% انخفاض في اعداد الافة وكذلك M.Tea 10% + L.T.Ext.0.02% حقق ٩٧% انخفاض في اعداد *T. urticae*.وكان اعلى معدل انخفاض تم بعدالرشة الخامسة وخلال الرشة السادسة.

Table (2): Number and %reduction of the mobile stages of *Tetranycus urticae*/10 leaves infesting soybean, *Glycine max* (L.) plants after successive spraying with different natural compounds during the 2nd season 2014.

Compound	Rate of applic.	Mean No. mite/10 leaves	Post-treatment counts (in days)						Mean
			1st spray	2nd spray	3rd spray	4th spray	5th spray	6th spray	
Vertimec	40 ml/100L	124.7	40.7 (81%)	45.7 (83%)	20.3 (98%)	13.7 (99%)	14.0 (99%)	16.7 (99%)	25.2 (93%)
L.T.Ex.	0.01%	98.0	54.7 (68%)	51.7 (75%)	52.0 (94%)	50.0 (95%)	34.7 (99%)	35.7 (98%)	46.5 (88%)
L.T.Ex.	0.02%	111.7	45.0 (77%)	42.3 (82%)	37.3 (96%)	27.3 (98%)	26.7 (99%)	29.0 (99%)	34.6 (92%)
L.T.Ex.	0.03%	115.3	35.0 (82%)	39.7 (84%)	35.0 (97%)	19.0 (99%)	29.3 (99%)	19.7 (99%)	29.6 (93%)
M.Tea	5%	100.0	56.7 (67%)	56.3 (74%)	47.0 (95%)	48.7 (96%)	28.3 (99%)	31.7 (98%)	44.8 (88%)
M.Tea	10%	111.3	43.7 (77%)	41.3 (83%)	42.3 (95%)	37.0 (98%)	29.7 (99%)	31.0 (98%)	37.5 (92%)
M.Tea+L.T.Ex.	5%+ 0.01	102.0	52.7 (70%)	53.0 (76%)	49.3 (93%)	47.3 (96%)	31.0 (99%)	29.7 (98%)	43.8 (89%)
M.Tea+L.T.Ex.	5%+ 0.02%	105.3	28.7 (84%)	30.0 (87%)	28.3 (96%)	26.3 (98%)	30.3 (99%)	30.3 (99%)	29.0 (94%)
M.Tea+L.T.Ex.	5%+ 0.03%	127.3	24.0 (89%)	25.7 (91%)	26.3 (97%)	22.7 (98%)	23.0 (99%)	20.0 (99%)	23.6 (96%)
M.Tea+L.T.Ex.	10%+ 0.01%	103.7	30.0 (88%)	26.7 (88%)	20.0 (97%)	19.7 (99%)	21.7 (99%)	21.7 (99%)	23.3 (95%)
M.Tea+L.T.Ex.	10%+ 0.02%	104.7	20.7 (88%)	19.7 (91%)	18.7 (98%)	19.0 (99%)	17.3 (99%)	18.0 (99%)	18.9 (96%)
M.Tea+L.T.Ex.	10%+ 0.03%	118.3	15.3 (92%)	16.3 (94%)	16.0 (98%)	20.3 (98%)	16.3 (99%)	18.0 (99%)	17.0 (97%)
Control	-	110.7	191.0	236.3	967.0	1348.0	3489	2028.0	1376.6
F value	-	-	-	-	-	-	-	-	3.17
LSD at 0.05	-	-	-	-	-	-	-	-	7.24

Table (1):Number and %reduction of the mobile stages of *Tetranycus urticae*/10 leaves infesting soybean, *Glycine max* (L.) plants after successive spraying with different natural compounds during the 1st season 2013.

