

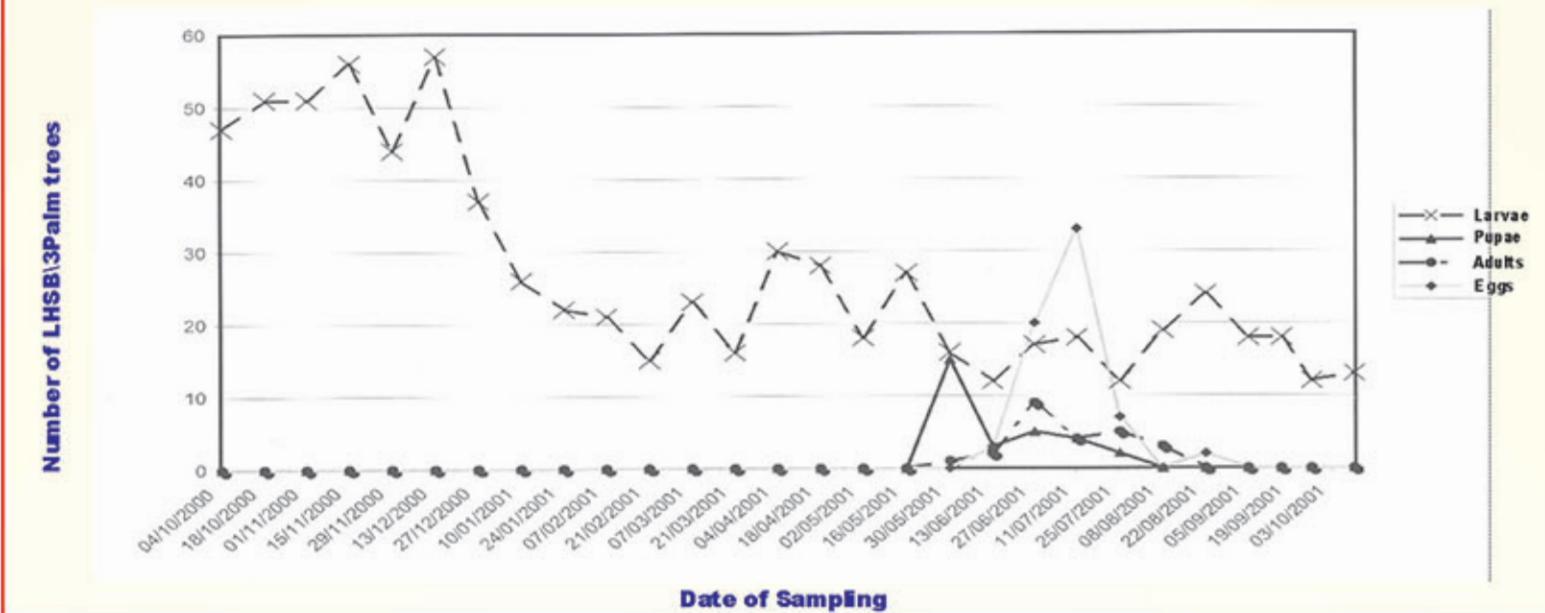
The Components of IPM Program of the Date Palm Pests in Iraq

Ibrahim J. Al-Jboory, University of Baghdad, College of Agriculture, Plant Protection Department, Abu-Ghraib, Baghdad, Iraq, e-mail: <ijboory@yahoo.com>

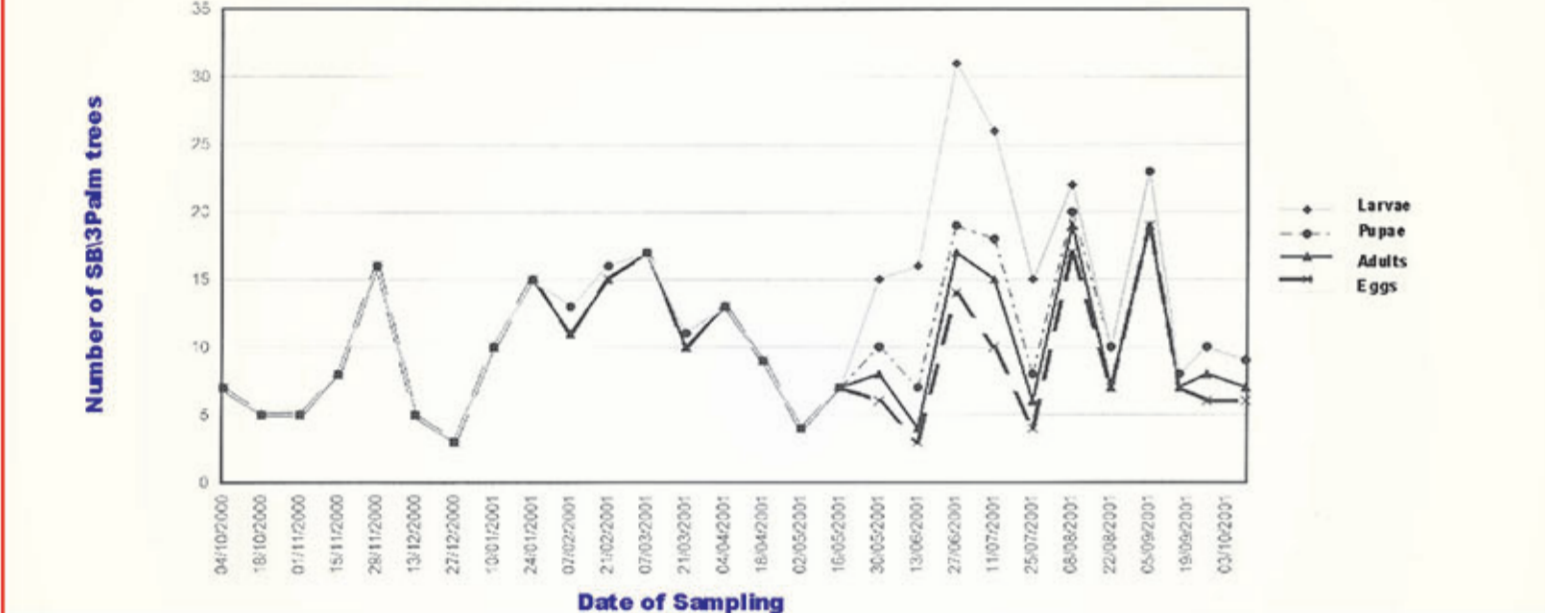
1 Date Palm Pests and their Economic Importance in Iraq

