

وزارة الزراعة واستصلاح الأراضي
مركز البحوث الزراعية

معهد بحوث وقاية النباتات
و
المعمل المركزي للأبحاث و تطوير النخيل

المؤتمر الدولي الأول لنخيل البلح
عن
" الإدارة المتكاملة لمحصول نخيل البلح ودورها في
حماية و إنتاج تمور خالية من التلوث"
4-2 سبتمبر 2007
جيزة - مصر

تحت رعاية
السيد/ أمين أباطة
وزير الزراعة واستصلاح الأراضي

رئيس المؤتمر

الأستاذ الدكتور / ايمن فريد أبو حديد
رئيس مركز البحوث الزراعية

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و

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مقرر عام المؤتمر
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**Ministry of Agriculture & Land Reclamation
Agricultural Research Center**

**Plant Protection Research Institute
&
Central Laboratory for Date Palm
Research and Development**

**The First International Conference
Of Date Palm
On
Integrated Crop Management Of Date Palm
And Its Impacts For Producing Clean
And Safety Dates.**

**2-4 September 2007
Giza - Egypt**

Under the Auspices of His Excellency

Amin Abaza

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Time Table

DATE: 2/9/2007

Hall: A

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Opening Cermony	10.00-11.00
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Session:1

Chairman:	Prof. Dr. Gameel El-Saadany
Vice Chairman:	Prof. Dr. Ahmed Amin
Vice Chairman:	Prof. Dr. Fathy Eid

TITEL & AUTHORS	TIME
Studies on the Infestation of Red Palm Weevil <i>Rhynchophorus ferrugineus</i> Oliv. In Egypt Y. El-Sebay Plant Protection Research Institute, Agric. Res. Center. MOA	11.30-11.50
نحو إستراتيجية للإدارة المتكاملة لسوسة النخيل الحمراء أ.د. محمد إبراهيم عبدالمجيد قسم وقاية النبات - كلية الزراعة - جامعة عين شمس - القاهرة - مصر	11.50-12.10
A Comprehensive Date Palm Bibliography. Abdullah Saleh Al-Ghamdi Department of Agriculture Biotechnology, College of Agricultural Sciences & Food. King Faisal University	12.10-12.30

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Chairman:	Prof. Dr. Said Emara
Vice Chairman:	Prof. Dr. Youssey El-Sebay
Vice Chairman:	Prof. Dr. Ali El-Sheikh

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Vice Chairman: Prof. Dr. Hassan Ali Taha
Vice Chairman: Prof. Dr. Fathy Faheim

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<p>طريقة الحقن الجديدة أحدث الطرق الفعالة لمكافحة سوسة النخيل الحمراء د نبوي متولى</p>	13.50-14.10
<p>How Do You Know About The RPW Distribution Globally In A Minute? Al-Ajlan, Abdulaziz; Khalid Alhudaib and Khaled Al-Abdulsalam Department of Arid Land Agriculture (Plant Protection Science Program), College of Agricultural and Food Sciences King Faisal University, Al Hasa, Saudi Arabia</p>	14.10-14.30
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Session:4

Chairman: Prof. Dr. Malak Farah Gergis
Vice Chairman: Prof. Dr. Hassan El-Deeb
Vice Chairman: Prof. Dr. Fawzy F.Shalaby

Titel & Authors	Time
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<p>Actinomycete Natural Metabolites To Combat <i>Batrachedra Amydraula</i> Meyrick And <i>Cadra Spp</i> At Kharga Oasis, New Valley, Egypt S. A. Temerak,¹ A. A. Sayed,² H. K. Bekheit² and S.M.M. Gameel² ¹Plant Protection Department, Faculty of Agriculture, Assiut University, ²Plant Protection Research Institute, ARC, Egypt</p>	16.00 – 16.15

ANALYTICAL REVIEW OF THE MAIN ARTHROPOD PESTS AND NATURAL ENEMIES ASSOCIATED WITH DATE PALM TREES IN EGYPT Mohamed Abdel-Rahman Mohamed Amro Plant Protection Research Institute, ARC, Dokki, Giza, Egypt	16.15 –16.30
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Chairman: Prof. Dr. Abdel Aziem El- Hamady
Vice Chairman: Prof. Dr. El-Said Ibraim Bakr
Vice Chairman: Prof. Dr. Amina Hamed Goma

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Studies On Some Phytohormones Producers Bacteria For Using In Date Palm Micro Propagation Ibrahim .A.*; A.A. Guirgis*; A. M. Ibrahim*; Eweda, Wedad**, E.E.; A.A.El-Banna*** and Farrag, Hala, M.A***	15.45 –16.00
Sequence Of Using Bacterial Supernatants In Date Palm Micropropagation Farrag, Hala, M.A*.; Eweda, Wedad**, E.E.; A.A. Guirgis ;***A. M. Ibrahim ;***A.A.El-Banna *and I.A. Ibrahim	16.00 – 16.15
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Effect Of Salts Stress On Growth And Development <i>In Vitro</i> Culture, Acclimatization Stage On <i>Phoenix Dactylifera</i> L. Cv. Sakuti In Greenhouse El-Tantawy *,Azza M. S. Arafa *Abd El-Moneam El- Banna	16.30-16.45
<i>In Vitro</i> Micropropagation Protocol For Root Explants Of Date Palm Cv. Sewi Madboly¹, E.A.; A.H. Gomaa² and M.A. Eisaa²	16.45-17.00

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Chairman: Prof. Dr. Hamdey Yossif
 Vice Chairman: Prof. Dr. Sania E-Nashawy
 Vice Chairman Prof. Dr. : Gamal E.Abd Elmagied

Titel & Authors	Time
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Selection Of The South-West Algerian Varieties Of Date Palms Against Bayoud Disease : <i>Fusarium Oxysporum F.Sp.Albedinis</i> * Boudeffeur saïd * National Institut of the Agronomic research of Algeria	9.15-9.30
<i>Using Actinomycetes On Controlling Bacterial Contamination Of Date Palm During Different Stages In Vitro</i> Abeer.H.E. Abd-El Kareim Central Laboratory of Date Palm Researches and Development, Agricultural Research Center Giza, Egypt	9.30-9.45
<i>Pseudomonas fluorescents</i> spp. استعمال التصاد لمكافحة بيوض النخيل الميكروبيولوجي بواسطة Dalila Toua, Rabah Bakour & Messaoud Benchabane* * Université de Blida – Faculté Agro – Vétérinaire. Département des Sciences Agronomiques	9.45-10.00
تأثير <i>Pseudomonas .spp fluorescents</i> على مستوى إنباء التربة للفطر <i>Fusarium oxysporum f.sp. albedinis</i> Dalila Toua, Fatiha Bensaïd & Messaoud Benchabane	10.00-10.15
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Chairman: Prof. Dr. Abdel Monheim El-Bana
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TITLE & AUTHORS	IME
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Some Factors Affecting Maturation And Germination Of Date Palm (<i>Phoenix Dactylifera</i> L.) Somatic Embryos Mona M. Hassan¹, Mamdouh A. El-Shamy² and Ezz G. Gadalla 1- Central Lab. For Date Palm Researches and Development, ARC. Egypt.	11.15-11.30
Effect Of Growth Regulators On Scanning Electron Microscope Measurements And Counts On Leaf Of Some Cultivars Of Date Palm Abd El-Baky, M.A.², I.A.Ibrahim¹, A.A. Guirgis¹, M.I. Nasr¹, And A.A. Elbanna² Central Laboratory Of Date Palm Research And Development, Arc, Egypt.	11.30- 11.45
Effect Of Chemical Fruit Thinning Of Samany Date Palm Cultivar. Bakr, E .I.¹; G.M. Haseab¹; S. EL-Kosary¹ and T.Y.Saber². Pomology Dept., Faculty of Agriculture, Cairo University	11.45 – 12.00
Micropropagation Of Selective Old Seedling Date Palm Trees By Using Inflorescences Bakr E.I.¹, S. El-Kosary¹, G. M. Haseeb¹ And H.A. A. Metwaly Department of Pomology, Faculty of Agriculture, Cairo University, Egypt	12.00-12.15
Direct Somatic Embryogenesis Of Date Palm (<i>Phoenix Dactylifera</i> L.) By Osmotic Stress *Rehab, A. Sidky., *Zeinab, E. Zaid And **Adel, A. Abul-Soad *The Central Laboratory For Date Palm Researches And Development, Agriculture Research Center, Cairo, Egypt.	12.15-12.30

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Chairman:	Prof. Dr. Zaher El-Naggar
Vice Chairman:	Prof. Dr. Salah Flefil
Vice Chairman	Prof. Dr. : Adel ElFeshawe

TITLE & AUTHORS	TIME
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Cryopreservation of <i>In Vitro</i> Established Shoot Tip Explants of Date Palm cv. Zaghlool ¹ M. M. El-Dawayati., ² E. I. Baker and ³ A. H. Gomaa 1 The Central Laboratory for Date Palm Researches and Development, Agriculture Research Center, Cairo, Egypt. 2- Department of Pomology, Faculty of Agriculture, Cairo University,	13.00 –13.15

Cost Analysis And Energy Requirements Fo Mechanical Controlling Of Red Palm Weevil Morad , M. M. and ²Eliwa , A. A. Agric. Eng. Fac. Agric., Zagazig University	13.15 –13.30
Comparative Studies On The Physical And Chemical Properties Of Date Fruits Of Sakkoty Variety Propagated By Off-Shoots And Tissue Culture Techniques Osman, S. M. Desert Research Center, Cairo, Egypt.	13.30 –13.45
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Chairman:	Prof. Dr. Rshdi Rizkalla Isshak
Vice Chairman:	Prof. Dr. Gomaa E. Khedr
Vice Chairman:	Prof. Dr. Magdy M. H. Salem

TITLE & AUTHORS	TIME
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<i>Pteroptrix aegyptica</i> Evans & Abd-Rabou (Hymenoptera: Aphelinidae) as a bioagent of <i>Parlatoria blanchardii</i> ((Homoptera: Diaspididae) infesting date palms in Egypt Shaaban Abd-Rabou , Mona Moustafa and Noha Ahmed Plant Protection Research Institute, Agricultural Resaerch Center, Egypt	9.15-9.30
The Predatory Insects,Mites And Spiders Of Date Palm In Rashid Region,El-Beheira Governorate,Egypt Sallam, Gihan,M. ; E. M.A. Yassin And Abd El-Azeim Nahla, A. Plant Protection Research Institute, Agricultural Research Center, Dokki, Giza, Egypt	9.30-9.45
Efficiency of new isolates of entomopathogenic fungus <i>Beauveria bassiana</i> against RPW, <i>Rhynchophorus ferrugineus</i> in Saudi Arabia G. Hegazy ; O. AL- Muhanna ; S. B. Hanounik ; T. S. AL-Gumaiah and A.A. Aldossary Project on Biocontrol of red palm weevil, Arab Organization for Agricultural	9.45-10.00
Earwing <i>Anisolabis maritima</i> a new predator of <i>Rhynchophorus ferrugineus</i> in Sadudi Arabia Mohamd Salem Abdel Wahed Dept. of Plant Protection, Fac., of Agric. Ain Shams University	10.00-10.15
Biology and Ecology of the predaceous bug, <i>Xylocoris galactinus</i> Fiber, a new predator of red palm weevil , <i>Rhynchophorus ferrugineus</i> in Saudi Arabia Mohamd Salem Abdel Wahed Dept. of Plant Protection, Fac., of Agric. Ain Shams University	10.15-10.30
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Chairman: Prof. Dr. Mohamed Abdel Maged Ibrahim

Vice Chairman: Prof. Dr. Gomma Abbas

Vice Chairman: Prof. Dr. Khalil El-Malki

TITLE & AUTHORS	TIME
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Population Dynamics And Tillage Process On Land Snail <i>Cochlicella Acuta</i> (Muller) Infesting Certain Fruit Trees At Dumyat And Kafr Saad Districts Of Dumyat Governorate. Awad, M.H.M. and Maha.M.Fouad Plant Protection Research Institute, ARC, Dokki-Giza	11.15-11.30
Biological Aspects of the black spider, <i>Walckenaera acuminata</i> on the larvae of the red palm weevil <i>Rhynchophorus ferrugineus</i> Mohamed E I- Erksousy Plant Protection Research Institute, ARC, Dokki-Giza	11.30- 11.45
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Susceptibility of Three Variety of Date Fruits to <i>Ectomyeloides ceratoniae</i> in Two Oasis South-East of Algeria: Wad Righ and Biskra. Farid Bounaceur¹, Atika Guendouz-Benrima³ Bahia Doumaïndji-Mitiche² & Abdessalem Zabi¹	12.15-12.30

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Chairman: Prof. Dr. Ahmed H. El-Hneidy
Vice Chairman: Prof. Dr. Magdy Wilson
Vice Chairman: Prof. Dr. Adel Fawzy Lotfala

TITLE & AUTHORS	TIME
Observations on the Greater Date Moth (<i>Arenipises sabella</i>) in El-Baharia Oasis – Egypt Abdel-Rahman A. G. ⁽¹⁾ , Fouda M. A. ⁽²⁾ , Mahmoud H. I. ⁽³⁾ , Agamy E. A. ⁽⁴⁾ , Imam A. I. ⁽¹⁾ and Mansour A. N. M. ⁽¹⁾ Plant Protection Dept., Desert Research Center, Mataria, Cairo, Egypt	12.30 –12.45
<i>Oligonychus</i> (Acarina: Tetranychidae) مكافحة حلم الغبار <i>Eutogens punctata</i> باستخدام الحلم المفترس <i>afrafiticus</i> (Prostigmata) Cheyletidae :Acarina : الملائم لأشجار النخيل د . عمران أبو صلاح أبو قلبية * د. حلومة محمد كرتة** م. علي محمد الباهي*** قسم وقاية النبات – كلية الزراعة – جامعة عمر المختار – البيضاء – ليبيا	12.45 – 13.00
Integrated Management Of Pests And Diseases Of Dates During Their Five Stages Of Development Dr. Emad Hussain AL-Turaihi Agricultural Development Department, Ministry of Municipal Affairs & Agriculture	13.00 –13.15
The Use of Direct Sunlight as Pre Storage Treatment of Date Fruits to Control <i>Ephestia cautella</i> Ahmed M. AlJabr Plant Protection Department, Faculty of Agriculture and Food Sciences, King Faisal University, AlHassa, Saudi Arabia	13.15 –13.30
The Role of Kairomone in Red Palm weevil <i>Rhynchophorus ferrugineus</i> Olivier (Coleoptera: Curculionidae) Aggregation Pheromone Traps . Ahmad Hussen AL-Saoud Baniyas Agricultural Research & Experiment Station General Agricultural Directorate of Abu Dhabi.Abu Dhabi	13.30 –13.45
Population Dynamic of Date Palm Fruit Pests in Riyadh Area, Kingdom of Saudi Arabia. Abdulrahman Saad Aldawood, King Saud University, College of Food & Agricultural Sciences, Plant Protection Dept., P.O. Box 2460 Riyadh 11451 Saudi Arabia	13.45 – 14.00
Lunch	14.00 –15.00
Recommendation and Close	15.00-17.00

PLANT PROTECTION

**ACTINOMYCETE NATURAL METABOLITES TO COMBAT *VIRACHOLA LIVIA*
INHABITED DATE PALM FIELDS AT DAKHLA OASIS, NEW VALLEY, EGYPT**

SAYED, A. A.,¹ S. A. TEMERAK,² H. K. BEKHEIT¹ AND S.M.M. GAMEEL¹

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2-Plant Protection Department, Faculty of Agriculture, Assiut University, Egypt

Based on reliable successful penetration % of *Viracola livia*, the two imported Actinomycete metabolites namely spinosad (tracer 24 SC) & abamectin (Vertemic 1.8 EC) demonstrated significantly better infestation level than the two Deuteromycete metabolites locally produced in both 2005 and 2006 . The two local metabolites were produced by fermentation of *Metarhizium anisopliae* and *Paecilomyces farcinus*

Thiocyclam (evisect 50WP) denostrates significantly infestaion level (low) better than the two local Deuteromycete metabolites in both years. Local Deuteromycete metabolite from *P. farcinus* showed the greatest infestation of *V.livia* at 200 ml/100L.