Compound	Rate of applic.	Mean No. mite/10 leaves	Post-treatment counts (in days)						Mean
			1st spray	2nd spray	3rd spray	4th spray	5th spray	6th spray	
Vertimec	40 ml/100L	91.7	22.7 (95 %)	33.3 (95%)	17.3 (98%)	14.7 (99%)	28.0 (97%)	36.0 (89%)	25.3 (96%)
L.T.Ex.	0.01%	75.3	56.3 (87%)	58.0 (89%)	56.0 (93%)	53.7 (96%)	52.7 (93%)	60.0 (78%)	56.1 (89%)
L.T.Ex.	0.02%	80.3	51.0 (88%)	50.3 (91%)	44.3 (95%)	27.0 (98%)	37.3 (96%)	47.0 (84%)	42.8 (92%)
L.T.Ex.	0.03%	84.0	39.7 (91%)	30.0 (95%)	25.7 (97%)	23.7 (98%)	22.3 (97%)	29.0 (90%)	28.4 (95%)
M.Tea	5%	80.7	51.3 (88%)	70.0 (88%)	67.3 (93%)	62.7 (95%)	64.7 (92%)	70.7 (75%)	64.5 (89%)
M.Tea	10%	85.7	44.3 (90%)	49.7 (92%)	35.0 (96%)	26.7 (98%)	26.7 (97%)	43.3 (86%)	37.6 (93%)
M.Tea+L.T.Ex.	5%+ 0.01	80.3	56.0 (87%)	57.7 (90%)	55.3 (94%)	51.3 (96%)	48.0 (94%)	53.0 (81%)	53.6 (90%)
M.Tea+L.T.Ex.	5%+ 0.02%	90.7	44.3 (91%)	44.7 (93%)	36.0 (96%)	38.0 (98%)	36.7 (96%)	44.7 (86%)	40.7 (93%)
M.Tea+L.T.Ex.	5%+ 0.03%	101.0	38.0 (93%)	31.0 (96%)	37.0 (97%)	34.0 (98%)	33.0 (97%)	39.0 (89%)	35.3 (95%)
M.Tea+L.T.Ex.	10%+ 0.01%	81.3	47.7 (89%)	42.7 (93%)	16.0 (98%)	16.0 (99%)	16.0 (98%)	53.7 (81%)	32.0 (93%)
M.Tea+L.T.Ex.	10%+ 0.02%	132.3	30.0 (96%)	24.3 (97%)	16.7 (99%)	21.7 (99%)	24.0 (98%)	28.7 (94%)	24.2 (97%)
M.Tea+L.T.Ex.	10%+ 0.03%	114.0	24.7 (96%)	16.3 (98%)	15.0 (99%)	14.3 (99%)	16.7 (99%)	31.7 (92%)	19.8 (97%)
Control	-	121.3	656.0	851.0	1369.0	2094.0	1267.0	431.0	1111.3
F value	-	-	-	-	-	-	-	-	2.01

LSD at 0.05	-	-	-	-	-	-	-	-	5.68

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Table (3) Seed yield and seed chemical compositions as affected by *Tetranycu sUrticae* (Koch) Mites control with four compounds during two successive seasons ,2013 &2014 .

TREATMENTS	Conc.	First season						
		100 seed weight (gm)	SEEDS YIELD (Kg)	increase in yield (%)	SEED Protein (%)	increase in seed Protein (%)	SEED OIL (%)	Inc. Oil Seed (%)
Vertimec	40cm³/ 100L.	17.93	2618	63	40.00	2.65	19.00	0.2
L.T. Ext.	0.0 1 %	18.27	2291	43	40.30	3.44	21.33	12.30
	0.02%	18.10	2356	46	40.30	3.42	21.00	8.68
	0.03%	18.40	2715	70	40.00	2.56	21.33	12.30
Tea Manure	5%	18.37	2684	70	41.70	6.86	21.00	10.60
	10%	18.60	2757	73	43.30	11.14	22.33	17.80
M.Tea. + L.T. Ext	0.01+5 %	16.87	2359	48	43.00	10.26	22.67	19.50
M.Tea. + L.T. Ext	0.02+5 %	18.97	2395	49	42.70	9.45	21.67	14.20
M.Tea. + L.T. Ext.	0.03+5 %	18.80	2538	58	42.00	7.69	21.67	14.20
M.Tea. + L.T. Ext.	10 % + 0.0 1 %	19.57	2813	75	42.30	8.62	22.00	16.10
	10 % + 0.0 2 %	16.10	2941	82	43.30	11.14	22.67	19.40
	10 % + 0.03 %	19.63	2972	85	42.70	9.43	22.00	15.90
control		15.00	1618	--	39.00	--	19.00	--
TREATMENTS	Conc.	Second season						
		100 seed weight (gm)	SEEDS YIELD (Kg)	increase in yield (%)	SEED Protein (%)	increase in seed Protein (%)	SEED OIL (%)	Inc. Oil Seed (%)
Vertimec	40cm³/ 100L.	20.80	2743	32	40	4.40	20.00	0.00
L.T. Ext.	0.0 1 %	21.23	2616	26	40	4.40	21.33	6.67
	0.02%	21.90	2837	37	40	5.20	22.33	10.00
	0.03%	21.00	2657	28	41	7.00	21.67	8.33
Tea Manure	5%	20.20	2634	27	42	9.60	21.00	5.00
	10%	21.00	2777	34	44	15.00	22.33	11.67
M.Tea. + L.T. Ext.	5 % +0.01	22.00	2708	31	43	12.00	22.00	10.00
M.Tea. + L.T. Ext	5 % + 0.02 %	22.33	2908	40	42	10.00	22.00	10.00

M.Tea. + L.T. Ext	5 % + 0.03 %	21.50	2605	26	42	9.60	21.70	8.33
M.Tea. + L.T. Ext	10 % + 0.0 1 %	22.40	2962	43	43	11.00	21.67	8.33
	10 % + 0.0 2 %	22.30	2768	33	43	12.00	22.70	13.33
	10 % + 0.03 %	22.60	3016	45	43	13.00	22.67	13.33
control		20.01	2074	--	43	--	22.69	--