Pest Name	Scientific Name	Phylum and Family	Importance
Longhorn date palm stem borer	<i>Jebusea hammerschmidtii</i> Reiche	Coleoptera Cerambycidae	+++
Fruit stalk borer	<i>Oryctes elegans</i> Prell	Coleoptera Scarabaeidae	++
Froned borer	<i>Phenacopa frontalis</i> Fahracus	Coleoptera Bostriichidae	+
Dubas bug (old world date bug)	<i>Ommatissus lybicus</i> Bergevin	Homoptera Tropiduchidae	+++
Lesser date moth	<i>Batrachra amydrata</i> Meyrick	Lepidoptera Mormphidae	++
Greater date moth	<i>Arenipes sabella</i> Hampson	Lepidoptera Pyralidae	+
Termite	<i>Microcerotermis diversus</i> Silvestri	Isoptera Termitidae	(+)*+
Parlatoria date Scale	<i>Parlatoria blanchardii</i> Targioni	Homoptera Diaspididae	+
Gohbar mite (old world date mite)	<i>Oligonychus afrasiaticus</i> (McGregor)	Acari Teranychidae	(+)*++

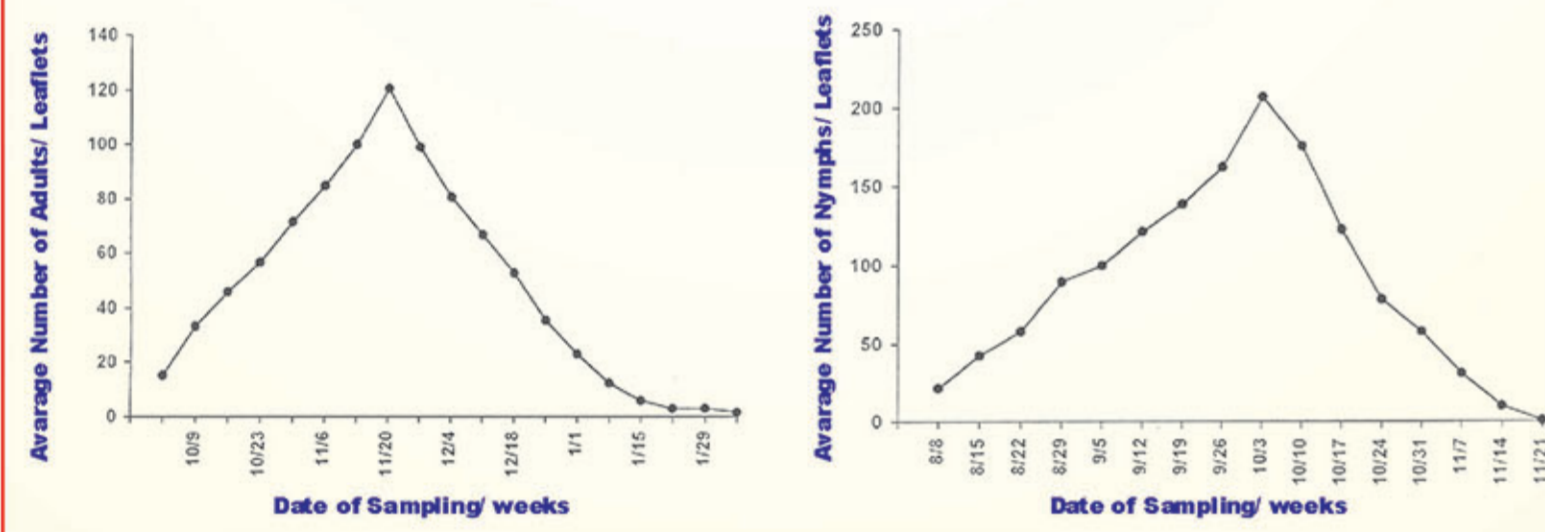
The Population Density of the Longhorned Stem Borer