Corresponded reduction infestation level due to Tracer was significantly greater than that of Agerin or *P. farcinus* product in both years of study. Tracer was the best overall in 2005 and equal to Vertemic in 2006. The low penetration % of alive larvae into the fruits, zero and 0.5 with spinosad treatment in 2005 and 2006 respectively, reflected a high level of ovilarvicidal activity of this product.

**ACTINOMYCETE NATURAL METABOLITES TO COMBAT *BATRACHEDRA*
AMYDRAULA MEYRICK AND *CADRA* SPP AT KHARGA OASIS, NEW VALLEY,
EGYPT**

S. A. TEMERAK,¹ A. A. SAYED,² H. K. BEKHEIT² AND S.M.M. GAMEEL²

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Two years of field trials to investigate certain bio-insecticides to combat the lesser date moth *Batrachedra amydraula* Meyrick and the almond moth *Cadra* spp were conducted at Kharga oasis, New valley, Egypt in 2005/6.

Based on infestation of *B. amydraula*, the two imported Actinomycete metabolites, spinosad (Tracer 24 SC) & abamectin (Vertemic 1.8 EC) performed significantly better than the two Deuteromycete metabolites locally produced (by fermentation of *Metarhizium anisopliae* and *Paecilomyces farcinus*) in 2006.

No significant difference was found among the efficacy of spinosad, abamectin and thiocyclam (Evisect) in 2005 or 2006. Also, no significant difference was noticed among the performance of the two locally Deuteromycete metabolites and *Bacillus thuringiensie* subsp *aegypti* (Agerin). Reduction % due to tracer was significantly greater than of Agerin in both years of study.

Based on infestation of *Cadra* spp, the two imported Actinomycete metabolites, performed significantly better than the two Deuteromycete metabolites locally produced in 2005/6. Thiocyclam (Evisect 50WP) was also significantly better than the two local Deuteromycete metabolites in 2006. Tracer performed the best overall in 2005 and 2006

CONTROLLING OF DATE-PALM SNAIL COCHELICELLA ACUTA BY USING SAFE MATERIALS COMPARED WITH RECOMMEND MOLLUSCICIDES

AWAD, M.H.

Plant Protection Research Institute, Dokki, Giza, Egypt

These studies were conducted at Damietta province on date-palm snail *C. acuta* under field and Laboratory conditions to evaluate the efficiency of four safe materials; agricultural sulphur, calcium super phosphate, loam and ashes compared with three recommended molluscicides; Lannate 90%, metaldehyde and skipper.

Under laboratory conditions, lannate 90% recorded high mortality (94%) followed by, metaldehyde bait, agricultural sulphur, skipper, loam, ashes and calcium super phosphate which represented 91%, 90%, 89%, 81%, 78% and 71% respectively.

On the other hand, field studies were conducted to evaluate four safe materials; Agricultural sulphur, calcium super phosphate, loam and ashes, in addition to recommended molluscicides; metaldehyde and skipper and one of candidate insecticides lannate 90%

Tested palm were chosen from five locations; El-Senania, Kafr El Batikh, Om El-Redda, El-Rekabiah and Kafr El-Ghab of Damitta governorate

Three date palm for each treatment which repeated at five locations, obtained data showed significant differences between tested compounds which recorded; (81%), (75%), 74%, (70%) and (69%) for lannate 90, metaldehyde, agricultural sulphur, skipper and loam. While calcium super phosphate and ashes were similar or equal (63%) for each, safe materials were effective by rates of 250,500, 500 and 250 gram/palm of agricultural sulphur, calcium super phosphate, loam and ashes respectively, while lannate 90, metaldehyde and skipper used in rates; 5.0, 20.0 and 20.0 gram/palm respectively.

POPULATION DYNAMICS AND TILLAGE PROCESS ON LAND SNAIL COCHLICELLA ACUTA (MULLER) INFESTING CERTAIN FRUIT TREES AT DUMYAT AND KAFR SAAD DISTRICTS OF DUMYAT GOVERNORATE.

AWAD, M.H.M. AND MAHA.M.FOUAD

Plant Protection Research Institute, Agricultural Research Center, Dokki-Giza, Egypt.

Field studies were conducted under different conditions of Dumyat governorate (Dumyat and Kafr Saad districts) to study some ecological aspects associated with *C. acuta* as a serious pest of date palm, lemon, orange and guava trees and the performance of tillage process on population reduction of *C. acuta* on date palm and citrus trees during four successive seasons. Obtained data showed that date palm is the most preferable one for land snail infestation, followed by lemon, orange and guava trees respectively. The high number of individuals was found under shelter of fibers which cover date palm trunk and recorded during the whole year, also found on lower leaves and trunk through spring and autumn seasons while, found only under shelter of trunk and soil around root of tree in winter season. *C. acuta* was found also on citrus trees, recorded with high number particularly on trunk of citrus trees digging a hole and hiding in it or under outer cortex of the trunk though winter and summer seasons but active through spring and autumn seasons distributed on leaves and all branches of the citrus tree.

Dumyat district was more infested than Kafr Saad and increased with soil moisture and relative humidity. The efficacy of tillage process cultural control method is dependent on season. It was more effective in spring and summer than autumn and winter seasons with reduction percentages in population density, so the population density of *C. acuta* was obviously increased during spring and summer seasons as compared to population density during winter and autumn seasons. Also, the effect of certain climatic factors (temperature and relative humidity) on population density.

OBSERVATIONS ON THE GREATER DATE MOTH (*ARENIPSES SABELLA*) IN EL-BAHARIA OASIS – EGYPT

**ABDEL-RAHMAN A. G.⁽¹⁾, FOUDA M. A.⁽²⁾, MAHMOUD H. I.⁽³⁾,
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Date palm is the main cash crop in the Egyptian oases and insect infestations are limiting factor in date production. Field observations in different groves in El-Baharia Oasis during 2003-2006 seasons indicated that the greater date moth (*A. sabella*) became a serious pest in the oasis causing enormous damages. The percent of impressive infested trees ranged between 41% and 100% with a general mean 60%. The first egg was observed in the beginning of March on the tip of the new closed male spathe. The moth lays the eggs in one batch of 3-16 eggs. The new emerged larvae move inside the inflorescence feeding on the flowers leaving black areas between the white healthy inflorescence. Larvae mine the spathes and bore at the stalk base causing the breakage of bunch stalk and losing its date fruits. It also attacks fruits and the lower part of the midrib in the crown and the young offshoots. The insect over-wintered as larvae or pupae. The over-wintered larvae were observed between leaves in the crown, inside the dried spathes on the tree, inside the fallen dates, between the trunk fibers (sheath) or inside the leaves of the offshoots surrounding the heavily infested mother trees. The over-wintered pupae were noticed inside the dried spathes or between the trunk fibers (sheath) and rarely in fallen dates. Moths appeared in light traps from the first of March to mid. October.

RAVAGEURS OF DIFFERENT FROM THE DATE PALM AND VEGETATIVE LAYERS IN THE CENTRAL STEPPE IN ALGERIA (NATURAL RESERVE OF MERGUEB, M'SILA)

CHEBOUTI- MEZIOU NADJIBA¹, CHEBOUTI YAHIA² AND DOUMANDJI SALAH-EDINE³

1: University of Boumerdes, Faculty of Science, Department of Biology.

2: National institute of forest research (INRF) - Bainem

3: National institute of agronomy (INA)

The natural reserve of Mergueb is made up of three layers to knowing the shrubby and herbaceous arborescent layer. These various plantations are prone to several attacks. Cependant these insects cause damage on foliages of the date palm entrainant a fall of the output. No study on orthopterologic fauna was made, for this purpose, we undertook the inventory of the orthoptères of the three stations of study. The orthopterologic fauna of the station with *Artemesia bleached* on grass alba (armoise white) which is made up of 18 species of which the half belongs to the subfamily of Oedipodinae ensifères. The ensifères are noted only with only one species *Platycleis intermedia*. On the other hand the second station of study in *Pinus halepensis* (pine of Alep) conceals 21 species of Caelifères and with only one species of the ensifères *Platycleis intermedia*. But the greatest number of species is 8 belong to under family of Oedipodinae what corresponds to a rate of 36,5% of the orthopterologic total richness of the station. In the station with *Stipa tenacissima*

(esparto) we noticed the existence of two sub-orders the ensifères and the caelifères. The ensifères are represented by only one species *Platycleis intermedia*. On the other hand the caelifères consist of 19 species distributed between 7 subfamilies. However it should be noticed that Oedipodinae have a percentage of 32%.

Key words: Natural reserve, the date palm, orthopterologic fauna, *Platycleis intermedia*, Caelifères and ensifères.

SUSCEPTIBILITY OF THREE VARIETY OF DATE FRUITS TO *ECTOMYELOIS CERATONIEA* IN TWO OASIS SOUTH-EAST OF ALGERIA: WAD RIGH AND BISKRA.

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Ectomyelois ceratoniae is known to cause a great damage to date fruits in Algeria; infestation affecting date production was estimated between 10 to 40% witch consist a permanent danger in export date fruits production. The objective of the study was to determine the susceptibility of three varieties of date fruits in two oasis in south-east of Algeria: Wad Righ and Biskra. The study was conducted during October 2005 to June 2006 in three stations of el Wad governorate; Djamâa, El Maghier and Sidi Khellil respectively; the second stations were realized at Biskra governorate namely; Tolga, Sidi Okba and Felliache. Studies affected infestation degrees of three varieties of date fruits " Deglet Nour, Mech Degla and Ghars". Results indicated large differences of infestation by *Ectomyelois ceratoniae*, all variations depended from varieties, regions and storage area. The highest infestation was unregistered at Wad Righ Oasis from 15 to 25%, however Deglet Nour variety showed in important sensibility to this insect in storage conditions.

BIOLOGY AND ECOLOGY OF THE PREDACEOUS BUG, *XYLOCORIS GALACTINUS* FIEBER, A NEW PREDATOR OF *RPVV RHYNCHOPHORILS FERRUGINEUS* OLIV. IN AUDI ARABIA.

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Xylocoris galactinus Fieber (Anthocoridae : Hemiptera) was recorded for the first time in Kingdom of Saudi Arabia as a predator of red palm weevil *Rhynchophorus ferrugineus* Oliv., in 1999. Both nymphs and adults of the predator feed on eggs, early instars and pupal stages of *R. ferrugineus*. The predator feeds piercing and sucking the fluid of its prey.

The biology and predaceous efficacy were studied under laboratory conditions. Eggs were laid singly, hatched after 3.6 days at 25 ± 1 C and only after 2 days at 30 ± 1°C. The development of all five nymphal instars was completed within 14 - 19 days. The pre-oviposition period ranged from 3-9 days. Total number of eggs/female ranged from 18 to 37 during the oviposition period of the predator which varied from 15-21 days. Adult longevity varied from 21-37 days.

The predaceous efficacy of *X. galactinus*, expressed in terms of eggs or larvae consumed, of *R. ferrugineus* ranged from 61-95 eggs and 111-185, larvae per predator during its life time.

The activity of the natural population of the predator was studied in date palm plantations in the Kingdom of Saudi Arabia (Qatif province) the predator hibernates as

an adult in different shelters including palm fiber mat, leaf axil and galleries of palm trunk infested with *R. ferrugineus*. Activity expressed in % of dead pupae due to *X. galactinus*, increased from a low level of 9.6% dead pupae in February to a high level of 36.7% dead pupae in April. However the activity of the predator declined gradually in the following hot months and the predator completely hibernated during the cooler winter months.

EARWIG *ANISOLABIS MARITIMA* A NEW PREDATOR OF EGGS OF *RHYNCHOPHORUS FERRUGINETIS* IN SAUDI ARABIA

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The biology , predaceous efficacy against *Rhynchophorus ferruginetis* and effects of alternative food on mass production of the naturally occurring earwig *Anisolabis maritima* were investigated in Saudi Arabia . Results concerning the biology indicated that *A. maritima* lays its eggs in clusters. The incubation period was 7 days. The nymphal stage consists of four instars and lasts for 54 - 65 days. Adults lived for an average of 68 days and laid about 305 eggs/ female Studies regarding performance of *A. maritima* under semi-field conditions showed that the release of 10 , 20 , 30 and 40 earwigs I tree artificially infested with *R. ferruginetis*, reduced infestation from 100% in control to about 50% in treated plots. The effects of red beans, combination of date and yeast, as well as eggs of *Rhynchophorus ferruginetis* were individually investigated on mass production of *A. maritima*. Although there were no significant differences in total life cycle, differences in number of eggs / female were highly significant. Red beans may be considered as a potentially important food source for the mass rearing of *A. maritima*

INTEGRATED MANAGEMENT OF PESTS AND DISEASES OF DATES DURING THEIR FIVE STAGES OF DEVELOPMENT

EMAD HUSSAIN AL-TURAIHI

Agricultural Development Department, Ministry of Municipal Affairs & Agriculture

Date palm fruits which are known as "Dates" are formed after passing through five separate stages of physiological and morphological development. These stages, accordingly to their state of maturity, are: Hababouk, Kimri, Khalal (Bsir), Rutab, and Tamar. The final state is also called the ripening stage in which the dates reach full maturation.

During these stages of development, dates are subject to attack by several pests and diseases which cause considerable damage on dates and resulted direct loss in dates production. The major pests and diseases which normally attack dates in the field are: Inflorescence rot or Khamedj (*Maugieniella scaettae*), Fruit rot (*Thielaviopsis paradoxa*, *Stemphylium sp.*, *Aspergillus spp.*, *Penicillium spp.* *Alternaria spp.* & others), Lesser date Moth or Humara (*Batrachedra amydraula*), Greater date moth (*Arenipsea=Aphamia sabella*), Pomegranate fruit butterfly (*Virachola livia*), Saw-toothed grain beetle (*Oryzaephilus surinmensis*). Dried fruit beetle (*Carpophilus dimidaidus*). In addition of many species belong to *Ephestia* genus and Dust mite (*Parateranychus afraisitiacus*).

The aim of this study was to highlight the importance of Integrated Crop Management (ICM) in order to protect dates from pests and diseases attacks as well as from unfavorable conditions. The study showed that ICM could be applied through agricultural practices, biological control, pheromone traps, bunch covers, spreader rings, crop husbandry and hygiene to reduce the using of chemical pesticides.

Additionally, applying of ICM in the field would lead to protect dates during the storage because many of pests or diseases attack dates in the field and continuing their development on harvested dates. The study also revealed that ICM provides cost-effective and environmentally sound methods to control pests and diseases of dates. Besides, the application of ICM in the sustainable agriculture programmes leads to produce healthy dates and improve the quality as well.

IMPACT OF PHYTOSANITARY TREATMENTS ON SEMIOCHIMIC SUBSTANCES QUALITY AND ITS EFFECT ON BIOTIC POTENTIAL OF DATE PYRALE *ECTOMYELOIS CERATONIAE* ZELLER (*LEPIDOPTERA*, *PYRALIDAE*) UNDER CONTROLLED CONDITIONS.

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Our work has focused on date pyrale, which present an important economical impact on date-palm fruit quality following its installation.

In the aim to detect the possible metabolic disruptions of semi chemical substances, we have treated the dates with an insecticide of contact. After that the treated dates was exposed to *Ectomyelois ceratoniae* females in order to evaluate their fertility.

Our results enabled us to note the sensibility of phenolic compounds to phytosanitary treatment, and even indicate that sesquiterpens quantity is more important in the treated block than the not-treated one.

The variability noted in females laying behavior; seems to be dependant on the product treatment concentration and on the exposure time.

In the other hand, the results showed that the variability inside the complex treatment-semiochemicals substances-fertility; reveals a positive correlation just after 48 hours of exposure to the recommended dose.

Key world: *Ectomyelois ceratoniae* Exposure, Insecticid, semiochemicals substances, Sesquiterpenes, Dose.

SURVEY OF DATE FRUITS INSECTS UNDER TRADITIONAL STORAGE CONDITIONS AT BISKRA OASIS IN ALGERIA.

