ARAB AND NEAR EAST PLANT PROTECTION NEWSLETTER

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CONTENTS

EDITORIAL

Status of Host Plant Resistance to Insect Pests in the Arab World: Case of Cereals and Food Legumes

No one would deny the fact that host plant resistance (HPR) is the most economical and environment friendly mean of controlling pests. The resistance is "incorporated" in the seed, and thus there is no extra cost or effort on farmers to use resistant cultivars. In contrary to other management options such as biological control, biopesticides etc.., farmers may need to pay extra to buy natural enemies or biopesticides for the control of pests in their fields. Even though there are obvious advantages for the use of resistant varieties for the control of pests, breeding efforts to look for sources of resistance and develop resistant varieties are still very limited worldwide. Any good reason for that? Probably because more emphasis has been put on breeding for diseases. Of course, we all agree that at large diseases are more important than insects. However, and depending on regions, there are cases where insects are equally or more damaging than some of the diseases; for example the case of the chickpea pod borer in Africa and South East Asia and Sunn pest on wheat in West and Central Asia. In addition, handling artificial infection and scoring germplasm/breeding lines for diseases resistance is much easier than dealing with insects.

I would argue that host plant resistance to insect pests really got going after Dr. R.H. Painter published his book "Insect Resistance in Crop Plants" in 1951. In this book, Dr. Painter defined genetic resistance to insects. He also described the different categories of resistance (Antibiosis, Antixenosis or non-preference and tolerance), which at that time he called them mechanisms of resistance.

The first insect that was studied the most during this period was Hessian fly on wheat. Sources of resistance to this pest were identified and used in the breeding programs. Also the genetic of resistance in wheat and also that of the pest were thoroughly studied. The gene-for-gene interaction with insects was first demonstrated on Hessian fly in wheat, where highly effective resistance to the Hessian fly is mediated by resistance genes, known as H genes. The ability of the Hessian fly to overcome H-gene-mediated resistance is conferred by mutations in a matching avirulence gene. Now there are over 37 resistance genes identified and several resistant varieties to Hessian fly have been released in the USA. The other insects where good progress has been made in the area of host plant resistance are the Russian wheat aphid on wheat and barley in the USA and South Africa, the green bug on wheat in the USA and the Orange wheat blossom midge in Canada.
What is the status of host plant resistance to insects of cereals and food legumes in the Arab World?

A part from the work led by the International Center for Agricultural Research in the Dry Areas (ICARDA), in collaboration with its partners in North Africa, West and Central Asia, host plant resistance to insects is still at its infancy. In North Africa, West and Central Asia, the work on breeding wheat for Hessian fly resistance in Morocco is a pioneering one. In

close collaboration between INRA (National Institute of Agronomic Research), Morocco, ICARDA and Kansas State University, USA, over 10 resistance genes and several sources of resistance in wheat and it's wild relatives have been identified and used in breeding programs. Also several bread wheat and durum wheat varieties carrying resistance to Hessian fly have been released in Morocco. ICARDA, in collaboration with its partners, has also developed germplasm carrying resistance to Russian wheat aphid in bread wheat and barley and to chickpea leaf miner; this germplasm has been shared widely with users worldwide.

Host plant resistance should be considered the IPM foundation on which other management options need to be built for sustainable control pest strategies. The recent advances made in the area of biotechnology, development of markers for the different traits, cloning resistance genes etc… would facilitate breeding for insects resistance. As stated above, phenotyping for resistance to insects is very time consuming and quite laborious. The identification and use of molecular markers for resistance to key pests would definitely save time and efforts spent in the field and/or greenhouse phenotyping.

Taking into consideration the many advantages HPR has, I personally feel that research institutions in the Arab world should put more efforts and resources in the area of genetic resistance to insect pests. The use of resistant varieties to insect pests should help boost productivity of our staple crops and at the same time contribute to the protection of our fragile environments.