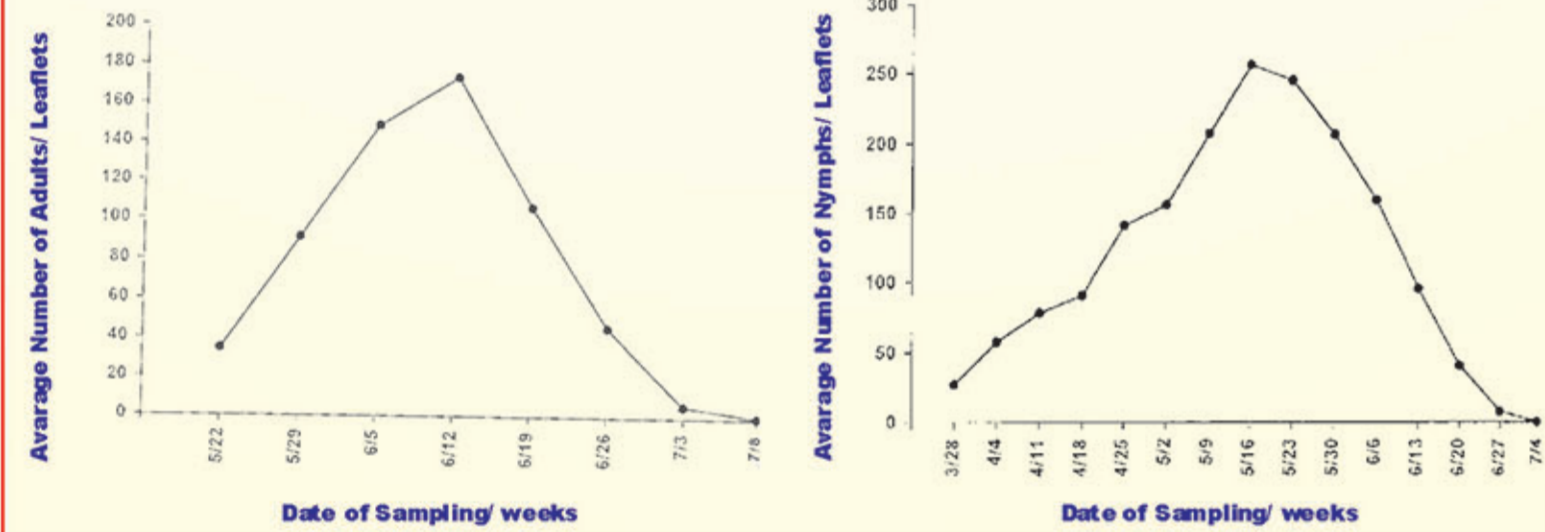
The Population Density of the Stalk Borer



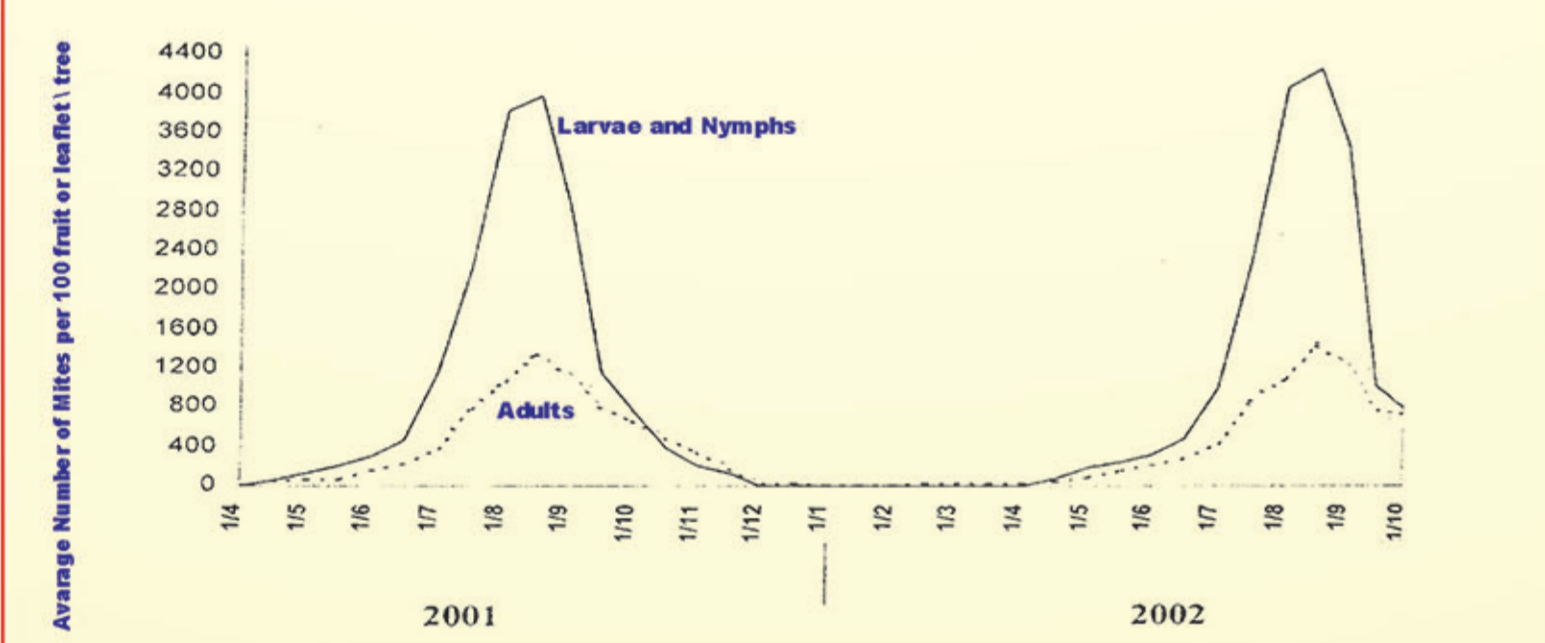
The Population Density of the Dubas Bug (Adults/Nymphs) of Autumn Generation 2001-2002