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A survey for stored date fruits insects was carried out during the period January to August 2006, to identify insect species at Biskra Oasis Biskra in Algeria. Two locations were visited namely Tolga and Felliache. Around 15 samples of date fruits were collected in each location and for all the seasons studies "winter, spring and summer"; 5 samples per season and per location were collected. In this survey 6 species of insects from different families were identified. Mediterranean fruit fly *Ceratitidis capitata*, family *Tephritidae* was found on spring and summer season. Corn sap beetles *Carpophilus hemipterus* was found in date fruits damaged and in decomposition family *Nitidulidae*. 2 species of angoumois grain moth *Plodia interpunctella* and *Ephestia calidella*, family, *Pyralidae*, and 1 species of date fruits *Ectomyelois ceratoniae* were found in all seasons in the storage conditions; 2 species *Phanerotoma flavitestacea*

and *Habrobracon hebetor*, family *Braconidae*, principals parasitoids of *Ectomyelois ceratoniae*.

Key words: Date Fruits Insects, Storage Conditions, Biskra Oasis, Algeria.

ANALYTICAL REVIEW OF THE MAIN ARTHROPOD PESTS AND NATURAL ENEMIES ASSOCIATED WITH DATE PALM TREES IN EGYPT

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In Egypt, approximately 140.000 feddan were cultivated by more than nine millions of date palm trees which produced more than 750.000 tons of dates every year. Date palm trees were infested by several insect pests and mites. An extensive review of date palm arthropod pests and associated natural enemies was established by using the available publications. The main recovered subjects were the faunistic surveys, biological, ecological studies, seasonal population trends, damage and yields loss caused by the main date palm arthropod pests. The arthropod pests recovered in association with date palm trees were represented by 40 species belonging to 32 genera, 24 families and 6 orders. These six orders were represented by Orthoptera, Isoptera, Homoptera, Coleoptera, Lepidoptera and Diptera. The main recovered species belonging to these orders were: *Macrotoma palmata* (Fabricius); *Rhynchophorus ferrugineus* Olivier; *Arenipses sabella* (Hampson); *Ommatissus binotatus lybicus* De Berg; *Parlatoria blanchardi* (Targ.); *Phonopate frontalis* (Fabricius); *Batrachedra amydraula* Myerick; *Ephestia (Cadra) calidella* (Guenee); *Ephestia (Cadra) cautella* Walker; *Ectomyelois (myelois) ceratoniae* Zellar and *Virachola (Deudorix) livia* (Klug.). On the other hand, 22 mite genera were recorded in association with fruits, leaves, dry dates and in the soil around date palm trees. The recovered natural enemies were represented by 12 predatory species belonging to 12 genera. However, the recovered parasitoid species were belonging to 7 genera.

Key words: Analytical review, Arthropod pests, Date palm trees, Mites, Natural enemies.

BIOLOGICAL ASPECTS OF THE BLACK WALL SPIDER, WALCKENAERA ACUMINATA ON THE LARVAE OF THE RED PALM WEEVIL, RHYNCHOPHORUS FERRUGINEUS

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The biological aspects of the black wall spider, *Walckenaera acuminata* were studied on the larvae of the red palm weevil, *Rhynchophorus ferrugineus* Oliv. at $27 \pm 1^\circ\text{C}$ and $70 \pm 5\%$ RH. The life cycle of the true spider ranged between 133 to 165 with average 149 days for female, while ranged between 118 to 152 with average 135 days for male. Under constant temperature and relative humidity, the adult female lived for between 169 to 187 with average 178 days and adult male the longevity ranged between 145 to 168 days with average 165.5 days. Throughout the whole period of the immature adult stages, the immature and adult's female consume a ranged between 225 to 301 with average 263.0. Male followed similar trend as that of female, but in smaller numbers (ranged between 156 to 220 and average 188).

THE USE OF DIRECT SUNLIGHT AS PRE STORAGE TREATMENT OF DATE FRUITS TO CONTROL EPHESTIA CAUTELLA

AHMED M. ALJABR

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Date moth *Ephestia cautella* is the major pest of date fruits in Saudi Arabia. It attacks the dates on trees and after harvest prior to and during storage. Larva penetrates in the fruit and feed within and contaminates it with feces, molting skins and silk threads, which lead to inedibility of such fruits and lower its economic value. This study aim to evaluate alternating date fruits chemical fumigations with the use of direct sunlight. Dates infected with larvae and eggs of *E. cautella* were placed under clear plastic sheets under direct sun light for different exposure times. Temperature and relative humidity were recorded every one hour for 24 hours. The mortality of larva was recorded and LT50 was calculated. The promising results obtained might suggest the possible substitute of date chemical fumigation with the exposure of direct sun light.

HOW DO YOU KNOW ABOUT THE RPW DISTRIBUTION GLOBALLY IN A MINUTE?

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Date palm (*Phoenix dactylifera* L.) in many countries is under threat due to the infestation of agriculture pests. The most dangerous insect pest is the red palm weevil (RPW), (*Rhynchophorus ferrugineus*), which causes the death of date palms. In the mid of 1980's, it is invaded the Gulf countries and started to spread over other countries. Indeed, scientists, researches and people, whom caring about the date palms, are in need to search information about this destructive pest. Therefore, the first worldwide website (<http://www.redpalmweevil.com/>) was established in 1998 to help finding information about the RPW. A page in this website, named RPW World Report, was established for scientists around the world to report about RPW distribution such as China, Cyprus, Egypt, Greece, India, Iran, Italy and Sicily, Japan, Jordan, Spain, Syria, Turkey. However, if any one, who cares about date palms, would like to find information about RPW around the world in less than a minute, he should have to go to the red palm weevil website, which is consider globally link between scientists, researches and people caring about date palms and the participants are welcome.

CAPTURE-SEARCH-TREAT: A PHEROMONE BASED STRATEGY FOR THE AREA-WIDE MANAGEMENT OF RED PALM WEEVIL *RHYNCHOPHORUS FERRUGINEUS* OLIVIER IN DATE PLANTATIONS OF THE MIDDLE EAST

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Ever since Red Palm Weevil (RPW) *Rhynchophorus ferruginous* Olivier (Curculionidae / Rhynchophoridae / Dryophthoridae) was reported from the Gulf region of the middle East in the mid nineteen eighties, it has caused wide spread damage to date palm *Phoenix dactylifera* L. in several countries of the region where the pest has found an ideal ecological niche. However during the last decade there have also been reports of its successful control from the middle East. Initially, RPW was effectively managed in India on coconut by employing an Integrated Pest Management (IPM) strategy comprising of several tactics including the use of food baits to attract adult weevils. Based on this experience and with the synthesis and availability of the male produced aggregation pheromone "Ferrugineol" during 1993 RPW has been managed both in coconut and date palm in several countries, through a pheromone based strategy comprising of the following tactics (i) set monitor traps, (ii) implement mass trapping (based on infestation reports and weevil captures in monitors) using sequential

sampling plans, (iii) check palms around traps recording weevil captures on a weekly basis, (iv) treat infested palms (curative control), (v) eradicate heavily infested palms, (vi) take-up preventive insecticide sprays in and around eradicated/ treated palms, (vii) go in for repeat checking and spraying of palms around gardens where heavily infested palms are eradicated and (ix) implement other components of the regular RPW-IPM program (palm and field sanitation, quarantine, training and extension, treating breeding sites, watch closed gardens, avoid making wounds etc). The above strategy revolves around "capturing" adult weevils, "searching" hot spots to detect infestations and "treating" with insecticide to prevent new attack and cure infested palms, besides adopting strong quarantine regulations to prevent spread of the pest into new areas and also prevent its reoccurrence in plantations where RPW is controlled.

The use of food baited pheromone traps suppresses the build up of RPW population in the field as mostly young, gravid and fertile female weevils are captured in such traps. However, pheromone trapping can also be counter productive as reported from Iran, where infestations around these traps increased. This can happen if recommended trapping protocols with respect to trap design, servicing (replacing of food bait and insecticide solution), trap placement, trapping density, lure efficiency and longevity etc are not adopted.

This paper gives an over view of the above RPW-IPM strategy including adoption of the best pheromone trapping practices and success stories based on experiences of the author in managing RPW on coconut in India and date palm in Saudi Arabia, besides the current status on its bio-ecology, early detection of infested palms, role of Geographical Information System (GIS) in RPW-IPM and other control options *viz.* biological control, sterile male technique and host plant resistance.

STUDIES ON THE INFESTATION OF RED PALM WEEVIL *RHYNCHOPHORUS FERRUGINEUS* OLIV. IN EGYPT

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Studies and figure analysis of red palm weevil infestation in Egypt is presented to get some lessons and new applications for more convenient control. Obtained results from such study revealed the following data. Through 1993-2000, trees were surveyed from 4.3-16.2 times at Sharkia governorate and 2.9-14.1 times at Ismaïlia governorate. Number of infested trees were 85435 at Sharkia (27503 trees, removed) and 130217 trees at Ismaïlia (32354 trees were removed). The total infested trees in Egypt were 216118 and 60527 removed. Trees were monthly sprayed with total number of 811 times at Sharkia and 40 times at Ismaïlia during 8 years. Consumed insecticides were 162 tons at Sharkia and 110.8 at Ismaïlia with total of 272.4 tons. Number of infested locations were 2 during 1992-1998, and increased to 6 locations till 2000, hence it is cover all 26 Egyptian governorates by 2007. The annual cost of control measurements was 8 million L.E. Data from 2000-2007 was not available.

COST ANALYSIS AND ENERGY REQUIREMENTS FOR MECHANICAL CONTROLLING OF RED PALM WEEVIL

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A local controlling device for mechanical controlling of red palm weevil was developed and tested under different operational parameters (palm age, infestation position and injection pressure).

Evaluation of the performance of the developed device was carried out taking into consideration controlling time, device productivity, requirements and controlling cost.

The experimental results reveal the following:

- Insecticide injection at different pressures to determine the acceptable pressure which penetrates the cocoon and kills pupae.
- Controlling time increased for old palms especially at top infestation position and the vice versa was noticed with the device productivity.

Both energy requirements and controlling cost increased for old palms especially at top infestation positions comparing with young palms at bottom infestation position.

SURVEY OF SCALE INSECTS (COCCOIDEA) INFESTING DATE PALM AND THEIR NATURAL ENEMIES IN EGYPT

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A survey study concerning scale insects infesting date palm trees from different localities in Egypt was conducted during 2005-2006. The results registered nine species belonging to three families. These species are: *Avidovaspis phoenicis* Gerson & Davidson (Family: Asterolecaniidae), *Chrysomphalus aonidum* (L.), *Chrysomphalus dictyospermi* (Morgan), *Diaspis boisduvalli* Signoret, *Fiorinia fioriniae* (Targioni-Tozzetti), *Fiorinia linderiae* Takagi, *Mycetaspis personata* (Comstock) and *Parlatoria blanchardii* (Targioni-Tozzetti) (Family: Diaspididae) and *Phoenicococcus marlatti* Cockerell (Phoenicococcidae). Five parasitoids and 8 predators were recorded associated with these scale insects. Two of them; *Aphytis mytilaspidis* (Le Baron) and *Coccinella undecimpunctata* L. are new records in Egypt.

PTEROPTRIX AEGYPTICA EVANS & ABD-RABOU (HYMENOPTERA: APHELINIDAE) AS A BIOAGENT OF PARLATORIA BLANCHARDII ((HOMOPTERA: DIASPIDIDAE) INFESTING DATE PALMS IN EGYPT

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Pteroptrix aegyptica Evans & Abd-Rabou (Hymenoptera: Aphelinidae) was recorded for the first time in Egypt parasitizing the date palm scale insect *Parlatoria blanchardii* (Targioni-Tozzetti) (Homoptera: Diaspididae) during 2005. The present work deals with the distribution and the role of this parasitoid as a bioagent of *P. blanchardii* during 2005-2006. *P. aegyptica* recorded distributed in Fayoum, Giza, Ismailia and North Sinai (El-Arish). Percent parasitism ranged between 4.4 and 15.1 %.

THE PREDATORY INSECTS, MITES AND SPIDERS OF DATE PALM IN RASHID REGION, EL-BEHEIRA GOVERNORATE, EGYPT

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A survey of different predators of date palm pests was carried out during November, 2004 to October, 2006 in Rashid region, El Beheira Governorate, Egypt. Three insect species were recorded on leaves and two under tree bark. The predatory mites in this study included 52 different species belonging to 25 families in two suborders namely, Prostigmata and Mesostigmata. The most abundant predatory mites were belonging to the Families Macrochelidae and Cheyletidae. The spiders in

this study were recorded in 17 families. The most dominant spider families were Agelenidae, Theridiidae and Lycoseidae. A trial for rearing the predatory mite *M. muscaedomesticae* (Scopli) infesting fallen fruits under laboratory conditions was conducted.

Key words: Mite, Prostigmata, Mesostigmata, Spiders, *Macrocheles muscaedomesticae*

**EFFICIENCY OF NEW ISOLATES OF ENTOMOPATHOGENIC FUNGUS
BEAUVERIA BASSIANA AGAINST RPW, *RHYNCHOPHORUS FERRUGINEUS* IN
SAUDI ARABIA**

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The red palm weevil *Rhynchophorus ferrugineus* is a destructive pest on date palm plantations in the Middle East. Traditionally chemical insecticide have been used to control this insect in the Arab region .Arab Organization for Agriculture development (AOAD) set up a project to use bioagents to control this pest . seven local strains of entomopathogenic fungus *Beauveria bassiana* were isolated from naturally infected red palm weevils adults , pupae and from an adult of the mole cricket *Gryllotalpa* sp. for the first time in Eastern province ,Saudi Arabia . Bioassay of three isolates; B-SA1, B-SA2 and B-SA3 on *R. ferrugineus* adults resulted values LC50 of 1.25x10⁷ ,1x10⁵ and 2x10⁶ conidia/ml .Adults allowed to contact food sprayed with a formulation of conidia of B-SA3 and oil\water of the concentrations of 30 ,20 ,10, 9 , 5 x 10⁸ (conidia /ml) for three days showed 100% death in insects .however , 2.5 and 1.25 x 10⁸ (conidia /ml) killed 50 and 57 % of the rpw . 100 % aerial fungus developed on insects at the concentrations of 30 and 20 x 10⁸ conidia /ml . Only 75,60 , 50 , 50 and 12.5 % of the insects showed aerial growth of the fungus resulted from concentrations of 10, 9 , 5, 2.5 and 1.25 x 10⁸ conidia /ml respectively . Stored dray conidia at - 4 C for 16 months ; indicated 98.5 % germination during the first 6 months, then declined to 88 % up to the month 13. Germination of stored dray conidia for 14 to 16 months exhibited 74 and 61 % germination respectively . Effect of sunlight on the germination of the dray conidia during a period of 15 days exhibited reduction in germination from 95 .7 after one day to 91.2 , 86.4 75,70.7 and 67.57% at days 3,6,9,12 and 15 days respectively .Regression line showed that the half life of the fungus is about 22 days.

ORGANIC DATE AND BIOINTENSIVE IPM

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Organic date is one of food produced organically which have seen an increased demand during recent years not only globally but also in the Arab countries. Dates shall refer to organic production only if they come from a farm system employing the practices of transition, production, pest management, preparation and handling in accordance with the valid standards. This standard applies to the unprocessed and processed products that carry or are intended to carry descriptive labelling referencing organic production methods. When the organic management practices alone cannot prevent or control crop pests, disease or weeds, a biological or botanical substance, or other substances may be applied through biointensive IPM programs. Consequently, biointensive IPM is not just about management of pests alone, it is a sustainable crop production based on sound eco-system analysis. However there are certain challenges that constrain its wide range implementation in

Arab region. This paper focus on the need to overcome these constrains and planning as well as implementation of bio-intensive IPM program in organic date palm farms.

Key words: *Organic date, Pests, Biointensive IPM, Arab region*

Historical records of Application of the ministerial law 1205 /1996 to move from conventional insecticides to safe Bio-products to combate

Batrachedra amydraula , Virachola livia and Cadra spp in New vally Governorates

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In Egypt, The first use of alternation of different class of safe chemicals on dates to combat the lesser date moth *Batrachedra amydraula* , *Viracola livia*, and the almond moth *Cadra* spp was adopted by temerak and sayed in 2004 in Egypt(Temerak and sayed & temerak 2007) *B. amydraula*

Based on minimum effective rotation doses, alternate Tracer 24SC at 20 ml/100L then Runner 24SC at 15 ml/100L with 2-week interval showed zero infestation and 1.8% at the last sample of 2004 and 2005, respectively.