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Hessian fly Resistant wheat line (left) and damaged wheat line (right)

Hessian Fly adult laying eggs

❖ Crop Protection News from Arab and Near East Countries

INVASIVE AND NEW PESTS

ALGERIA

A Survey of Thrips and their Potential for Transmission of Viruses to Crops in Biskra (Algeria): First Record of the Species *Frankliniella intonsa* and *Thrips flavus*. Thrips are the main phytophagous insects on many agricultural crops and plants in Algeria that have not yet been thoroughly studied. These pests have been reported as vectors of viruses. The investigation was conducted on vegetable crops between 2014 and 2016 in six arid area sites at Biskra. Thrips species were sampled from 14 vegetable crops. Four species were affiliated to the genus *Frankliniella* (*F. occidentalis, F. intonsa*), and two to the genus *Thrips* (*T. tabaci* and *T. flavus*). Two sympatric species namely *F. occidentalis* and *T. tabaci* were collected from the majority of the vegetable hosts in all the studied sites, while *F. intonsa* and *T. flavus* were sampled only from pepper and they were signaled for the first time in Algeria. The current survey updates the information on the Thysanoptera of Biskra region and highlights their importance in agriculture, particularly in the greenhouses. This survey may be useful for producers and scientists to consider the risk of these harmful pests.[Razi, S., Bernard, E.C., and Laamari, M.(Algeria).Tunisian Journal of Plant Protection 12: 197-205,2017].

IRAQ

First Report of Mexican Black Scale, *Saissetia miranda* (Cockerell & Parrott) (Hemiptera: Coccoidea: Coccidae) on Fig from Baghdad Orchards. During a routine survey in the autumn season of 2017 in the orchards around Baghdad area, strange black scale insects have been noticed on fig leaf blades and petioles, terminal twigs and fruits. Samples were collected and stored in 70% ethyl alcohol. Morphological characters have studied and compared with the scale insects of Iraq, meanwhile, some samples were sent abroad to three scale insect specialists: Mehmet Bora Kaydan, Cukurova University, Biotechnology and Research Center, Adana/ Turkey.; Masumeh Moghaddam, Insect Taxonomy Research Department, Iranian Institute Research of Plant Protection, Tehran, Iran and Christopher Hodgson, Digital Learning Specialist and Director at Discover eLearning Ltd. The Nottingham University, Newcastle, UK.

Kaydan and Moghaddam have confirmed the identification that the samples belong to Mexican black scale, *Saissetia miranda* (Cockerell & Parrott).This is the first report of *S.miranda* in Baghdad area. The global distribution map of this insect does not refer to the presence of Mexican black scale in Iraq whoever this insect was recorded in 2013 on wide host range in Iran. [**Mohamed Zeadan Khalaf, and Ibrahim Jaddoa Al-Jboory 2018, Integrated Pest Control Research Center, Directorate of Agricultural Research, Ministry of Science & Technology, Baghdad; the University of Baghdad, College of Agriculture, Iraq 2018]**

IRAN

First Report of *Phytophthora austrocedri* on *Cupressus sempervirens* in Iran. In Iran, symptoms of foliage bronzing were observed in 2016 on *Cupressus sempervirens* trees in a public park in Qazvin city. Affected trees were also displaying orange-brown lesions in the phloem around the stem collar. Samples were taken from phloem tissues in the lesion edges for diagnosis. Results of the laboratory tests (morphological, molecular, and pathogenicity tests) confirmed the presence of *Phytophthora austrocedri* in symptomatic samples. This is the first report of *P. austrocedri* from Iran, as well as the first time that it is found in association with symptoms on *Cupressus sempervirens*. The possible source of introduction of *P. austrocedri* into Iran remains unknown. [**Mahdikhani M, Matinfar M, Aghaalikhani (Iran), New Disease Reports 36, 10, 2017]. EPPO Reporting Service 2017 no. 11 – Diseases**