The Population Density of the Dubas Bug (Adults/Nymphs) of spring Generation of 2002



Seasonal Occurance of Gohbar Mite stages Oligonychus afrasiaticus in the year of 2001 and 2002

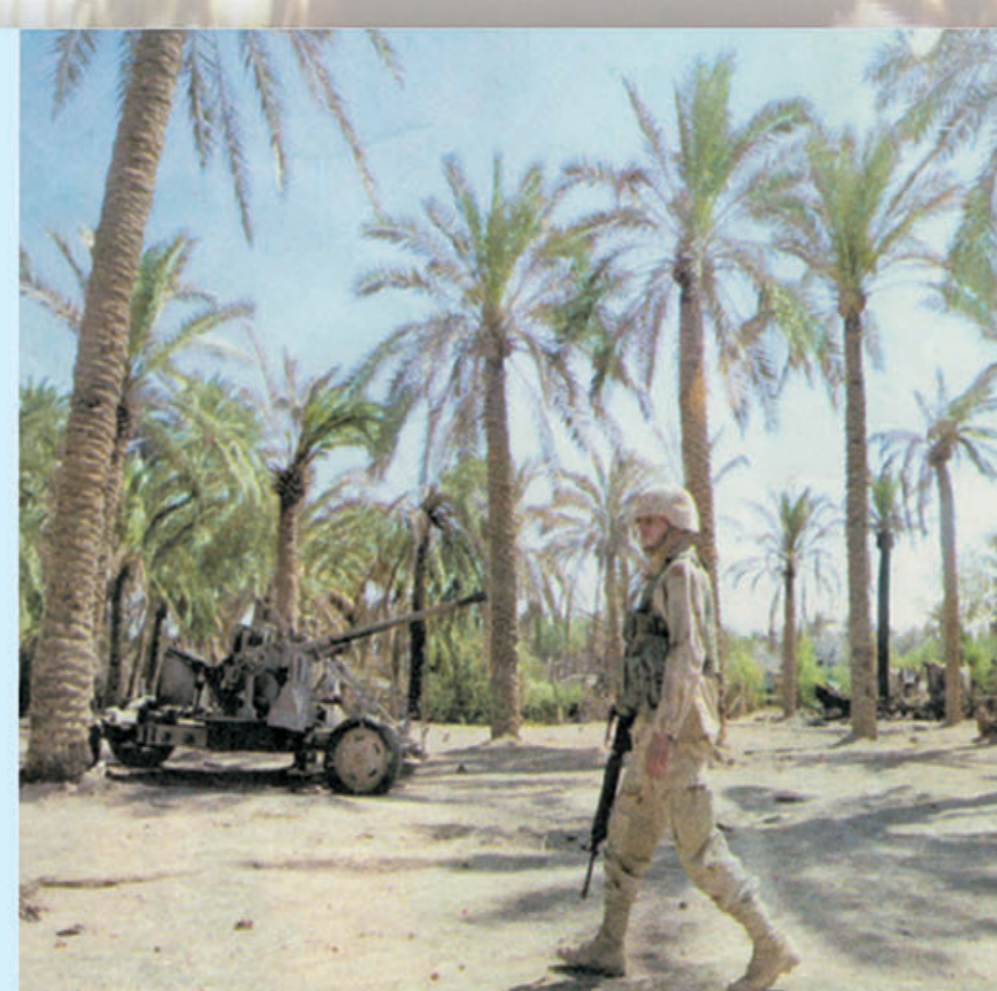


7 Evaluation of thiamethoxam in a different application techniques to control Dubas bugs (Ommatissus binotatus lybicus DeBerg.)