V. livia

Based on minimum effective rotation doses, alternate Tracer 24SC at 20ml/100L then Runner 24SC at 15ml/100L with 3-week interval showed 0.3 and 0.6% infestation, before harvest for 2004 and 2005, respectively. However, before harvest, untreated infestation was 33 and 70% in 2004 and 2005, respectively. Also, Successful penetration % of alive larvae into the fruit by using the minimum effective doses of rotation program resulted in almost 1.8, and 1% larvae, before harvest in 2004 and 2005, respectively. However, it reached to 97% and 89% in the untreated in 2004 and 2005, respectively. The last reflect the

excellent effect on the neonate larvae. During the same period, reduction of the 3 rotation programs was 97.8-99 and 99-100% for 2004 and 2005, respectively.

Cadra spp

Based on infestation of the late insect pest *Cadra* spp, same previous trend of the 3-rotation results. Based on minimum effective rotation doses, alternate Tracer 24SC at 20 ml/100L then Runner 24SC at 15 ml/100L with 3-week interval indicated less than 1% and 1% infestation during harvest for 2004 and 2005, respectively. The last reflected important value when storing the fruit. Both products proved to be working under dry hot high temperatures. Both products proved to be working under dry hot temperatures

POPULATION DYNAMIC OF DATE PALM FRUIT PESTS IN RIYADH AREA, KINGDOM OF SAUDI ARABIA.

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Fruits of date palms are very important product in term of their nutritional and social value in the Kingdom of Saudi Arabia. These fruits are infested with numerous pests including: *Arenipes sabella*, *Batrachedra amydraula*, and *Oligonychus afrasiaticus*. Population dynamics of these pests were followed in the College of Food and Agricultural Sciences farm for two seasons. Results showed that *A. sabella* was mostly active in the beginning of the fruiting season, whereas *B. amydraula* was

mostly active after the opening of the fruit sheets until the middle of the season. *Oligonychus afrasiaticus* started to appear in the beginning of May. Detailed results will be discussed in the presentation and suggested management methods will be presented.

THE ROLE OF KAIROMONE IN RED PALM WEEVIL *RHYNCHOPHOROUS FERRUGINEUS* OLIVIER (COLEOPTERA: CURCULIONIDAE) AGGREGATION PHEROMONE TRAPS .

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Red Palm weevil. *Rhynchophorus ferrugineus* Oliv. Attacking date palm trees causing considerable damage. The control of this insect pest depending in the aggregation pheromone traps. Capturing efficacy of the trap is heavily affected by its components. Field trials were conducted in date palm plantations at Al-Rahba, in the United Arab Emirates, during May 2005- April 2006, to evaluate the role of kairomone on number of captured Weevils. The experiment contained 9 treatments: Pheromone+ Kairomone, Pheromone + 150 g dates, Pheromone+ 250 g dates, pheromone+300g dates, pheromone +350g dates, pheromone+ kairomone + 150 g dates, pheromone + kairomone+ 250 g dates, pheromone + kairomone+ 300 g dates and pheromone + kairomone+ 350 g dates in 4 replications, 4- 5 liters of water were added each traps. The aggregation pheromone 4-Methyl-5-Nonanol 90%+ 4-Methyl-5-Nonanon 10%, Kairomone Ethyl Acetate 98% and forage date fruits were used. Results indicated that the treatments which contained pheromone, kairomone dates were better than the treatments without kairomone. The number of captures weevils were(161, 340, 405, 417, 469, 557, 661, 713, and 762 weevils) during the studying period for these Nine treatments respectively. The results indicated that there are significant differences between the numbers of captured weevils, between these treatments, all treatments superiors on first one, and the treatments contain pheromone + kairomone + dates fruit, significantly increase the number of captured (2693 weevils 62.3%) compared with (1631 weevils 37.7%).The increase of captures was 1062 weevils (24.6%).The number of captures weevils increase in increasing the date fruits weight. This is need to detail studying. Adding water, date fruits, aggregation pheromone and kairomone to the RPW traps is very necessary to increase its weevil attraction and increase the number of captured weevils. The insect is attracted to a smell combination emitted from pheromone, kairomone and date fruits which improves attraction of these traps to this pest. We must always change the bait and water every 2 weeks. Putting a new pheromone, kairomone and performing trap maintenance should be done when that is needed to increase the efficacy.

Key words: Aggregation pheromone traps, Kairomone, *Rhynchophorus ferrugineus*

BIOCONTROL OF DATE PALM DUST MITE OLIGONYCHUS AFRASITICUS(ACARINA: TETRANYCHIDAE) USING PREDATORY MITE, EUTOGENS PUNCTATA (ACARINA : CHEYLETIDAE : PROSTIGMATA)

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Oligonychus afrasiticus is an important injurious mite in open-air date palm in southern libya, affecting both quality and quantity of date crop. Laboratory studies showed that the development time of predatory mite *Eutogens punctata* which reared in smole scale using *Oligonychus afrasiticus* and *Tyraphegus punctata* as food sources were egg stage 5-4days; larva stage 2-3 days; Protonymph stage 5-6 days; Duotonymph stage 4-6 day respectively. Laboratory studies showed that adult females

of *Eutogens punctata* could consume 7-8 and 9-11 prey per days, while male consume 3-5 and 4-6 prey per days. *Eutogens punctata* larva, is reported for the first time as non-feeding stage

STUDY OF THE EFFECT OF THE ENTOMOPATHOGENIC FUNGI IN THE HISTOLOGY OF THE TEGUMENT OF THE DESERT LOCUST.

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In Algeria, the locust pilgrim *Schistocerca gregaria* is regarded as one of the most frightening ravageurs of the palm trees - date palms especially in period of invasion. Currently the chemical fight is the only means used to fight this ravageur. However it weighed down the environmental assessment. In the search of new techniques to protect the cultures, we chose the use of a local stock of a mushroom entomopathogene *Beauveria bassiana* Balsamo (Villemin) collected in the North of the country against L5 of *S. gregaria*. In this study we prepared two batches. The 1st batch was treated by contact by DL50, the 2nd witness batches treated by distilled water. 5 days after treatment, of these 2 batches, one recovered, dissected and took the teguments of the acridiens. The examination of the various parts of the teguments of L5 of *S. gregaria* under the optical microscope highlighted notable differences in structure at the individuals treated compared to the witnesses. Key words: *Schistocerca gregaria*, *Beauveria bassiana*, mortality, Histology, tegument.

Key words: *Schistocerca gregaria*, *Beauveria bassiana*, date palm, mortality, Histology, tegument

نحو إستراتيجية للإدارة المتكاملة لسوسة النخيل الحمراء

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يتعرض نخيل التمر للإصابة بحوالي 40 نوع من مفصليات الأرجل منهم حوالي 8 أنواع تندرج تحت الآفات الخطيرة وتعتبر سوسة النخيل الحمراء أكثرها شراسة ... لشجرة نخيل التمر . وتختلف نسبة إصابتها لنخيل التمر وفقاً للظروف البيئية والصنف وعمر النخلة . وتتراوح نسبة الإصابة بسوسة النخيل الحمراء ما بين 2% (باكستان) إلى حوالي 60% (واحة القطيف). تعتبر سوسة النخيل الحمراء من أخطر الآفات التي تهدد نخيل التمر في المشرق العربي حيث دخلت إلى منطقة الشرق الأوسط بداية من منتصف الثمانينات. نظراً للإفتدار البقائى والتناسلى الذى تتمتع به سوسة النخيل الحمراء ووجودها لفترات طويلة داخل جذوع أشجار النخيل فإن مكافحتها تعتبر غاية فى الصعوبة وتحتاج إلى جهد فائق حتى يمكن السيطرة عليها وعليه فإنه من الضروري تبنى إختيارات متعددة تعمل معاً أو بالتبادل وفقاً لمقتضيات الوضع القائم لإحكام السيطرة على منع إنتشار الآفة ثم خفض تعدادها داخل منطقة الإدارة مع التأكيد على أن المكافحة الكيميائية الواعية هى حجر الزاوية لبرامج المكافحة . وتعتمد سبل مكافحة هذه الحشرة على وجود نظام رصد قوى مع إمكانية إستخدام كافة الوسائل المتاحة مثل الطرق الزراعية والميكانيكية والمكافحة السلوكية والحيوية والكيميائية . ولعل وضع كافة هذه الوسائل فى حزمة واحدة يعتبر من الأمور الهامة المحددة لنجاح مكافحة هذه الحشرة . ومن الضروري لتحقيق السيطرة على هذه الحشرة دعم وسائل التدريب والتعليم والإرشاد والوعى العام وإعتبار المزارع هو مركز إدارة ومكافحة هذه الحشرة مع دعم الدراسات البحثية وتوفير التمويل اللازم لإيجاد حلول لبعض المشاكل القائمة . ولا يمكن أن تغفل أهمية ودور مثلث إستنباط أصناف نباتية مقاومة والمكافحة الحيوية والمكافحة السلوكية بالإضافة إلى التدخل بالمبيد الكيميائى الأمان لتحقيق إدارة متكاملة لسوسة النخيل الحمراء

التركوجراما وافاق استخدامها فى الزراعة المصرية

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يعتبر نخيل البلح من المحاصيل البستانية ذات الطبيعة الخاصة فى مناطق زراعته كما لنخلة بلح مزايا عديدة حيث ينشأ عليها كثير من الصناعات البيئية الهامة و التى تعتبر مصدر الرزق والعمل الرئيسي لنشاط السكان فى تلك المناطق.

يصاب البلح بالعديد من الآفات الحشرية التى تتبع حرشفية الأجنحة منذ بداية التزهير وحتى الوصول الى المخزن وتتسبب فى حدوث أضرار بالغة للمحصول كما ونوعا، معظم هذه الآفات تضع بيضا خارج الثمار وبمجرد الفقس تدخل الثمرة و تصبح فى مأمّن من المبيدات.

لذلك يستخدم طفيل التريكو جراما لمكافحة هذه الآفات حيث يتطفل على البيض قبل فقسه وبالتالي يقل الضرر الناشئ عن الاصابة فضلا عن عدم استخدام المبيدات ويصبح المنتج النهائي آمن و صحي و خالى الملوثات الكيماوية ويصلح للتصدير والاستهلاك المحلى.

حصر الحشرات المتلازمة مع التمر تحت ظروف التخزين التقليدية بواحات بسكرة بالجزائر

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تم إجراء مسح للحشرات المتلازمة مع التمر تحت ظروف التخزين التقليدية بواحات بسكرة جنوب شرق الجزائر في الفترة ما بين 01/01 الى غاية 2006/08/30 خلال هذا المسح تم زيارة موقعين للتخزين في منطقة بسكرة الاول بطولقة و الثانية بفلياش، جمعت خلالها 15 عينة إجمالية من كل موقع بما يعادل 05 عينات في كل موسم.

الشتاء، الربيع و الصيف حيث تم ذلك في اماكن تخزينها الرئيسية من خلال الدراسة أمكن تحديد و تعريف ستة أنواع من الحشرات تتبع فضائل مختلفة هي فصلة *Tephritidae* و تمثلها ذبابة الفاكهة *Ceratitidis capitata* وجدت في فترات التخزين لموسمي الربيع و الصيف، و فصيلة المنصورة و التمور خنفساء عصارة الذرى *Carpophilus hemipterus* وجدت في التمور المتصورة و التمور المتعفنة و فصيلة *Pyralidae* و يمثلها ثلاثة انواع، نوع سوسة التمر *Ectomeylois caratoniea* و نوعين من فراشات المخازن *Plodia interpunctella* ; *Ephestia calidella* حيث وجدت هذه الفراشات على التمور في العينات المحصاة خلال ثلاث مواسم الفصيلة الاخيرة تمثلت في *Braconidae* حيث تمثلها نوعين من طفيليات فراشات سوسة التمر و فراشات المخازن و هما *Phanerotoma* و *Habrobracon hebetor*.

كلمات مفتاحية : حشرات التمر، مخازن تقليدية، واحات بسكرة، الجزائر.

دراسة أولية لبعض طرق مكافحة المتكاملة لسوسة النخيل الحمراء فى سوريا

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دخلت سوسة النخيل الحمراء الى سوريا فى السنوات الخمس الأخيرة وظهرت أول مرة فى اللاذقية على أشجار النخيل الثمرى فى الساحل السوري وكانت الإجراءات التى اتبعت للوهلة الأولى هى اقتلاع الأشجار وحرقتها، لذلك كان لابد من وضع أسس لدراسة تهدف الى اختبار بعض طرق مكافحة المتكاملة للحد من أضرار هذه الآفة الخطيرة والجديدة على البيئة السورية وقد عثر على العديد من الأعداء الحيوية (نوعين من الفطر) ونوع من البكتريا، ونوع من الاكاروس المفترس فى البنية السورية كخطوة اولى كما تم اختبار فعالية ثلاث مبيدات بطريقتن من المعاملة.

طفيليات الطور البرقي لفراشة سوسة التمر *Ectomyelois ceratoniea* فى ظروف التخزين

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تم حصر الطفيليات الطور اليرقي لفراشات سوسة التمر *E.ceratoniae* تحت ظروف التخزين المخبرية بالمعهد الوطني لحماية النباتات بولاية بسكرة خلال عام 2006 وجد نوعين من الطفيليات تهاجم يرقات سوسة التمر تحت هاته الظروف يعتبر النوعين من الطفيليات الخارجية و هما : *Braconidae* فصلة *Habrobracon hebetor Hymenoptera* *Phonerotoma flavitestacea* بينت الدراسة ان هذا الاخير اظهر قدرة طفيلية عالية بنسبة تطفل تتراوح ما بين 15 الى 30 % و بمعدل تتراوح ب 225 % بينما تراوحت ما بين 10 الى 20 % بمتوسط 15 % .
تطفل اقل حيث تراوحت ما بين 10 الى 20 % بمتوسط 15 % .
كلمات مفتاحية : طفيليات الطور اليرقي *Phanerotoma flavitestacea* و *Habrobracon hebetor* سوسة التمر *Ectomyelois ceratoniae*
الحشرات المتلفات لاشجار النخيل و لمختلف الطبقات النباتية في فيفاء الوسطى الجزائرية (المحمية الطبيعية لمرقب، المسيلة).

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المحمية الطبيعية لمرقب تتكون من ثلاث طبقات نباتية و هي : الأشجار، النخيل و الشجيرات و الأعشاب. هذه المزروعات متعرضة لمختلف المتلفات. بحيث ان هذه الحشرلت تلتف محاصيل النخيل مما يؤدي الى انخفاض نسبة المحصول.
حتى الآن لا توجد أي دراسة حول الجراد في هذه المنطقة، و عليه، فمننا بتعداد مستقيمت الأجنحة في ثلاث محطات دراسية.
إن مستقيمت الأجنحة المتواجدة بمحطة نبات الشيخ *Artemesia herba alba* متكونة من 18 نوع، نصفها ينتمي إلى عائلة Oedipodinae. الأنسفيريات متواجدة فقط بنوع واحد و هو *Platyceis intermedia*.
في محطة الدراسة الثانية للصبور الحلبي *Pinus halepensis* جمعنا 21 نوع من السليفرات و نوع واحد من الأنسفيريات *Platyceis intermedia*. لكن العدد الأكبر من الأنواع 8 تنتمي إلى عائلة Oedipodinae هذا يمثل نسبة 36.5% السعة الكلية لمستقيمت الأجنحة لهذه المحطة. في محطة الحلفاء *Stipa tenacissima* لاحظنا نواجد تحت رتبتين معا. الأنسفيريات ممثلة بنوع واحد *Platyceis intermedia*. لكن السليفرات متواجدة ب 19 نوع مقسمة على 7 تحت عائلات. لاحظنا بأن Oedipodinae تحتل نسبة 32%.
الكلمات المفتاحية :
فيفاء، محمية مرقب، محمية مسيلة، مستقيمت الأجنحة.

