DEDICATION

To the soul of my Mother With deep love
And for
My Family
Father, Brothers, Husband, Teachers and Friends
With love

Ashwag
ACKNOWLEDGEMENTS

First Sincere thanks to Allah who helped me and gave me health to finish this study.

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ABSTRACT

An integrated Pest Management (IPM) approach was adopted to minimize or nullify the use of insecticides in tomato fields. The study was carried out in 2006/2007-2007/2008 seasons at Shambat and Karari areas particularly to find out whether the yield of tomato, *Lycopersicon esculentum* (variety Peto86) can be increased without the use of synthetic insecticides. The following treatments were compared:

1. Neem -seed-kernel hexane extract (2.5%) (*Azadirachta indica*) (No).
2. Cotton-seed-kernel hexane extract (2.5%) (*Gossypium hirsutum*) (Co).
3. Argel leaves aqueous extract at 37.3g/6L (*Solenostemma argel*) (S).
4. Soap solution at 25 ml /4L (So).
5. Actara®25WG at the rate of 0.75g/f (act) as (standard) (M).
6. Intercropping tomato with fenugreek (*Trigonella foenum –graecum*) (F).
7. Intercropping tomato with hot pepper (*Capsicum annuum*) (H).
8. Intercropping tomato with garlic *Allium sativum* (G).
9. Intercropping tomato with garad (*Acacia nilotica*) (A).
10. Intercropping tomato with neem (*Azadrachta indica*) seedlings (N).
11. Intercropping tomato with cafour (*Eucalyptus camaldulensis*) seedlings (E).

12. Control (tomato only) (C).

Both treatments spraying with dissolved materials and intercropping were tested to observe the effect of these treatments on the population dynamics of the whitefly *Bemisia tabaci*, leaf miner *Argomyza trifolii*, African bollworm (*Helicoverpa armigera*) (Hub) larvae as well as fruit damage by both pests and by the sun (sunscald) and predators (Coccinellidae larvae, Chrysopidae larvae, Hemiptera nymph and Spider). Observations were also made on other pests (Aphids) and diseases such as Tomato Leaf Curl (TLCV) virus and comparison between damage by leaf miner in tomato and the plants intercropped with tomato such as fenugreek, garlic, and hot pepper were done. In addition to other observations on the damage caused by blossom end rot and the effect of sunlight on the growth of seedlings in the nursery also were made.

The results showed that Actara, neem oil, and cotton oil were the superior treatments in controlling whitefly, whereas cotton oil, neem oil, and garlic were found effective in suppression the population of the leaf miner followed by neem, garad, cafour and Actara. argel seem to be attractive to leaf miners. Actara was better in protecting the natural enemies, followed by garlic, soap, garad, neem oil, argel, and neem .

Tomato fruits showed that, cotton oil and neem oil exhibited good results in controlling *Helicoverpa armigera*, but argel and garad were better in increasing the number of sound fruits. However, Actara, garad, neem and cafour treatments gave good results in the control of *Helicoverpa armigera*. All above mentioned treatments (cotton oil, neem oil, argel and garad) resulted increased the size of tomato fruits. Soap gave the best result in increasing the number of small size of sound fruits.
Assessment of tomato plants damaged by leaf curl disease at Shambat indicated that neem and fenugreek treatments resulted in good protection of tomato plants from leaf curl disease, followed by Actara, cotton oil and soap, whereas argel, garlic, cafour and garad showed high level of damage by leaf curl disease. However there is no damage observed at Karari area in all the treatments.

The results in intercropping plots of fenugreek, garlic, and hot pepper with tomato plants at Shambat area indicated that hot pepper and garlic plants were not damaged by leaf miner while fenugreek plants were susceptible to damage by leaf miner. However, tomato intercropped with hot pepper gave good results; it gave low damage by leaf miner whereas tomato intercropped with fenugreek gave high damage by leaf miners.

Neem oil, cotton oil and fenugreek were the superior treatments in the control of Aphids, *Aphis gossypii*, followed by cafour and soap at both Shambat and Karari areas in 2007/2008 season.

Also assessment of tomato fruits damaged by blossom end rot at Karari area showed that cotton oil and neem oil gave the best results in the control of blossom end rot. There was no blossom end rot damage appeared in the experimental site at Shambat.

Comparative study was also done comparing tomato seedlings exposed to the sun and seedlings grown under the shade after 20 days from germination in the nursery. The results indicated that the seedlings which were exposed to the sun were better than the shaded seedlings.

Spraying treatments gave the best result in production of tomato fruits ranging between (160.00- 117.36) ton/feddan which was achieved by argel and soap respectively. Whereas intercropping treatments exhibited low production of tomato fruits ranging between (113.52- 93.60) ton/ feddan, which was achieved by garad and cafour respectively.
Finally, result show that the best production was in (2006/2007) season. Argel gave high production in tomato fruits ranging between (160.00- 42.24) ton/ feddan while cafour gave the last recorded in the production of tomato fruits ranging between (93.60-58.32) ton/ feddan.