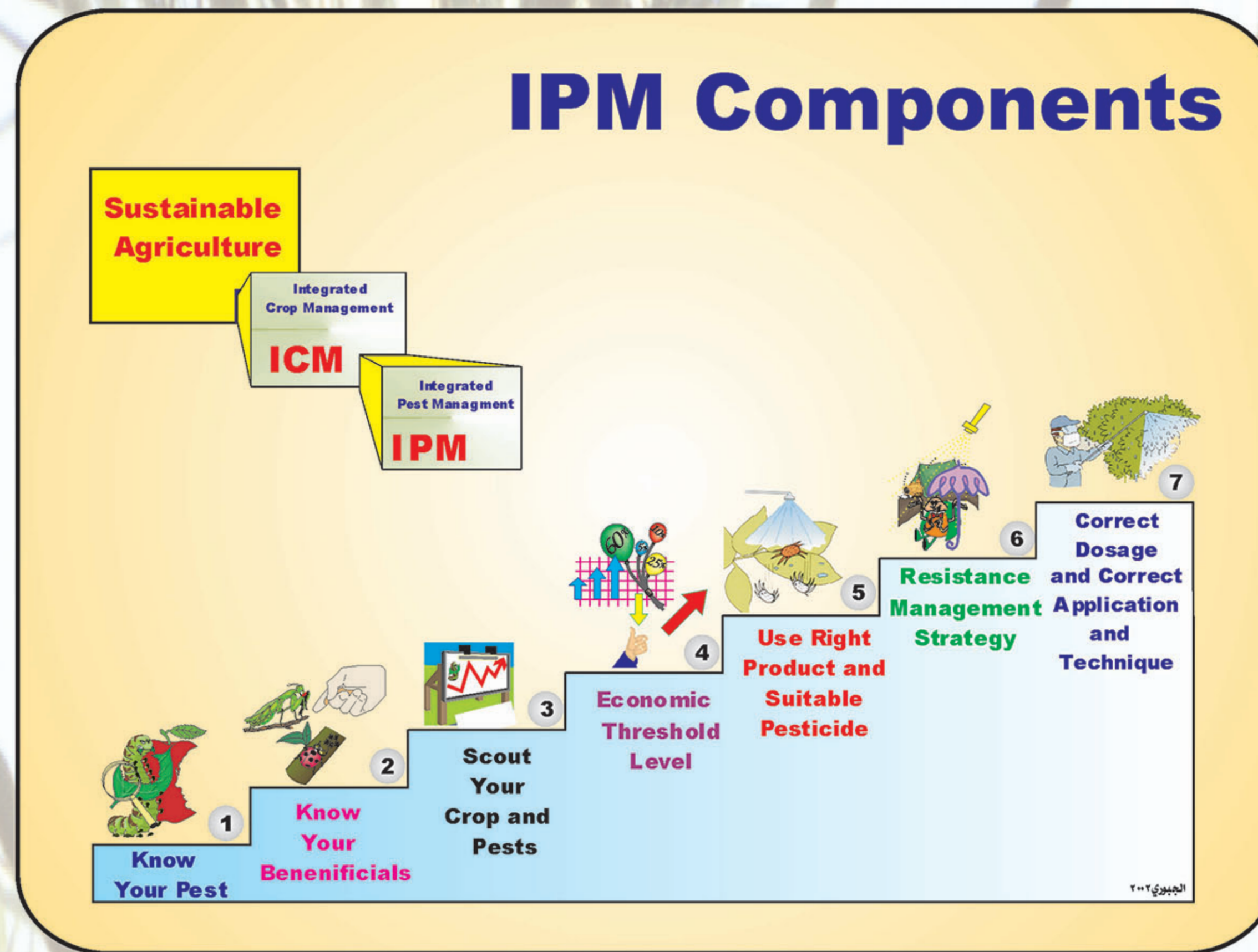
Actara 25WG(thiamethoxam) and Sevin 48%(carbaryl) were evaluated to control the old world date bug (Dubas bug) by using different application techniques, (spray, drench, and injection). The trials were carried out during spring and autumn of 1999 in Baghdad city. It was found that injection of 1gm (a.i.) per tree of thiamethoxam suppressed the population density remarkably, there was 0.056 insect/leaflet 7 days after injection while no infestation was observed after 25 days post treatment. The drench and spray treatment were less effective than injection particularly after 25 days, while the injection of prepared capsule of Sevin (carbaryl) was less efficient than thiamethoxam injection. During autumn season the insecticide Actara was evaluated using different application methods. It was observed that the injection methods was most superior than the others. Residues of thiamethoxam in leaves were 4.091 and 2.675 ppm., 7 and 25 days respectively post injection of 1gm a.i./tree.