دراسة مقارنة للحشرات في وحتين تقليدية و حديثة بمنطقة عين بنوي بسكرة الجزائرية

صايغي سعيدة و دومانجي صلاح الدين

جامعة محمد خيضر بسكرة قسم البيولوجيا -قسم علم الحشرات الزراعية و الغابية المعهد الوطني للزراعة الحراش الجزائر

يتميز الجنوب الجزائري و خاصة الجنوب الشرقي بزراعة النخيل في الجزائر المساحة المخصصة لزراعة النخيل تقدر بأكثر من 130.000 هكتار. يصل تعداد النخيل الإجمالي إلى حوالي 13 ألف مليون نخلة % 83 من المساحة الإجمالية المخصصة لزراعة النخيل تتمركز بالولايات التالية :الوادي % 23.5 بسكرة % 21.05 ادرار % 22.4 ورقلة % 16.05 تعتبر منطقة بسكرة والوادي من أهم مناطق زراعة النخيل في الجزائر من حيث الكمية والنوعية الإنتاج الوطني الإجمالي للتمور يقدر ب 4.4 مليون طن كل الأصناف مدمجة يمثل إنتاج دقلة نور % 49 يتبع بدقلة بيضاء % 27 من الإنتاج الإجمالي للتمور (ناجي 2003).
تعتبر زراعة النخيل من أهم مصادر المعيشة لسكان منطقة بسكرة على حسب إحصائيات مديرية المصالح الفلاحية لمنطقة بسكرة لسنة 2004 يوجد أكثر من 3172262 نخلة بهذه الولاية المساحة المزروعة بالنخيل تبلغ 38896 هكتار و يبلغ إنتاجها من التمور 1300118 قنطار تصاب زراعة التمور بعدة آفات تنقص من نوعية التمور منها الناتجة عن أمراض فطرية و بعض الحشرات كسوسة التمر، القشرية، البيضاء إلخ.....
قمنا بهذه الدراسة من أجل دراسة الحشرات الضارة و المفيدة التي توجد بالواحة التقليدية و الحديثة لمعرفة مدى تأثير التقنيات الحديثة الوسط الحيوي للحشرات.
لاحظنا من خلال نتائج بحثنا ان الأنواع المحصاة معظمها ينتمي إلى قسم الحشرات بـ 250 نوع مصنفة في 10 رتب 225 نوع تم جردها في الواحة الحديثة و 170 نوع في الواحة التقليدية من

250 نوع محصاة من بين فهي الممثلة بأكثر من 99 نوع في هذه الأنواع التي تم جردها رتبة غمديات المركز الثاني غشائيات الأجنحة. في المركز الثالث كل من رتبة ذوات الجناحين و مستقيمات الأجنحة نصفيات الأجنحة و حرشفيات الأجنحة بـ 15 نوع في الأخير كل من رتبة شبكيات الأجنحة رعشات الأجنحة و مغمذات الأجنحة فهي ممثلة بأعداد ضئيلة من خلال نتائج الدراسة لاحظنا أنه بالواحة الحديثة أكبر عدد من الأنواع تم وجوده في شهر افريل 90 نوع اما العدد المنخفض تم جرده في شهر جانفي 15 نوع اما بالنسبة للواحة التقليدية ثم برد 55 نوع في شهر ماي اما في شهر ديسمبر ثم جرد 10 أنواع فقط كلمات المفتاح: واحة تقليدية، واحة حديثة ، بسكرة الجزائر، دقلة نور، الحشرات، غمديات الأجنحة، غشائيات الأجنحة مستقيمات الأجنحة.

أهم الحشرات الشائعة التي تصيب بساتين النخيل في منطقة قره تبه / ديالى

شاهين عباس مصطفى ، ممتاز محمود رفعت

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يعتبر النخيل *Phoenix dactylifera* L. من اقدم اشجار الفواكه في العالم ، اذ اهتم الانسان بالنخلة منذ اقدم العصور حيث كانت مقدسة عند السومريين والبابليين والاشوريين ، يعتبر العراق من الاقطار المهمة في زراعة و انتاج التمور ويحتل مركز الصدارة بين الدول المنتجة والمصدرة لهذا المحصول الاقتصادي المهم ، الا ان الواقع الفعلي لهذه البساتين في الوقت الحاضر لا تبشر بالخير وخاصة بعد الاحتلال حيث تم تحويل معظم هذه البساتين الى مواقع عسكرية ومن ثم قطع الاشجار الكثيفة فيها ، اظهرت نتائج هذه الدراسة وجود عدد من الافات المهمة والملازمة لاشجار النخيل والذي يؤدي الى اضعاف الحاصل الانتاجي للاشجار وهذه الحشرات هي (دوباس النخيل *Ommatissus binatatus* D. ، حميرة النخيل *Batrachedra amgdraula* M. ، حفار عذوق النخيل *Oryctes elegans* ، دودة الطلع *Arenipses sabella* ، الارضة *Microcerotermes diversus* Silv. ، الافات . العراق كلمات مفتاحية : النخيل *Phoenix dactylifera* L. ، الافات . العراق

طريقة الحقن الجديدة أحدث الطرق الفعالة لمكافحة سوسة النخيل الحمراء

نبوى منولى

انتشار البواء بسوسة النخيل الحمراء عبر البحار والمحيطات والإصابة من القمة حتى منطقة الجذور هل يمكن التحكم في هذا العدو القاتل للنخيل ؟

بعض المميزات التي تجعل طريقة الحقن بماكينة ترى فيتال افضل الطرق لمكافحة سوسة النخيل الحمراء :

1- التحكم فى كمية المبيد المحقن حيث انه فى حالة استخدام المركبات الكيميائية فى بعض الحالات الصعبة من الإصابات الشديدة والتي تحتاج الى عدد 2 مرة فى السنة لم يتم فقد اى مركب كيميائى فى التربة.

2- طريقة اولية تتماشى مع التوازن البيئى والحفاظ على صحة العامل.

3- يمكن حقن العناصر الغذائية الكبرى والصغرى وبعض المستخلصات التى تزيد من المناعة الطبيعية للنخيل غير المصاب وهى حصانة طبيعية ضد سوسة النخيل الحمراء وتزيد من صحة وعافية النخيل والذي ينعكس بالطبع على إنتاج التمر من زيادة مركبات السكر والجودة العالية وبالتالي فترة التخزين.

4- التحكم فى ضغط المحلول المحقن حيث انه مناسب مع الضغط الأسموزى للنخلة.

5 - طريقة اقتصادية حيث أنها توفير فى الوقت حيث انه يمكن إجراء عملية الحقن مرة واحدة فى العام فى حالة الإصابة الخفيفة ومرتين على الأكثر فى الحالات شديدة الإصابة

6 - تبلغ فاعلية الحقن بماكينة ترى فيتال فى القضاء على سوسة النخيل الحمراء فى كثير من الأحيان الى 85%

فاعلية تكنولوجيا جهاز الحقن ترى فيتال فى مكافحة سوسة النخيل:

نظام تشغيل جهاز الحقن عن طريق التحكم فى ضغط المبيدات المخصصة لعملية الحقن و كذلك كمية المحلول المحقن وسرعة سريان المادة الفعالة والتي تنقل مع العصارة عن طريق الحزم الوعائية الأصلية ثم الى الحزم الوعائية الثانوية وبالتالي الى القمة النامية والسعف. و لذلك يجب إتقان وضع ابر الحقن فى موضع محكم ويلانم مع موقع امتداد وتكثف الحزم الوعائية مع نقطة امتداد الجرز حتى يضمن وصول المحلول الى جميع اجزاء النخلة وعدم حدوث تراكم للمادة الفعالة فى منطقة معينة من جذع النخلة. ومن الدراسات والأبحاث التى بلغ اهتمام شركة العالم الأخضر المساهمة وهى إتقان تصميم ماكينة ترى فيتال على حسب الاختلاف فى الظروف المناخية والطبيعية مع احترام قوانين الأمان الدولية المتفق عليها.

PLANT PATHOLOGY

POST HARVEST FUNGI ON DATE FRUITS IN MIDDLE OF IRAQ

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Survey on eight varieties of date fruits at three stages of maturation (Khala, Rutab and Tamr) was conducted to identify the fungi cause market diseases in middle of Iraq. Varieties of dates included in the study were: Barhee, Degel, Halawy, Hamrawy, Khadrawy, Maktoom, Zahidi and Shuker. Results revealed that seven important fungi and yeast associated with date fruits were isolated. These fungi were: *Alternaria* sp., *Aspergillus flavus*, *A. niger*, *A. ochraceous*, *Fusarium* sp., *Penicillium griseum* and *Rhizopus stolonifer*. The percentage of fruits infection of each sample was calculated, a significant differences were observed among different varieties. Percentage incidence of fungi on date fruits ranged from 8.2 to 37.4 % . *Aspergillus* spp. were the most prevalent fungi isolated and the most common one caused fruit spoilage was *A. niger*. Fruit deterioration varied from Khalal stage until fruit maturation (Rutab and Tamr stages) depending on the fungal infection and the spontaneous conditions.

RANDOM AMPLIFIED POLYMORPHIC DNA (RAPD) MARKERS IN DATE PALM: STUDY OF RESISTANCE TO *FUSARIUM OXYSPORUM F. SP. ALBEDINIS*.

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The date palm tree has great socioeconomic importance in Arabs countries. The vascular wilt of date palm known as Bayoud disease is caused by the fungus *Fusarium oxysporum f.sp. albedinis* (Foa). The bayoud is the most letal infectious disease of palm date, and his impact is very serious in North Africa, especially Algerian and Moroccan oasis where losses are increasing and may be a threat for palm-groves around the araby contries. However, the development and application of new technologies such as RAPD can be useful to identify molecular markers linked to be resistant. Of the 97 primers screened, 44 did not produce any amplification product and 53 produced a mono and polymorphic RAPD bands; 7 of whom are suspect to be a candidate for resistance to a fungus. We applied these seven primers out of 14 varieties including 7 resistances and 7 sensitive. The genetic profiles between the sensible and the resistant plants were compared and the results are to discuss. Whereas, this study well be applied on other varieties and plants issue of different cross and have different reactions to gene for specific resistance to Foa.

Keyword: bayoud- *Fusarium oxysporu, f.sp. albedinis*- date palm- RAPD- resistance

STUDY OF THE ALTERATIONS CAUSED BY THE FUNGUS MAUGINIELLA SCATTAE CAUSAL AGENT OF KHAMEDJ DISEASE ON DATE PALM-TREES *PHOENIX DACTILIFERA*

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In order to appreciate effects of the fungus *Mauginiella scaettae* causal agent of the khamedj disease on pollen grains of date palm-trees and wich can involves to complete yield loss , this study has concerned two varieties (Degla beida and Ghers) highly sensitif to the disease. Many morphological and physiological

parameters have been evaluated: length and width of pollen grains, length of flowers, length of anthers and pollen grain's viability percentage.

The results showed that the fungus *Mauginiella scattae* causes morphological alterations on flowers which have conducted to there drought and death, destruction of anthers and affects the viability of pollen grains.

SELECTION OF THE SOUTH-WEST ALGERIAN VARIETIES OF DATE PALMS AGAINST BAYOUD DISEASE: *FUSARIUM OXYSPORUM F.SP.ALBEDINIS*.

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The study and the prospections showed that on the level palm plantations reached by the disease of Bayoud, caused by a telluric fungus: *Fusarium oxysporum f.sp.albedinis*, the majority of the varieties disappear more or less quickly. The program against the fusariose of the date palm with the I.N.R.A.A of Adrar consists of the selection of varieties resistant to Bayoud and possibly presenting good characters of quality and productivity, either among the natural populations, or among those resulting from controlled crossings. The varieties of date palm not having expressed symptoms on the level of the active fields of Bayoud were taken into consideration for tests of resistance. The strains of F.o.a used were isolated from date palm rachis and were chosen for their virulence: F.o.a 90, Mahdia F.o.a 94, I.N.R.A F.o.a 96. After plantation, 90% of the young individuals of date palm subjected to the experimentation began again well. We observed a practically continuous variation of the reaction of sensitivity to Bayoud since a variety having a horizontal resistance, more tolerant to most sensitive. A classification was established separating the varieties of categories: sensitive, tolerant, resistant. Within the very sensitive class, the death rate varies from 75 to 100%, tolerant varieties had a going percentage of mortality from 10 to 37.5%. However, other varieties did not express any symptom of Bayoud during more than 10 years of culture. We noticed that within each variety, the individuals react in a heterogeneous way to the parasitic attack that the appearance of the symptoms is done at very variable times after inoculation. The appearance of the symptoms can be done according to the individuals. This infection is spread out after the inoculation. Each individual tree has its owen potentialities of defense.

Key words: *Fusarium oxysporum albedinis* - date palm - mortality - inoculum - symptom.

PESTALOTIA PALMICOLA ON DATE PALM LEAVES IN EGYPT

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During March, 2001, a new leaf spot disease symptoms was observed on leaves of date palm plants (*Phoenix dactylifera* L.) Barhee cv. Resulted from tissue culturing from Bahteem Farm, Mounfyia governorate, Egypt. Symptoms observed as brown colored spots with yellowish margins. Several spots coalesced to each other and cover large portions on the leaf, finally complete discoloration and dead. Also, the same symptoms were observed in A.R.C. Under greenhouse of Central Lab. Res. Development of date palm, Giza governorate, Egypt, during April, 2004. The causal pathogen was isolated from leaves of tissue culture plants. Based on cultural characteristics and light microscope examination, the pathogen was identified as *Pestalotia palmicola* and confirmed its pathogenicity to cause the disease. No significant differences between Bahteem isolate and Central Lab. isolate in disease severity

Host range test revealed that, most tested ornamental palms Latan palm (*Latania* sp.), Canary island date palm (*Phoenix canariensis*), Mexican fan palm (*Washingtonia robusta*), Coconut palm (*Cocos nucifera*), Royal palm (*Roystonea regia*), Cabbag palmetto (*Sabal palmetto*) and Seaforthia palm (*Seaforthia elegans*) were also attacked by *Pestotia palmicola*. However, disease severity and disease symptom varied according to plant species.

This is the first report about possibility *Pestotia palmicola* to attack host range of ornamental palms under Egyptian condition. Royal palm was high susceptible comparison in other tested palms while California fan palm was least susceptible. The relationship between the infection and leaf age showed that, the older leaves (pinnae or leaflet) in adult palm and leaves of tissue culture plants were more susceptible infection than the new leaves of adult palm.

Topsin M 70 showed the best effect against the causal pathogen followed by copper oxychloride, kocide 101 and antracol. On the other hand, kocide 2000 revealed the lowest effect.

Three commercial biofungicides namely AQ10 (*Ampelomyces quisqualis*), Bio-Zaid (*Trichoderma album*) and Bio-Arck (*Bacillus megaterium*) and one organic fungicide namely kanz (Gogoba oil) were found to be efficient in suppressing *Pestotia* leaf spot of date palm caused by *Pestotia palmicola*. Also they are tested *in vitro* to determine their efficacy in lysing the cell wall of the pathogen. The antagonists produced mycolytic enzymes viz. Chitinase and β -1, 3-glucanase. Variations among the biofungicide were found in their ability to produce these enzymes.

Key words: *Pestotia palmicola* Leaf spot, Date palm, ornamental palms, Topsin M 70, copper oxychloride, kocide 101 and kocide 2000 *Trichoderma album*, *Bacillus megaterium*, chitinase and β -1, 3-glucanase

ANTIFUNGAL ACTIVITY OF SYNTHETIZED DITHIOCARBAMATE DÉRIVATIVES ON *FUSARIUM OXYSPORUM F.SP. ALBEDINIS* IN ALGERIA

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The date palm (*Phoenix dactylifera*) is a cultivated plant with a great interest for several populations in the Algerian arid regions. The date palm is threatened by a vascular wilt, called Bayoud, where the causal agent is a mushroom; *Fusarium oxysporum F.sp. albedinis* (FOA). The cultivars date palm differ by their resistance to the Bayoud and date quality. In the field, the appearance of the external symptoms of Bayoud takes a long time after the first infection *via* the root system and the reaction becomes fast at the plants resulting from seeds. Currently, there is no method suitable to mark the resistance of the date palm toward the Bayoud disease.

Research has been conducted on new antifungal derivatives from natural products, with the intention to synthesize novel dithiocarbamic ester derivatives of itols and carbohydrates; esters having greater residual effectiveness, phloem mobility and higher plant systemic activity. The *in vitro* antifungal activity of the new compounds was evaluated.