الخلاصة


1. المستخلص الهكساني لنوءة بذرة النيم (Azadrachta indica) (No) (%2.5).
2. المستخلص الهكساني لنوءة بذرة القطن (Cotton spp) (Co) (%2.5).
3. المستخلص المائي لأوراق المرجل (Solenostemma argel) (S) تركيز 37.3g/6L. تركيز 37.3g/6L.
4. محلول الصابون (M) (%25wg 0.75كمبيد قياسي (1). أكتارا تركيز® بمعدل 0.75 Actara.
5. الزراعة البينيه للطماطم مع نبات الحلبة (Trigonella foenum – graecum). (F).
6. الزراعة البينيه للطماطم مع نبات الحلبة (H) (Capsicum annuum).
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12. الشاهد (طماطم فقط) (C)

(الزراعة الينهلطيطماطم معشتوالنيم
(Azadrachta indica)

(الزراعة الينهلطيطماطم معشتوالكافور
(Eucalyptus camaldulensis)

أجريت تجربة رش وزراعة بيئة لملاحظة تأثير المعاملات على الديناميكا السكانية للذبابة البيضاء (Argus mylaius) وحافرة الأنفاق (Bemisia tabaci) ونماذج الأحافير (Helicoverpa armigera) (Hub)). تمكث أيضاً ملاحظات على آفات أخرى مثل الأسلام كويروس (Sunscald) (Aphus crassivora) من الآبار الشامنية ضربة الشمس. تمكح أيضاً ملاحظات على آفات أخرى مثل الأسلام كويروس (Sunscald) (Aphus crassivora) من الآبار الشامنية.

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أظهرت النتائج على أوراق الطماطم أن مبيد اكثرا زيت النيم وزيت القطن هي أفضل المعاملات في مكافحة الذبابة البيضاء بينما زيت النيم والقطن والثوم لها تأثير في خفض كفاءة حافة الأنفاق وتجنيبها النيم والقرص والكافور ومبيد اكثرا. الحشرات يبدو أنه جاذب لحشرة حافرة الأنفاق. كان مبيد اكثرا الأفضل من حيث عدم تأثيره علي الأعشاب الحيوية يتبعه الثوم والصابون والقرص وزيت النيم والرحل ونباتات النيم.

أظهرت النتائج على شمار الطماطم أن زيت النيم وزيت القطن أعطت نتائج جيدة في مكافحة دودة اللوز الأفريقية. والحمية من ضربة الشمس. بينما معاملات مبيد اكثرا والقرص والنيم والكافور أعطت نتائج جيدة في مكافحة دودة اللوز الأفريقية فقط.

الرحل والقرص أعطيا أفضل النتائج في زيادة الشمار السليمة بينما معاملات زيت القطن والرحل والقرص أعطت شمار كبيرة في الحجم. الصوابون أعطى نتائج جيدة في زيادة عدد الشمار السليمة لكنها صغيرة الحجم.

اختيار اصابة نباتات الطماطم بمرض تجعد الأوراق في شحبات ذلت على أن معاملتي النم والحلبة أعطت حماية جيدة لنباتات الطماطم من الإصابة بالمرض بينما لم تلاحظ أي إصابا بالمرض في كري. الزراعة البيئية للطماطم مع نباتات الحلبة والثوم والقطن في منطقة شحبات ذلت على ان نباتات الشابة والثوم غير قابلة للإصابة بحافرة الأنفاق بينما نباتات الحلبة حساس للإصابة بحافرة الأنفاق. الطماطم المزروعة مع الشابة أعطت نتائج جيدة

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اذ انها اعطت اصابه منخفضة بحافره الانفاق بينما الطماطم المزروعة مع الحلبة اعطت اصابة عالية بحافرة الانفاق.

زيت النين وزيت القطن والحلبة اعطت نتائج افضل مع ماء التربة اعطت اصابه عالية بحافرة النفاق.

والصابون في منطقة شمبات وكري في موسم 2008/2007). (إختبار اصابة ثمار الطماطم بالعفن البقمي في منطقة كري دلت التجارب على أن معاملته زيت النين وزيت القطن اعطت نتائج جيدة في مكافحة المرض. بينما لم نلاحظ الاสบายة في منطقة شمبات.

تمت مقارنة بين الشتل والتي تنمو في ضوء الشمس والشتل التي تنمو في الظل بعد 20 يوم من نموها في المخطط حيث دلت النتائج على أن الشتل التي تنمو في ضوء الشمس أفضل من التي تنمو في الظل.

معاملات الرش اعطت انتاجية جيدة تتراوح ما بين (160.00-117.36) طن/لفدان اعطت بواسطة الحرجل والصابون بالترتيب، مقارن مع معاملات الزراعة البيئية حيث اظهرت انتاجية أقل تتراوح ما بين (113.52-93.60) طن/لفدان والتي اعطيت بواسطة القرض والكافور بالترتيب.

أخيراً تشير النتائج الى أنه أفضل إنتاجية لطماطم كانت في موسم (2007) في منطقة شمبات. ومعاملة الحرجل قد أعطت أفضل انتاجية لطماطم والتي تتراوح ما بين (160.00-42.24) طن/لفدان بينما الكافور أعطي أقل انتاجية (93.60-40.56) طن/لفدان.