Military Operations Damaged Date Palm too



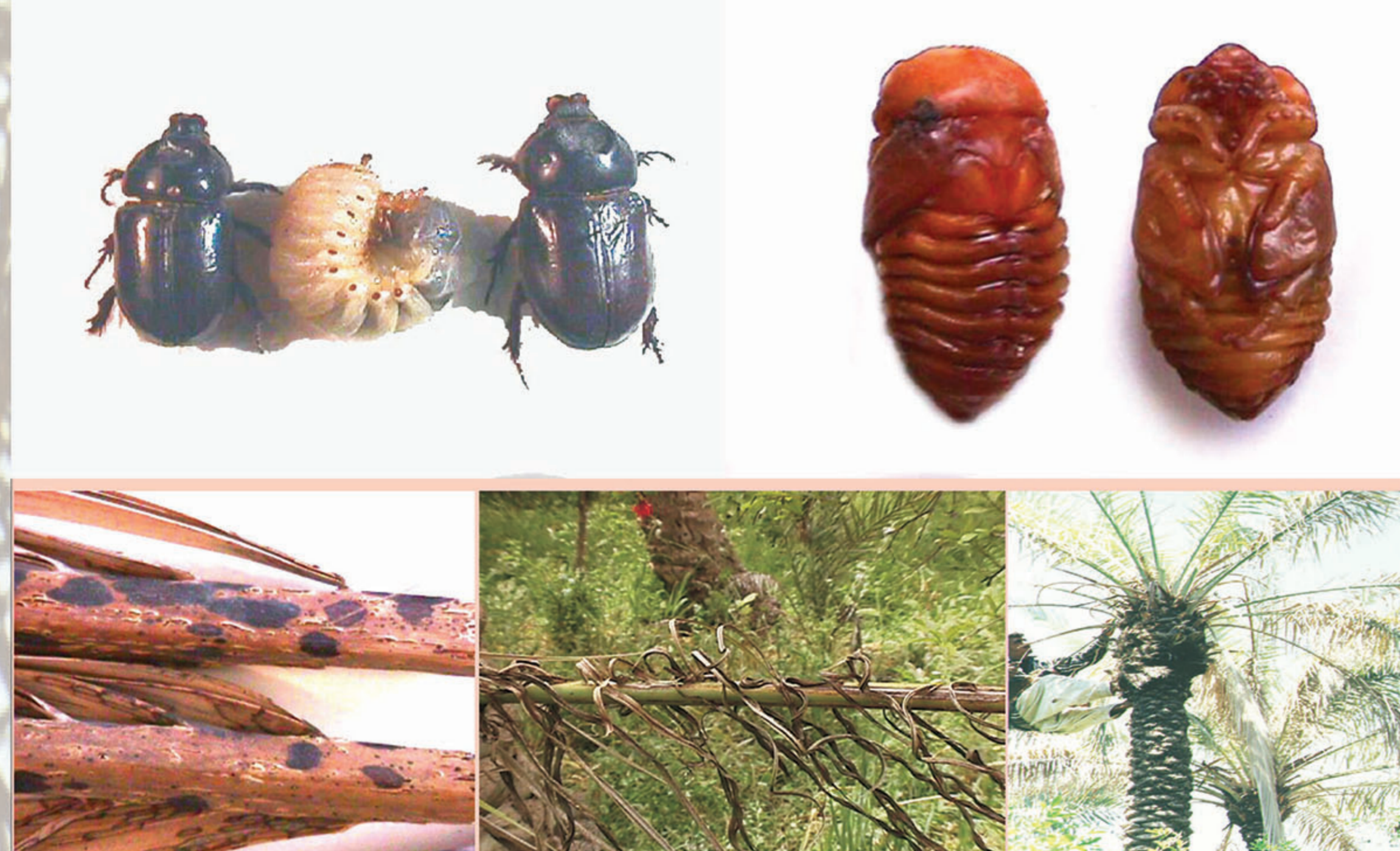
IPM Components



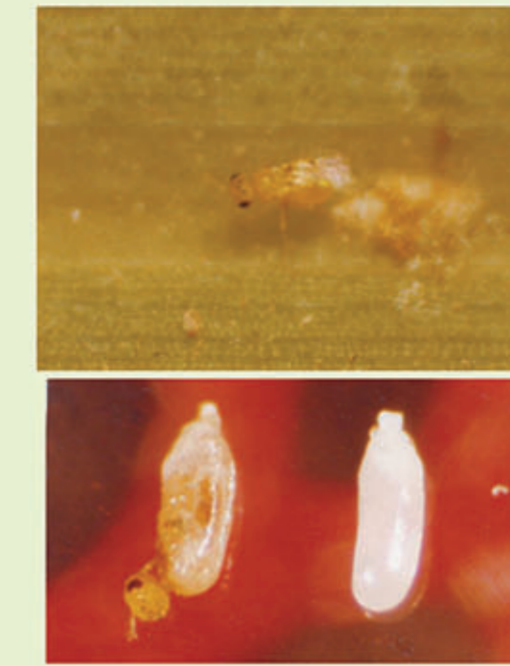
Abstract

The IPM components in the date palm orchards have been studied in the middle of Iraq. More than 150 date palm trees have been examined during the period between 2000-2003 to achieve the following results:

1. Rearrange the date palm pests according to their economic importance. The population density of the longhorned stem borer and fruit stalk borers has been studied.
2. First records of a) Entomopathogenic nematode *Steinernema* on borers, b) Predators and parasitic mites on stem borer with special focus on the Diploglynid mites, c) The parasite *Megaselia* sp. (Diptera) on the female of the longhorned stem borer, d) The egg parasitoid *Oligosita* sp. on Dubas bug. Two virus diseases and the pathogenic fungi *Beauveria bassiana* have been isolated and identified from date palm stem borers.
3. Monitoring of crops and predicting of appearance of some date palm pests by using light and food traps and degree-day model.