The growth inhibitory effect of 16 dithiocarbamate esters was tested against this fungus, (FOA), at concentrations of 200, 100, 60, 40 and 20 ppm on PDA plates using DMSO as solvent at 22 °C. All inhibition data were normalized as percentage inhibition (PI) compared to the control plates using only DMSO. At 200 ppm all our products inhibit the growth of the (FOA) with percentages of inhibition varying between ester

18 whose PI = 2.16 % and ester **5** whose PI = 64.23 %. Suitable exception for two products, the product **4** whose PI = -3.22 and **20** whose PI = - 0.34 %.

It was remarkable that the dithiocarbamic esters **14**, **15**, **3** and the dithiocarbamic esters **5** were usually the most antifungally active members of the dithiocarbamate series and the dithiocarbamate **20** generally showed a poor biological activity.

In conclusion, the synthesized dithiocarbamate esters has low toxicological effect compared to the commercialized products whose aromatic substrats, and in perspective, we will substitute others dithiocarbamate function on the same substrat, carbohydrates and itols, to obtained a serie of bis-dithiocarbamates to increase antifungal activity.

Key words: Dithiocarbamates, carbohydrates, Itols, antifungal activity, *Fusarium oxysporum f.sp. albedinis*

PATHOLOGICAL STUDIES ON SOME DATE PALM DISEASES AT EGYPTIAN OASIS

1- ISOLATION AND IDENTIFICATION OF FUNGI ASSOCIATED WITH LAIDBACK LEAVES ASPECT IN THE NEW VALLEY GOVERNORATE

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This study was conduct at some farms located in El-Kharga and El-Dakhla Oasis at the New Valley Governorate during years 2005-2006. The aim of the study was to investigate the causal agents of the date palm laidback leaves aspect, where the leaves of the date palm tree laid back then hanging against the trunk after that it start to wilt and die. This symptom appears through the last few years with inattentive reasons. The base part of the hanging leaf (attached to the trunk) which appears rotted with dark fibrous was cut down and the causal agents were isolated. Results revealed that the most frequent and abundant fungi isolated from the previous symptoms at the two locations were *chalara (Thielaviopsis) paradoxa* , *Diplodia sp.* with some associated fungi i.e. *Fusarium spp.* and *Alternaria spp.* which showed low abundant. Pre pathogenicity test using cell suspension culture technique and DNA Fingerprinting was performed for the most abundant fungi.

Key words : Date palm, The New Valley Governorate, Oasis, Fungi, *Chalara (Thielaviopsis) paradoxa*, *Diplodia sp.* *Fusarium spp.* *Alternaria spp.*, Pathogenicity, Fingerprinting, and cell suspension

SELECTION OF THE SOUTH-WEST ALGERIAN VARIETIES AND CLONES OF DATE PALMS AGAINST BAYOUD DISEASE: *FUSARIUM OXYSPORUM F.SP.ALBEDINIS.*

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The study and the prospections showed that on the level palm plantations reached by the disease of Bayoud, caused by a telluric fungus: *Fusarium oxysporum f.sp.albedinis*, the majority of the varieties disappear more or less quickly. The program against the fusariose of the date palm with the I.N.R.A.A of Adrar consists of the selection of varieties resistant to Bayoud and possibly presenting good characters of quality and productivity, either among the natural populations, or among those resulting from controlled crossings. The varieties of date palm not having expressed symptoms on the level of the active fields of Bayoud were taken into consideration for tests of resistance. The strains of F.o.a used were isolated from date palm rachis and were chosen for their virulence: F.o.a 90, Mahdia F.o.a 94, and I.N.R.A F.o.a 96. After plantation, 90% of the young individuals of date palm subjected to the

experimentation began again well. We observed a practically continuous variation of the reaction of sensitivity to Bayoud since a variety having a horizontal resistance, more tolerant to most sensitive. A classification was established separating the varieties of categories: sensitive, tolerant, resistant. Within the very sensitive class, the death rate varies from 75 to 100%, tolerant varieties had a going percentage of mortality from 10 to 37.5%.

Other hybrids date palm showed certain resistance against *Fusarium-wilt*, which were evaluated about 16 to 29.4% respectively for T-VIII and T-XI hybrids.

However, other varieties did not express any symptom of Bayoud during more than 16 years and about 22 years for hybrids palm. We noticed that within each variety, the individuals react in a heterogeneous way to the parasitic attack that the appearance of the symptoms is done at very variable times after inoculation. The appearance of the symptoms can be done according to the individuals. This infection is spread out after the inoculation. Each individual tree has its own potentialities of defense.

Key words: *Fusarium oxysporum albedinis* - date palm - mortality - inoculum - symptom

USING ACTINOMYCETES ON CONTROLLING BACTERIAL CONTAMINATION OF DATE PALM DURING DIFFERENT STAGES IN VITRO

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Bacterial contaminations are considered to be of the most serious constraints facing date palm proliferation *in vitro*. To control date palm (*Phoenix dactylifera*) cv. Sakkoty contaminated by bacteria *in vitro*, actinomycetes (*Streptomyces bobillii* or *S.chloramphenicol*) were studied in these paper. Actinomycetes were studied at the concentrations (0, 50, 100, 250, 500 and 1000ppm) and added to culture media in different stages of date palm indirect somatic embryogenesis stages (establishment, callus formation, somatic embryos growth, shooting and rooting). It was found that, after twelve weeks, *S.chloramphenicol* was more effective than *S.bobillii* at any concentration used at different stages. Addition of *S.chloramphenicol* at the concentration of 500ppm to the culture media during all studied stages was the prefer treatment which caused the best number of explants free contamination, the best number of survived explants, the highest number of embryos and the best degree of growth vigor during growth and development of explants.

Key words: *Phoenix dactylifera*, contamination, actinomycetes.

EVALUATION OF GLUCIDIC AND PHENOLIC FRACTION DURING THE MATURATION OF DEGLET NOUR DATE IN ALGERIA

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The Deglet NOUR variety studied is collected during various stages of maturation (hababouk, kimri, khalal, routab and tamar). The choice of this variety is justified by its abundance in Algeria and its gustatory quality assessed by the consumer.

During the maturation of the Deglet Nour date, a reduction in the water content is observed; whereas the sugar content total and of solid matters increase. In this direction, there is a close connection between the reduction of sugars and the water content of dates controlled by the invertase (enzyme).

In more, the degree of the browning of date is related to the contents of the phenolic compounds and thus has the activity of the polyphenoloxydase.

The determination of the evolution of all these parameters inside the fruit allowed the knowledge of biochemical causes with induces a lesson organoleptic quality of date "Deglet Nour" and the commercial acceptability.

KEY WORDS: Invertase, saccharose, sugar, phenolic compound, the enzymatic browning and polyphenoloxidase.

استعمال التصاد الميكروبيولوجي بواسطة *Pseudomonas spp. fluorescents* لمكافحة بيوض النخيل

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يعتبر البيوض من الأسباب الفتاكة بالنخيل في بعض الواحات الجزائرية. بعد إجراء تجارب مخبرية و ميدانية باستعمال التصاد ، تم انتقاء بعض عزلات بكتيريا من سلالة *spp. fluorescents Pseudomonas* المتميزة بقدرات تضاد و إفراز مركبات ثانوية نافعة. تأثير هذه البكتيريا على نمو الفطر *Fusarium oxysporum f.sp. albedinis* وكذا على قدراته التكاثرية كان جد ملحوظ. استعمال هذه البكتيريا تجريبيا على شجيرات النخيل منع غزو الفطر و دخوله للأوعية الناقلة . هذه الحماية البيولوجية قلصت نسبة الإصابة بهذا المرض. استعمال التصاد الميكروبيولوجي بإمكانه أن يكون وسيلة إضافية و مكاملة لمكافحة هذا المرض, في غياب طرق الحماية الناجعة حاليا.

تأثير *Pseudomonas spp. fluorescents* على مستوى إيواء التربة للفطر *Fusarium oxysporum f.sp. albedinis*

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استفحال مرض البيوض على النخيل في تصاعد مستمر في واحات النخيل الجزائرية . خطر هذا المرض يكمن في خصائص الفطر المسبب له ، إذ بإمكانه غزو جذور النخيل و تنقله عبر الأوعية و قدرته على البقاء حيا , بواسطة بنياته التكاثرية , في التربة إلى عمق يتعدى المتر , مما سبب عدم جدوى المبيدات الكيماوية. استعمال عزلات بكتيريا من سلالة *Pseudomonas spp. fluorescents* في تربة تحتوي على الفطر *Fusarium oxysporum f.sp. albedinis* ، سبب تراجع في نموه ، تكاثره ومفعوله الوبائي. نتائجنا أظهرت نقضا بارزا في قابلية التربة لإيواء الفطر بحضور هذه البكتيريا. مستوى إيواء التربة يتغير بتغير تركيز البكتيريا ، و تغيير بعض العناصر المغذية كأيونات الحديد و EDTA . تعديل مستوى إيواء التربة لهذا الفطر يعد وسيلة وقائية بإمكانها إضعاف القدرات الوبائية لهذا الفطر

أمراض نخيل التمر في المملكة العربية السعودية وطرق مكافحتها محمد عبد الستار المليجي

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يعتبر نخيل التمر (*Phoenix dactylifera*) شجرة الفاكهة الأولى في المملكة العربية السعودية حيث يبلغ عدد الأشجار المثمرة منها في المملكة العربية السعودية أكثر من 18 مليون شجرة يزرع منها حوالي مليونان ونصف شجرة نخيل من الأصناف الجيدة في منطقتي القصيم بوسط المملكة. تصاب أشجار النخيل في جميع مراحل نموها ببعض الأمراض التي تآثر على إنتاجية النخيل و تتفاوت هذه الأمراض في أهميتها الاقتصادية. ومن الأمراض التي قمنا بدراستها على أجزاء النبات المختلفة أمراض الفسائل وهي الدبلوديا (*Diplodia phoenicum*) واللفحة السوداء (*Chalara paradoxa*) وعفن الفسائل الفيوزاريومي (*Fusarium spp.*) ويصاب المجموع الخضري (الساق والأوراق) بتبغعات الأوراق (*Alternaria, Cladosporium, Drechslera, Mycosphaerella*) واللفحة السوداء (*Chalara paradoxa*) والذبول الفيوزاريومي (*Fusarium oxysporum*) ولفحة الورقة (السعفة المحروقة) (*Seranomyces californicus*) والورقة الهشة (PLO) واصفرار السعف (PLO) ومرض الأنثراكنوز (*Cholletotricum gleosporioides*) ومرض العظم ، أما الجذور فتصاب بعفن الجذور الفيوزاريومي (*Fusarium solani*) وتعقد الجذور النيماودي (*Meloidogyne spp.*) كما تصاب النورات والثمار بأمراض الخامج (عفن النورات) (*Mauginiealla scaetiae*) وذبول العذوق (*Fusarium moniliforme*) وتتخذ إجراءات وقائية وعلاجية للحد من هذه الأمراض في بساتين النخيل بمنطقة القصيم بوسط المملكة العربية السعودية حيث تتبع وسائل المكافحة الزراعية والكيماوية.

PLANT PRODUCTION

PARTITIONING OF IONS IN DATE PALM (PHOENIX DACTYLIFERA L.) GROWN UNDER SALINE CONDITION

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This study was conducted on date palm trees grown at the saline coasts of Arabian Gulf and non saline (in landfields) during 1999/2000. Ion and water relations were investigated using trees of Khalas, date palm commercial cultivar.

Results of ion relations revealed that high external EC_e in saline resulted in greater internal Na^+ and Cl^- concentrations, particularly in expanded leaves which contributed to the decrease in leaf osmotic potentials. Higher internal Na^+ concentration resulted in progressive significant lower K^+ concentrations as leaf aged. Leaves senescence plays a relief mechanism to regulations (i.e. Na and Cl) in young leaf while succulence play a significant role in mitigating the increase in salt concentration particularly in expanding and recently expanded leaves. All date palm trees generated sufficiently larger water potentials for import gradients of water with no significant differences in turgor pressure.

Keys word: date palm trees, saline water, osmotic potentials, Na and Cl

***IN VITRO* MID-TERM STORAGE OF DATE PALM GERMLASM BY SLOW GROWTH AND ENCAPSULATED SOMATIC EMBRYOS**

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Several applicable methods for *in vitro* mid-term storage of date palm cultures as a **commercially** vegetatively propagated crop were developed. Somatic embryos and undifferentiated cultures were successfully stored for 15 months at 5 °C in the dark with relatively high percentage (50 %) of cultures remained viable without serious signs of senescence. Adding 40 mg/l of both mannitol and sorbitol to storage medium as osmotic stress agents was examined for storing by slowing down growth. Storage at cold and dark conditions was more effective compared to slow stressed growth approach. Storing differentiated cultures registered higher viability compared with undifferentiated cultures. Another successful system for preservation was realized via artificial seeds. Somatic embryos proliferated directly from shoot-tip cultures in different maturation stage were encapsulated in 3 % of sodium alginate and stored for 12 months at 5 °C and normal growth conditions. The highest conversion percentage (75 %) was registered with the storage of encapsulated late cotyledon stage of embryos at 5 °C. Genetic stability of different types of preserved tissues was observed through RAPD analysis. The amplification products of primers used indicated the genetic similarity of preserved tissue cultures with their source. The developed plantlets were successfully adapted to the free living conditions after phase of simple acclimatization procedures. The regenerated plants showed no morphological differences from those grown *in vivo*.

Key words: Date palm, slow growth, osmotic agent, encapsulation, somatic embryos.

EFFICACY OF TECHNOLOGICAL PROCESSES IN POLLINIZATION OF DATE PALM-TREES (*PHOENIX DACTYLIFERA* L.)

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In order to appreciate the importance of technology in agricultural domain , this study has for object to compare the efficacy of two pollinization technics : manual and sub-mecanical , and it has been conducted with two varieties of date palm-trees (Daglet nour and Aouala).Some parameters have been evaluated : Knot's percentage , necessary times to realize the operation, necessary quantity of pollen and needed workers.

The results that have been obtained showed that the sub-mecanical method pollinization have many advantages and it has recorded: positif results for the knot's percentage, gain in times and quantity of necessary pollen, tree and farmer protection, who can undergoes many damages when he apply the manual pollinization technic.

Key words: Palm-tree, Pollinization,Technics, yield

CRYOPRESERVATION OF *IN VITRO* ESTABLISHED SHOOT TIP EXPLANTS OF DATE PALM CV. ZAGHLOOL

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Cryoprotection procedures for *in vitro* established shoot tip explants of Date palm cv. Zaghlool prior to cryoprsvervation process in liquid nitrogen were investigated in this study. This work aimed to develop simple cryoprotection procedure that can be handled easily. The first cryoprotection procedure was to study the effects of different sucrose concentrations (0.1, 0.3, 0.5, and 0.7Mol) in preculturing medium and the incubation under at 5°C or 27°C for four weeks. The second cryoprotection procedure was to study the effects of the same previous sucrose concentrations in preculturing medium and the incubation under at 27°C for four weeks followed by desiccation procedure for two hours in an open petri dish exposed to continual current stirel air in the laminar airflow cabint. The third cryoprotection procedure was to study the effects of abscisic acid (ABA) concentrations (2.0, 4.0, 6.0 and 8.0 mg/L) in preculturing media and the incubation under at 5°C or 27°C for four weeks. The fourth cryoprotection procedure was to study the effects of the same previous concentrations of (ABA) in preculturing media and incubation under at 27 ° C for four weeks followed by desiccation procedure for two hours in an open petri dish exposed to continual current of stirel air in laminar airflow cabinet . All shoot tip explants obtained from the four cryoprotiction procedures were plunged in liquid nitrogen Dewar at (-196 °C) for one hour after thawing process in water bath at 40 °C. All cryopreserved shoot tip explants were cultured on recovery medium for 3 weeks to examine their potential for surviving after cryopreservation process. The results of explants viability showed that all of the tested pretreatments gave quiet results for survival. The optimal procedure that we developed was the cryoprotiction of cultured shoot tip explants on preculturing medium supplemented with 0.5 M of sucrose concentration for four weeks and incubated at 27°C followed by air desiccation treatment prior to cryopreservation process. The cryopreserved explants from this cryoprotiction procedure revealed high survival and could resume their life cycle in normal manner on the recovery medium. Date palm explants cryopreservation needs more studies to achieve better results in germplasm conservation.