2 FIELD OBSERVATIONS ON THE EGG PARASITOID OLIGOSITA SP. ON DUBAS BUG EGGS



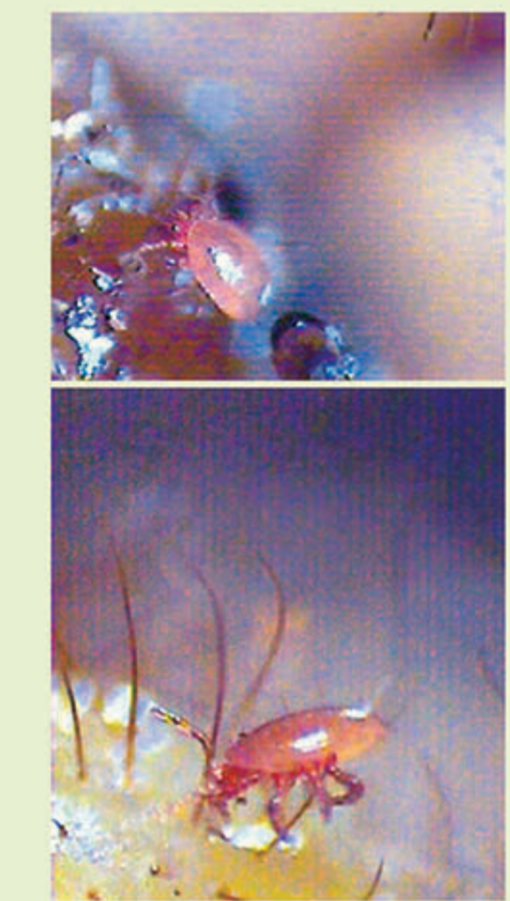
Some observations were studied on the egg parasitoid *Oligosita* sp. which is considered to be the first record on the egg of dubas bug *Ommatissus lybicus* Deberg. in Iraq. The parasitoid morphology, behavior and searching capacity were studied. The *Oligosita* sp. showed an excellent field performance in reducing the population of dubas bug eggs during the spring and autumn generations.

Identification of the parasite Megaselia sp. (Diptera:Phoridae) for the first time on the longhorn date palm stem borer Jebusea hammerschmidtii Reiche (Coleoptera: Cerambycidae)



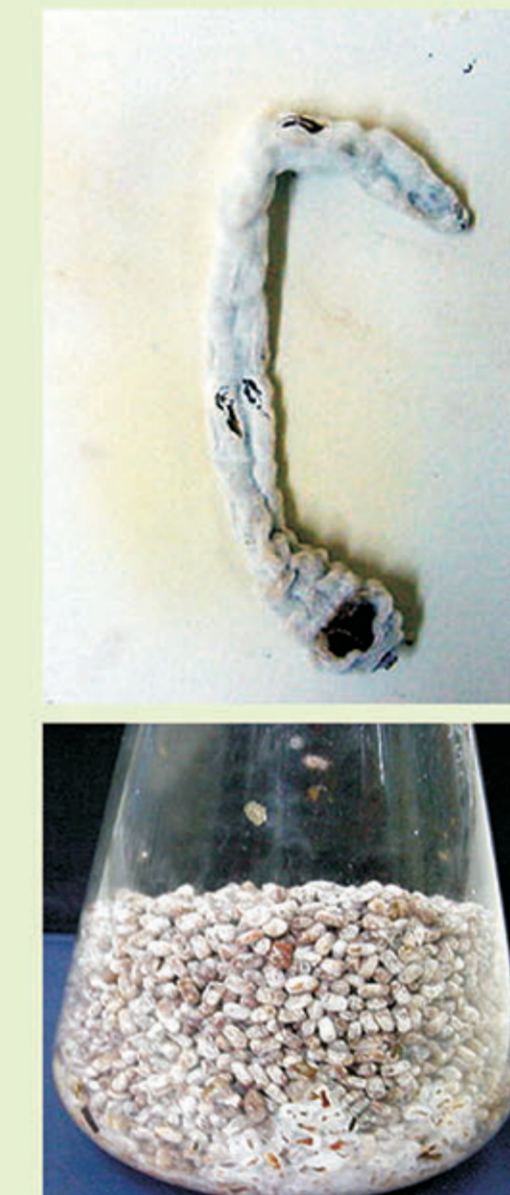
During the survey of the date palm pests in the central region of Iraq. Among many borers collected, observations have been done on two females of longhorn date palm stem borer, which showed abdomen swelling. The first female has been dead after one day, while the second laid (36) eggs during six days and then dead. The laid eggs didn't hatch. The results of the female dissecting revealed that a gregarious internal parasite was found. This has been identified as *Megaselia* sp. (Diptera:Phoridae).

SURVEY AND TAXONOMY OF MITES INHABITING DATE PALM TREES IN IRAQ WITH SOME OBSERVATIONS ON THE PARASITES OF DATE PALM STEM BORERS.



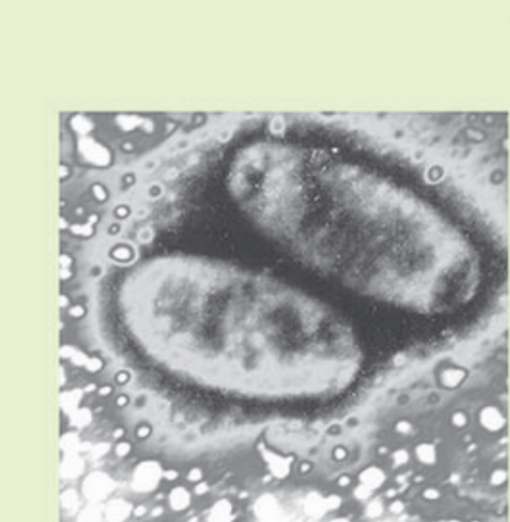
During the years 2000 and 2001 an extensive survey of mite living in /on date palm trees have been conducted based on anatomy of 60 date palm trees. The survey revealed, that 26 mite families which contain 34 genera are collected. According to the feeding habits those mites are : 3 phytophagous ,12 predaceous ,3 parasitic, 5 fungivorous and 3 saprophytic. The parasitism efficacy of Diploglynid mites which are often present with the date palm stem borers was studied in the laboratory. Out of the mite collection, 29 different species are new record to Iraq and perhaps to the Arabian region.

PRODUCTION OF BIO-PESTICIDE FROM BEAUVERIA BASSIANA (BALSAMO) VUILLEMIN ISOLATED FROM LONGHORNED DATE PALM STEM-BORER JEBUSEAE HAMMERSCHMIDTI REICHE



The inoculum of *Beauveria bassiana* was prepared as bio-pesticide by carrying it on sunflower oil and emulsion material. The results showed that 25 gm of rise seeds/ 1 oil reveals the optimum concentration of spores /ml which was (1.8 x 10⁶). The bio assay results indicated that: 1. No change in the fungal spore concentration has been occurred during the storing period that lasted for six months. The concentration was (1.8 x 10⁶) spores/ ml at the initial and after six months of production. 2. All the concentrations tested showed high mortality when bio-assayed against green peach aphid *Myzus persicae* in the laboratory. 3. No effect of emulsifier has been observed on the viability and the concentration of spores/ ml of *B. bassiana*.

New Record of Oryctes like virus from date palm fruit stalk borer Oryctes elegans from Iraq



Thirteen larvae of date palm fruit stalk borer *Oryctes elegans*, which showed viral infection symptoms have been taken to the laboratory. The larvae were homogenized with water and buffer solution and different centrifugation processes have been done to isolate virus molecules. The virus photographed by using a transmission electron microscope.

NEW RECORD OF ENTOMOGENOUS NEMATODES ISOLATED FROM DATE PALM STEM BORERS IN IRAQ



During March, 2001 entomogenous nematodes were isolated for the first time from the date palm longhorn stem borer *Jebusea hammerschmidtii* and fruit stalk borer *Oryctes elegans* from Iraq. The bio-efficacy (pathogenesis) of these nematode were tested in the laboratory against 15 different insects, 13 of them were lepidoptera and 3 are coleoptera. This test showed 100% mortality in all the lepidopteran larvae after 1-3 days and after 2-6 days in the coleopteran larvae except the pomegranate stem borer *Sphenoptera dhia-ahmadi* does not affected. When the nematodes *Steinernema* injected and sprayed in /on the date palm heat as a mixture of PDA and water this revealed reduction in the borer population in after 3 months of this operation. The isolated nematodes could be one of the promising bio-agents which fit the IPM of the date palm pests in Iraq.

NEW RECORD OF PATHOGENIC VIRUS OF THE LONGHORN DATE PALM STEM BORER Jebusea hammerschmidtii Reiche (Coleoptera: Cerambycidae)



Five longhorn date palm stem borer larvae (*Jebusea hammerschmidtii*), that moved slowly and showed milky appearance were collected. Dead larvae were homogenized with water and buffer saline phosphate. The solution was treated by high-speed centrifuge (3000- 6000 rpm). Particles were photographed by electronic microscopy, which represent poxivirus.

البحوث المنشورة في مجال النخيل

1. إنتاج مبيد جديد من فطر *Beauveria bassiana* المعزول من يرقات حمارساق النخيل في العراق.
2. تسجيل جديد لفيروس مرض نخلة حمارساق النخيل في العراق.
3. تسجيل نيماتودا طفيلية على حمارساق النخيل في العراق.
4. عزل وتشخيص فيروس *Oryctes like virus* من يرقات حمارساق النخيل في العراق.
5. حصر وتصنيف أنواع النيماتودا الموجودة في نخلة النخيل في العراق مع بعض الملاحظات على كثافة التطفل لبعضها على حمارساق النخيل.
6. ملاحظة طفيلية عن نمط البيض *Oligosita* sp. على بيض حشرة الدوباس.
7. أول تسجيل لنيماتودا طفيلية على حمارساق النخيل في العراق.
8. اختبار كثافة بيض *Oryctes* sp. معاملة مختلفة لكافة حشرة الدوباس النخيل.
9. تقييم كثافة بيض الحشرات الضارة في مكافحة حشرة الدوباس بطريقة الرش الجوي.
10. الكفاءة الكيمياء الحيوية لحشرة الدوباس النخيل باستخدام المبيد بايودين.
11. التأثير غير المباشر لكافة الدوباس النخيل على الحمارساق النخيل على اوقات الحماضيات.
12. التقييم الجيد واختيار فعالية بعض مبيدات النخيل على حمارساق النخيل في العراق.
13. أول تسجيل لمرض التمعج اللوزي على النخيل في العراق.
14. التجميع الحراري وبناء جداول التكاثرية للكثافة واثباتها باستخدام مبيدات الحمارساق النخيل (رسالة ماجستير 2003).
15. اداء الحمارساق النخيل تحت الظروف الحقلية والتبني بظهورها باستخدام مبيدات الحمارساق النخيل (رسالة ماجستير 2003).