**RESPONSE OF SEED GERMINATION AND SEEDLING GROWTH OF TEN
LIBYAN DATE PALM VARIETIES TO WATER SALINITY
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Abstract. Response of seed germination and seedling growth of ten Libyan date palm varieties to varying levels of water salinity were studied. Seeds of mature fruits were collected, cleaned, washed and planted in plastic pots full of soil/peat moss mixture at a five seeds/pot rate. Chloride content of the growth media was determined at the start of the study. Saline water consisted of five treatments; 109 (control), 1500, 3000, 4500 and 6000 ppm total soluble salts which were prepared by sea water dilutions. Treatments were replicated four times in a complete randomized block design (CRBD). Pots were irrigated using the same amount of the corresponding water twice a week. Number of germinated seeds was recorded regularly until no more seedlings emerged and the percentage of seed germination was calculated. At the end of the study, seedling heights, fresh and dry weights of their roots and shoots were determined. Concentration of soil and plant chloride was also measured. Results showed that there was a significant reduction in the percentage of seed germination with increasing salinity (88.5%, 59% in control and 6000 ppm respectively) and the reduction varied with the varieties too (40% to 88%). Seedling heights were significantly affected by salinity (30.7 cm in control and 16.3 cm in 6000 ppm treatment) and by the variety also. Similarly, fresh and dry weights of roots and shoots were significantly affected by both salinity and variety. Leaf and root chloride content clearly indicated that the varieties differ in their ability to exclude chloride and in their tolerance to salinity.

**STUDIES ON SOME PHYTOHORMONES PRODUCERS BACTERIA FOR USING
IN DATE PALM MICRO PROPAGATION**

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Many phytohormones like auxins, cytokinins, gibberellins(GA3) and abscisic acid (ABA) or their derivatives can be produced by microorganisms. Numerous studies have shown the synthesis of plant growth regulators (PGRs) by bacteria in culture medium but the resulted extractions are complicated and need sophisticated analytical detection. Therefore, this study carried out bioassay techniques coupled with high performance liquid chromatography(HPLC) and colorimetric assay to evaluate (PGRs) which formed by the selected strains(*Azotobacter chroococcum*, *Klebsiella pneumoniae*, *Azospirillum brasilense* and *Bacillus megaterium*) as a producer to (PGRs). Determining types and quantities of (PGRs) can be used to our advantage for regulating the synthesis as suitable for us to obtain optimum production that requirements for plant growth and development. SDS-PAGE of water protein fraction was used to determine the differences in the molecular weights of protein subunits among the strains in the presence of tryptophan and in the absence. The electrophoregrams illustrated that a number of polypeptides increased or decreased in

intensity and others disappeared, or new synthesized which reflect high effect of tryptophan on the genes expressions and biosynthesis operations in the strains cells

SEQUENCE OF USING BACTERIAL SUPERNATANTS IN DATE PALM MICROPROPAGATION

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The present investigation was aimed to use phytohormones produced by some bacterial strains like *Azospirillum brasilense*, *Azotobacter chroococcum*, *Bacillus megaterium* and *Klebsiella pneumoniae* instead artificial hormones as a protocol in date palm micropropagation through somatic embryogenesis induced from shoot tip or leaf primordial explants, which were isolated from offshoot apex. In order to test the possibility to use supernatant of the strains, which are auxin over producers and/or cytokinin over producers in culture medium composition according to development stages for maximizing yield and to study the effect on each stage, i.e., callus initiation, embryo formation, shooting and rooting stages. In general, results showed that *Klebsiella* and *Azotobacter* have an auxin effect but *Azospirillum* and *Bacillus* were more related to cytokinin nature.

COMPARETIVE STUDIES ON THE PHYSICAL AND CHEMICAL PROPERTIES OF DATE FRUITS OF SAKKOTY VARIETY PROPAGATED BY OFF-SHOOTS AND TISSUE CULTURE TECHNIQUES

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This study was conducted to compare the physical and chemical properties of date palm fruits of Sakkoty variety propagated by off-shoots and tissue culture techniques grown at Abou El-Reesh, Aswan Governorate during 2004 and 2005 seasons. The data showed that, Sakkoty date palm produced by tissue culture techniques gave the lowest bunch weight, total yield and seed weight in comparison with those produced by off-shoots in the two seasons. Sakkoty date palm propagated by tissue culture techniques gave the highest fruit and pulp weight, fruit length and fruit volume in the two seasons. Fruit moisture content and total acidity percentages were significantly higher in fruit from Sakkoty variety produced by off-shoots during in the two seasons. On the other side, Sakkoty variety produced by off-shoots gave the highest total soluble solids, but gave the lowest total and reducing sugars, and tannins content in both seasons as compared with there of Sakkoty date palm produced by tissue culture techniques.

Generally, it could be concluded that Sakkoty date palm produced by tissue culture techniques produced highest fruit weight with high quality.

EFFECT OF SALTS STRESS ON GROWTH AND DEVELOPMENT, ON PHOENIX DACTYLIFERA L. CV. ZAGHLOUL PLANTLETS IN GREENHOUSE

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This investigation was carried out to study the effect of salinity levels on date palm *Phoenix dactylifera* L.cv. Zaghloul plantlets (produced by tissue culture) after 2 years from the acclimatization stage in greenhouse were received different levels of (NaCl+CaCl₂) 2:1 by weight (0,6000,10000 and 14000 ppm.) for 6 months (1 week interval) and 6 months between two seasons (1 week interval) without salt concentration. Increasing the levels of salinity decreased survival percentage, number of leaves, roots number, plant height, fresh and dry weights of leaves, root length and fresh and dry weights of roots were detected. The chemical composition of *Phoenix dactylifera* cv. Zaghloul was affected by increasing the levels of salinity from 6000 to 14000 ppm.NaCl +CaCl₂, The highest levels of salinity, gave the greatest value of total sugars, phenols and proline contents, minerals such as Na,Ca and Cl , while depressed indole contents

Key word: date palm, salinity, Na,Ca,Cl, proline, phenols, total sugars, indoles

EFFECT OF SALTS STRESS ON GROWTH AND DEVELOPMENT *IN VITRO* CULTURE, ACCLIMATIZATION STAGE ON *PHOENIX DACTYLIFERA* L. CV. SAKUTI IN GREENHOUSE

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This investigation was carried out to study the effect of salinity. (NaCl +CaCl₂) 2:1 by weight on date palm *Phoenix dactylifera* L. cv.Sakuti propagated *in vitro* from shoot tip explants. Different concentrations (0,6000,10000 and 14000 ppm) of (NaCl+CaCl₂) were added to MS medium+ 0.5 mg/l BA+ 0.1 mg/l NAA +1.5 g/l AC (at shooting stage) and were added to MS medium + 3 mg/l IBA + 1.5 g/l AC (at rooting stage). Shootlets and rooted plantlets were recultured on shooting and rooting medium for 18 and 9 weeks (3 weeks intervals). Rooted plantlets resulted from different salinity levels were pre acclimatized by culturing on ¼ MS liquid medium + 3 mg/l IBA without sucrose for 3 weeks and then transferred to greenhouse and planted on plastic bags contain peatmoss: vermiculite : perlite 2:1:1 for 3 weeks. Plantlets were transferred from bags to plastic tunnels until new leaves were grown. Increasing the levels of salinity decreased the shootlets length cm., leaves number/shootlet at shooting stage and shootlets length cm.,leaves number/plantlet, root number, root length cm. at rooting stage. Survival percentages of date plm cv. Sakuti acclimatized plantlets of cv.Sakuti (68.2, 66.6,62.5 and 43.0% for control treatment, 6000ppm, 10000ppm and 14000 ppm. NaCl+CaCl₂,respectively). Shoot length cm., leaves number/ plantlet, roots number/plantlet and root length were decreased in greenhouse at all levels of salinity

Key word: date palm, Phoenix, salinity, *in vitro*, Na,Ca,Cl.

IN VITRO MICROPROPAGATION PROTOCOL FOR ROOT EXPLANTS OF DATE PALM CV. SEWI

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Developing high frequency of somatic embryos and normal plantlets from root segment explants of date palm cv. Sewi has been established in this study. Root segment explants were excised from roots of 3-5 years old offshoots. Different surface sterilization treatments were investigated. In this study, the sterilized roots segment explants were excised as two different explants, the first one was 1-5 cm in length including the root tip (RT) and the second one was 1-5 cm in length without root tip (RS). Root explants (RT and RS) were cultured on modified MS basal nutrient medium supplemented with 100mg/l 2,4-D+3mg/l 2iP (M₁) or supplemented with 10mg/l 2,4-D+3mg/l 2iP (M₂). The best surface sterilization treatments after 8 weeks in culture medium was by dipping root explants in 70% ethyl alcohol then transferred and dipping in 20% (w/v) calcium hypochlorite (CaOCl₂) for 5 minutes as the survival percentage was 25.83%. Culture medium (M₂) and RT explants showed the higher value of browning and swelling. Callus formation percentages increased with increasing subculture number to 7. Culture medium (M₂) and RT explants gave the higher percentage of callus induction. Embryogenic callus developed from each culture medium (M₁ and M₂), during subculture 5,6,7 and 8 were transferred and cultured onto differentiation nutrient medium which consists of MS basal nutrient medium supplemented with 0.1mg/l NAA. RT explants showed the higher percentage of embryogenic callus formation. In addition, percentage of normal somatic embryos (individual somatic embryos and multi-somatic embryos), number of individual somatic embryos, number of multi somatic embryos increased with increasing subculture number to 7. Culture medium (M₁) and RT explants showed the higher normal somatic embryos percentage. Culture medium (M₂) and RT explants resulted in the highest number of individual somatic embryos and multi somatic embryos. Number of leaves and roots per plantlet developed from individual somatic embryo increased with increasing subculture to 7. Culture medium (M₂) gave higher number of leaves per plantlet while culture medium (M₁) gave the higher number of roots per plantlet. RT explant gave the higher number of leaves and roots per plantlet.

Key Words: Date Palm (*Phoenix dactylifera L.*), *In vitro*, Micropropagation, Root explant, Sewi, Somatic embryogenesis

EFFECT OF *MELOIDOGYNE INCOGNITA* INOCULUM LEVELS ON SOME DATE-PALM CULTIVAR SEEDLINGS

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Studies on the influence of different inoculum levels of *Meloidogyne incognita* infecting date-palm cvs. Zaghlool, Deglet Noor and Samani. Results revealed that nematode final population was positively correlated with the initials used. However,

the rates of nematode build-up decreased by increasing the inoculum levels. Data showed that of each cultivar growth was as indicated by length and weight of both shoots and roots affected by increasing inoculum levels tested according to rate of cultivar susceptibility.

Key words: date-palm cultivar seedlings, inoculum levels, *Meloidogyne*

SOME FACTORS AFFECTING MATURATION AND GERMINATION OF DATE PALM (*PHOENIX DACTYLIFERA* L.) SOMATIC EMBRYOS

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Callus culture of date palm (*Phoenix dactylifera*) was initiated from shoot tip explants cultured on Murashige and Skoog medium supplemented with 10mg /l 2,4-D, 3mg /l 2iP and 1.5g/l activated charcoal for 32 weeks with regular reculture every 8 weeks. To determine the effects of GA₃, ABA, poly ethyleneglycol (PEG) in the presence of ABA and gelling agents (agar & gelrite) on maturation and germination stages; piece of callus of approximately 1×1cm and clusters of mature somatic embryos were transferred to solidified MS medium containing 0.1 mg /l NAA (maturation stage) and containing 0.1 mg /l NAA &0.05 mg /l BA for germination stage and reculture three times with regular transferring to fresh medium containing the same composition medium enriched with different treatments every 4weeks. MS nutrient medium containing GA₃ at 1mg/l or ABA at 0.5 mg/l or PEG at 10 g/l in the presence of 0.5 mg /l ABA and agar at 7 g/l increased significantly the number of mature embryos during maturation stage. The addition of GA₃ or PEG at different concentrations or ABA at 0.25 or 0.5 mg/l to germination medium enhanced the conversion frequencies percentage of matured somatic embryos to plantlets compared with control medium. Dissection caused by raising agar to highest concentration produced the highest conversion frequency percentage.

Keywords: *In vitro*, Date palm, GA₃, ABA, PEG, Gelling agent, Conversion

EFFECT OF GROWTH REGULATORS ON SCANNING ELECTRON MICROSCOPE MEASUREMENTS AND COUNTS ON LEAF OF SOME CULTIVARS OF DATE PALM

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The current investigation was carried out at Central Laboratory of Date Palm Research and Development , ARC, Egypt. The tissue culture Laboratory, Technological Institution for Genetic and Molecular Engineering, Sadat branch, Monofia Univ., during 2004-2005 seasons. Measurements and counts of the upper leaf surface of the three studied date palm cultivars as affected by the used growth regulators; ancymidol 0.2 mg/L, paclobutrazol 0.2 mg/L as well as 2,4,D 10.0 mg/L+ 3mg 2ip supplemented in the MS basic media. It is worthy to mention that, no comparisons could be held between the mean average of each growth regulator treatment and the control. Since, control plants were grew by direct sown of seeds in open fields. Though control plants will be used to show only the main features of palm date leaf surface. Generally it is

obvious that, cultivars and used growth regulator treatments affected the leaf ultra surface features by different extents

EFFECT OF CHEMICAL FRUIT THINNING OF SAMANY DATE PALM CULTIVAR.

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The effect of fruit thinning using ethephon and cytophex at different concentrations and dates of application was studied on Samany date palm cultivar in two seasons (2003-2004). Fruit set percentage was much decreased when ethephon was sprayed at all tested concentrations within 18 days after pollination compared with cytophex, in the two seasons. Moreover Samany fruit physical characteristics i.e., fruit weight, flesh weight, fruit dimensions and fruit size were enhanced with ethephon and cytophex treatments. In addition, Samany fruit contents of TSS, total soluble sugars, reducing and non-reducing sugars were increased when ethephon at 300 ppm and cytophex at 60 ppm were sprayed within 18 days after pollination.

Key words: Samany – ethephon – cytophex or growth regulators – fruit characters – fruit thinning – date palm cultivar.

MICROPROPAGATION OF SELECTIVE OLD SEEDLING DATE PALM TREES BY USING INFLORESCENCES

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This investigation has been conducted through successive period from 2000 to 2004 at the Tissue Culture Laboratory, Central Laboratory for Date palm Research and Development, Agricultural Research Center, Ministry of Agriculture. Female inflorescence was used as an explant material *via* tissue culture technique to propagate the elite Upper Egyptian seedling date palm that did not produce new offshoots. Inflorescences were sterilized with 0.1% mercuric chloride (HgCl₂) for 10 min. under aseptic conditions and then sterilized with 20% chlorox (5.25% sodium hypochlorite) with two drops of Tween-20 for 10 minutes. Inflorescences were classified through tissue culture technique into 3 morphological and physiological stages of growth, Inflorescence length 9-10 cm with spikes length 2-4 cm, Inflorescence length 16-17 cm with spikes length 6-8 cm, Inflorescence length 28-30 cm with spikes length 12-15 cm. It was recommended that, spikes of 2 - 4 cm in length gave the best results for browning %, swelling % and embryogenic callus formation % (12.46%, 70.77% and 59.09%, respectively). While spikes of 6 – 8 cm in length recorded intermediate results (38.67%, 55.18% and 23.29%, respectively). Whereas, spikes of 12– 15 cm in length recorded the worst results (83.77%, 41.30% and 9.49%, respectively). In addition, 50 g/L sucrose recorded the highest values (49.53%, 59.21% and 45.74%, respectively), while, 30 g/L sucrose and 40 g/L recorded low values (40.65%, 54.57% and 19.71%, respectively). Palm No. 5 showed the highest values of swelling % and embryogenic callus formation % (67.15% and 37.48%, respectively), while palm No. 4 recorded the lowest value of browning % (44.25%). Also, media composition No. 12 (**Greshoff** and **Doy** inorganic salts medium, 1972) supplemented with in mg/L, 10.0 2,4-D, 0.5 NOA and 0.3 2ip) recorded the highest value of swelling and embryogenic callus formation (73.52% and 49.91%, respectively). MS medium with 0.1 mg/L or free hormone enhanced the number of somatic embryos (7.33 and 6.67 embryos , respectively). MS medium

containing 0.2 mg/L BA recorded the highest leaves number and plantlet number (2.54 and 3.35, respectively), while 0.6 mg/L BA recorded the highest leaf length (6.69 cm). MS medium containing 3.0 mg/L NAA or IBA in the presence of 3.0 g/L activated charcoal showed the highest rooting percentage and root number (100.0% and 5.17, respectively), while 1.0 mg/L NAA or IBA recorded the highest root length (4.30 cm). The highest value of survival percentage, leaves number and plant length (80.0%, 3.40 and 23.86 cm, respectively) was obtained after 3 months of acclimatization

DIRECT SOMATIC EMBRYOGENESIS OF DATE PALM (*PHOENIX DACTYLIFERA* L.) BY OSMOTIC STRESS

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The present investigation aiming at induces somatic embryogenesis directly by osmotic stress of sucrose to shoot tip Malakaby cv. The explants cultured on MS basal medium supplemented with 10 mg/l 2,4-D + 3 mg/l 2ip + 1.5 g/l activated charcoal (AC) and various concentrations of sucrose (30, 50, 70, 90, 110 and 130 g/l). All explants were incubated in darkness at 27 C° ± 2 for 6 months. The percentage of somatic embryogenesis and the percentage of callus formation were recorded as measurement during the incubation period and after 45 days from transfer the explants to fresh growth medium (The basal medium included 10.0 mg/l 2.4-D + 3.0 mg/l 2ip). Few explants produced direct somatic embryos induced directly without an intervening callus phase on shoot tip explants which cultured on 90 and 110 g/l sucrose. Therefore, the high concentrations of sucrose 110.0 and 130.0 g/l caused thick root and globular structures formation. Data indicated that increasing the osmotic stress as a consequence of increasing sucrose in the initial starting medium of date palm induced the direct somatic embryos along with proline accumulation.

Key words: Osmotic stress – *Phoenix dactylifera* L. - sucrose - somatic embryogenesis.

EVALUATION OF GLUCIDIC AND PHENOLIC FRACTION DURING THE MATURATION OF DEGLET NOUR DATE IN ALGERIA

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The Deglet NOUR variety studied is collected during various stages of maturation (hababouk, kimri, khalal, routab and tamar). The choice of this variety is justified by its abundance in Algeria and its gustatory quality assessed by the consumer.

During the maturation of the Deglet Nour date, a reduction in the water content is observed; whereas the sugar content total and of solid matters increase. In this direction, there is a close connection between the reduction of sugars and the water content of dates controlled by the invertase (enzyme).

In more, the degree of the browning of date is related to the contents of the phenolic compounds and thus has the activity of the polyphenoloxydase.

The determination of the evolution of all these parameters inside the fruit allowed the knowledge of biochemical causes with induces a lesson organoleptic quality of date "Deglet Nour" and the commercial acceptability.

KEY WORDS: Invertase, saccharose, sugar, phenolic compound, the enzymatic browning and polyphenoloxidase.

A COMPREHENSIVE DATE PALM BIBLIOGRAPHY.

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Date palm, *Phoenix dactylifera* L., is probably the most ancient crop plant cultured by man on the earth. It is important from historical, religious, cultural, and food point of view. Date palm has enjoyed its importance since times immemorial and a lot has been written about it and considerable amount of research has been attempted. However, date literature is widely scattered and often difficult-to-get-access. A significant portion of information exists in an obscure state, reported in various foreign languages in difficult-to-obtain sources. Thus there is a need to make a bibliographic search, make access to all available and difficult-to-obtain date literature, and collate it in the form of bibliography. The scope of this work will be a comprehensive bibliography across the full range of date palm literature and related references. From all parts of the world, from early reports down to the present. The work calls for a detail and diligent search of date literature covering different aspects, through the year 2006 to retrospective. Recording, verifying, abstracting, and compiling the literature in the form of a comprehensive bibliography. Publishing it in the form of electronic data base thus making it available to people involved in date research education, production, technology, specialists, exports, date lovers, etc. The number of references were collected is more than 9,000 articles. The bibliography contain a compilation of scientific, semi-technical, and popular writings and articles. These articles were analyzed and organized by thematic content and presented in interactive visualizations that facilitate rapid identification of major themes and areas of interest using the **Galaxy** and the **Matrix** visualizations analyses software. Thus it would provide an invaluable guide to a wide range of people, teachers, researchers, extension workers, farmers, and students. As a electronic data base from the Kingdom of Saudi Arabia it would be distributed and circulated in the worldwide community of learning and research to disseminate the knowledge acquired by man, concerning date palm.

Galaxy visualization: is an interactive framework that lets us explore thematic relationships in reference collection. The Galaxy groups references according to how they are related conceptually, providing an overview of how each reference is related to every other reference.

Matrix visualization: is a two-dimensional representation of the associations between concepts and groups, It illustrates and highlights associations between keywords and groups, or among the keywords themselves.

اصطفاء أشجار نخيل النمر المذكرة (*Phoenix dactylifera* L.) من خلال دراسة غبار الطلع

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أثبتت الكثير من التجارب الحديثة نجاعة اختيار نوعية حبوب الطلع أثناء عملية التأبير من أجل الحصول على إنتاج جيد كما وكيفا، غير أن النخيل المذكر الذي يسمى محليا في الجزائر "ذكار" هي نباتات هجينة لأنها ناتجة من نمو البذور، ومن ثم تطرح بعض الإشكاليات بالنسبة لمعرفة أصله وضروبه، ولهذا أصبح من الضروري القيام بدراسة معمقة ومقارنة لغبار الطلع لمختلف الأشجار المذكرة باعتماد تقنيات دراسة حبوب الطلع أو الباليولوجيا.

أجريت الدراسة الميدانية في محطة عين بن نوي ببسكرة (شرق الجزائر) على 51 شجرة مذكرة تنتمي ظاهريا لأربعة أصناف مزروعة مؤنثة (Cultivars) في المحطة وهي دقلة نور (DN)، مش دقلة (MD)، غرس (GH) ودقل (DG). أما الدراسة المخبرية فتناولت 12 عينة من بين الـ 51 ، درست فيها الخصائص الطلعية التالية: الشكل، البنية التركيبية، ما فوق البنية والقدرة على الحفاظ على الحيوية أثناء التخزين. إن تنوع المعطيات المتحصل عليها في الدراسة الميدانية أدى بنا إلى القيام بدراسة إحصائية متعددة المعايير. إن مطابقة نتائج المعطيات الميدانية مع المعطيات المخبرية مكننا من التمييز بين مختلف الأصناف وترتيب العينات المدروسة حسب نوعها ثم إنتخاب أحسنها. الكلمت المفتاحية : أشجار النخيل المذكرة - علم غبار الطلع أو الباليولوجيا - إنتخاب أحسن الأصناف - محطة بسكرة الجزائر.

واقع زراعة النخيل في محافظة المهرة في الجمهورية اليمنية

عبد الرحمن أبوبكر حسان

رئيس قسم البساتين بمحطة البحوث الزراعية بسيئون

تقع محافظة المهرة في الجهة الشرقية من الجمهورية اليمنية وتطل على البحر العربي من جهة الجنوب وتقدر المساحة الكلية لمحافظة المهرة بـ 88 ألف كم مربع. تبلغ المساحة الصالحة للزراعة بالمحافظة حوالي 24850 فدان المساحة المزروعة لعام 2001م 5470 فدان وهي تشكل حوالي 22 % من المساحة الصالحة للزراعة أعتمد الدراسة على المسح الميداني إلى حقول النخيل خلال الفترة خلال الفترة من 28 ديسمبر 2002م حتى 3 يناير 2003م وتم اخذ 54 مزارع تمثل حوالي 10% من عدد الحيازات الزراعية أظهرت النتائج بلغ إجمالي النخيل في عينات المسح 22249 نخلة منها 56,54% مثمر 37,87% غير مثمر و الأفلح 4,94% أما النخيل الذي تم زراعته حديثاً (أقل من خمس سنوات) مثل 0,65% . أظهرت نتائج المسح أن محافظة المهرة تظم أكبر عدداً من الأصناف في الجمهورية اليمنية بلغت 97 صنفاً أما من حيث درجة الجودة للثمار على أساس ذوق المنتج فقد حددت خمسة درجات تبدأ من الممتاز الى الردي فقد أوضحت النتائج أن 24 صنفاً ممتازاً . أغلب النخيل في محافظة المهرة مزروع بطريقة غير منتظمة ووصلت النسبة إلى 85% ،أغلب الري يتم بواسطة الآبار و قد وصلت النسبة إلى 63% و الري بالعيون 28% و الري بالسيول 9% ، 91% من المزارعين لا يسمدوا النخيل مباشرة .

أهم الآفات الإصابة بحشرة الدوباس *Ommatissus bionotatus lybicus* DeBasg بلغ 33.6% أما متوسط الإصابة ك% بحشرة الحميرة *Batrashedra amydraula* Meyr و القشرية *Parlatoria blanchardi* T. بلغ في المحافظة 22.4 ، 18.3 على التوالي ، أما متوسط الإصابة ك% بحشرات حفار العذوق *Oryctes rhinoceros* (Linnaeus) و عنكبوت الغبار *Oliyonychys afrasiaticus* (Mc Gregor) و دبور البلح *Vespa orientalis* F. النمل الأبيض (الأرضة) *Microcerotermes diversus* S. على نخيل النمر فقد بلغ في محافظة المهرة 9,5 ، 5,6 ، 11,2 ، 3,1 على التوالي وهذا يدل على أن تلك الآفات ليست ذات أهمية اقتصادية، أما الأمراض فيبين أن متوسط الإصابة ك % بأمراض النخيل و التمور في محافظة المهرة كان منخفضاً جداً حيث بلغ 10,8 ، 2,4 ، 4,2 ، 4,4 لأمراض عفن الرطب ، خياس الطلع ، التفحم الكاذب ، و تبقع الأوراق على الترتيب وبالتالي فهذه الأمراض تعتبر حتى الآن ليست ذات أهمية اقتصادية .

الخبرات التطبيقية في تطوير برامج خدمة النخيل

م.عبد المحسن فهد المزيني م.سلطان بن صالح الثنيان

بالرغم من قدم النخلة ومكانتها الدينية والغذائية والاقتصادية لنسبة كبيرة جداً من أهل الوطن والمقيمين ، إلا أنها لم تحظ بالعناية والرعاية الكافية من قبل بعض المزارعين في التطبيق الأمثل لبعض البرامج الزراعية نحوها ، وقد يرجع ذلك إلى عدم درايتهم بالتطبيق الأمثل لهذه البرامج ، أو قصور في توصيل المعلومة إليهم ، أو لمعتقدات خاطئة لديهم ، أو عدم إتاحة قاعدة بيانات لخدمتهم ، لذا أردت من خلال هذه المقالة استعراض لأهم الممارسات الخاطئة في تنفيذ البرامج الزراعية للنخيل والتي يقع فيها كثير من المزارعين ، والطرق المثلى للتغلب عليها من واقع الخبرات العملية والتجارب الشخصية.

ومن هذه الممارسات الشائعة عدم مراعاة الشروط الفنية في اختيار الفسائل وغرسها ، كذلك إتباع أسلوب الرش الدوري ضد الآفات دون مراعاة مواعيد الرش المثلى وكيفيته ، مما

يؤدي إلى الإسراف في استهلاك المبيدات وتلوث البيئة ، كذلك لم تراخ الفترات الدنيا والقصوى لاحتياج النخلة من المياه ، وأيضاً عدم مراعاة احتياجات الصنف من حبوب اللقاح ، فضلاً عن عدم الربط بين المرحلة المناسبة للحصاد والصورة التي يفضلها المستهلك ، كل هذه الممارسات سوف نلقي الضوء عليها والتوصيات التي يجب أن تتبع حيالها من خلال هذه الورقة العلمية بإذن الله.

تحليل صور المجهر الإلكتروني الماسح (بمساعدة الحاسوب M.E.B) لحبوب طلع نخيل التمر *Phoenix dactylifera*

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يعتبر نخيل التمر *Phoenix dactylifera* من النباتات أحادية الفلقة ويأخذ مكانة بالغة الأهمية في الجزائر

من الناحية الإقتصادية والفلاحية والبيئية ، ويشكل أهم الأنواع النباتية في الغطاء النباتي للمناطق الصحراوية ينتمي نخيل التمر إلى النباتات ثنائية المسكن ، إذ يمكن تمييز الأشجار المؤنثة عن طريق الثمار بينما تطرح الأشجار المذكورة المنتجة لحبوب الطلع مشكلا في تمييزها ، وما يلاحظ في مجال زراعة هذا النبات في الجزائر هو عدم الأخذ بعين الاعتبار بمفهوم الصنف ونوع حبوب الطلع المستعملة لتلقيح النبات المؤنث .

لقد ركز الباحثون في السنوات الأخيرة على ضرورة إنتقاء حبوب الطلع المستعملة أثناء التلقيح ، وفي إطار توسيع مفهوم نوعية حبة الطلع، تم إستعمال تقنيات إلكترونية حديثة لدراسة صور أربعة ضروب من حبوب طلع نخيل التمر الملتقطة بالمجهر الإلكتروني الماسح.

تتضمن هذه الدراسة إستعمال طريقة الشبكات العصبية الإصطناعية إعتقادا على البرنامج (MATLAB) من أجل معرفة التغيرات الموجودة في بعض الصفات المرفولوجية و البنيوية لأربعة ضروب من حبوب طلع نخيل التمر:

(DN ، دقلة نور)GH(غرس) ، DG ، دقل (MD) مش دقلة

من خلال دراسة المعايير التالية : أبعاد حبة الطلع وشكله العام ، سمك الغلاف الخارجي ، تزيينات الغلاف الخارجي(Tectum) بحساب عدد الثقوب في الطبقة الخارجية ، طول وعرض ومساحة الثقوب.ساعدت النتائج المتحصل عليها على إنتقاء أحسن وأجود حبوب الطلع من أجل توجيه المزارعين أثناء التلقيح الإصطناعي من خلال ترتيب معايير الضروب الأربعة

تبيين أن حبوب طلع الضرب دقلة نور تملك من الصفات الجيدة التي تجعلها أجود حبوب طلع نخيل التمر.

تصنيف وتقدير المنتجات الثانوية لنخلة التمر ومدى أهميتها)

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لا يقتصر الاستثمار في مجال إنشاء بساتين نخيل التمر (*Phoenix dactylifera*) على ما تنتجه النخلة من فسائل (خلال سنواتها الأولى) وأيضاً ما تنتجه من ثمار خلال عمرها الممتد لأكثر من ستين عاماً ، بل أيضاً على المنتجات الثانوية والتي لا تقل أهميتها عن تلك المنتجات الرئيسية ، ومن هذه المنتجات الثانوية نواتج تقليم النخيل ، ونواتج الخف والحصاد ، ونواتج فرز التمور والنوى إضافة إلى الثمار المتساقطة بأحواض النخيل ، ويقصد بالمنتجات الثانوية هنا هو ما يسميه المزارعون المخلفات ، وإنما نهج هذه التسمية الجديدة لتكون دافعاً للاستفادة منها ولا يجب أن يطلق عليها مخلفات .

وقد قدرت كمية المنتجات الثانوية لعدد خمسة عشر صنفاً من أصناف النخيل المختلفة التي يزيد عمرها عن ثلاثين عاماً بالقطاع الثاني بمشروع الباطن ، ووجد أن المتوسط العام لإنتاج النخلة الواحدة من تلك المنتجات الثانوية بلغ 19.320كجم من نواتج تقليم النخلة ، و 7.497كجم من نواتج خف العراجين ووزن العذوق بعد الحصاد ، أما مجموع نواتج فرز التمور فبلغ 9.200كجم ، أما كمية النوى الناتجة فبلغت 8.64كجم بينما كمية الثمار المتساقطة بحوض النخلة يبلغ

1.732 كجم ، وتكمن أهمية هذه المنتجات الثانوية للنخلة فيما يقوم عليها من صناعات ، وعلائق لبعض الحيوانات ، وما يتطلب ذلك من تشغيل للأيدي العاملة.