SYRIA

Two New species and a New Record of Bdellidae (Acari: Trombidiformes) from Syria. . Two new species of Bdellidae, *Cyta kreiteri* **n. sp.** and *Odontoscirus tixieri* **n. sp.** were collected from Latakia province, Syria. *Biscirus iranensis* Paktinat-Saeej and Bagheri is reported for the first time from Syria, and *Spinibdella cronini* (Baker and Balock) is re-studied. [Barbar Ziad, Edward A., Ueckermann E. A. Acarologia, 57 (4): 1089–1102, 2017]

The First Record of Mango Stem Borer *Batocera rufomaculata* (Coleolptera: Cerambycidae) (DeGeer, 1775) on *Ficus bengamina* in Lattakia, Syria. The Mango stem borer *Batocera rufomaculata* (DeGeer, 1775) is a polyphagus insect, which infects 50 plants belong to 18 plant families, and the *Ficus* spp. is one of the most important hosts of *B. rufomaculata* in the word, where it is the most destructive and dangerous pests of ficus tree in the in Syrian coast, where the suitable wet and warm weather is. The *Ficus bengamina* (Urticales: Moraceae) is an ornamental tree, this tree farmed in the Syrian coast as single unformed trees, or formed plant fence, it is a host for many pests in both its native habitat and that inserted to it. A presence of non-agglomerated dark brown dense sawdust was noted, exiting from many holes spread in the trunk area of the *F. bengamina* tree in Lattakia center of application and rearing of natural enemies. In November 2017 six adults of *B. rufomaculata* was isolated: 4 males (medium size) and 2 females (large size) from both trunk and branches of the tree. The presence of feeding holes of small larvae was noted in the trunk area, which is pits with small diameters and sawdust, in addition to six exiting holes of adults with large diameters and without sawdust. Each of the morphological characteristics of the insect and the date of its appearance during November was agree with most of the reference studies of Mango stem borer, and this is the first record of this insect on *Ficus bengamina* in the Syrian coast**.[Walaa Jaber Bohasan and Jounar Aziz Ebrahim (Syria), (Under publication).**

The First Record of Leopard Moth *Zeuzera pyrina* L (Lepidoptera: Cossidae) on Citrus Tree in Lattakia, Syria. The Leopard moth *Zeuzera pyrina* L is a polyphagous insect which infects more than 150 plant species belong to more than 20 genus, and infects many of trees and weeds. Each of apple *Malus sylvestris* Mill, *M. domestica* and *Cornamental malus* and *Juglans regia* are the major hosts of the insect. As infects all of: Chestnuts, olive, Pear, Elm, Hawthorn, Oaks, Lilca, Maple, Quinces, Willower, Pomegranate and Poplar, where any infect by leopard moth have not been recorded on Cashews tree, Grapes or Fig in Syria. The existing of Leopard moth *Z. pyrina* on Washington navel orange *Citrus sinensis* L was recorded in Kemmen village which belongs to Al-Fakhora region in Lattakia. The larva was in the fifth instar (according to the head capsule width) inside feeding tunnels with sawdust and resin, the average length of these tunnels was 20 cm in the trunk area in August, season 2016. And this assented with its existing in the same larval instar on its assistant hosts in the same region: Olive and Pomegranate. This is the first record of *Z. pyrina* on citrus tree in the Syrian coast, while it was recorded in another Mediterranean countries as Italy by De Stefani (1904), Costantino (1937) and Silvestri (1943).[**Jounar Aziz Ebrahim (Syria), (Under publication).**

First Record of Natal Fruit fly *Ceratitis rosa* Karsch, 1887 (Insecta:Diptera:Tephritidae) on Damask rose *Rosa damascena* mill L.,(Rosaceae) in Syria. The presence of the Natal fruit fly *Ceratitis rosa* Karsch, 1887 (Insecta:Diptera:Tephritidae) on Damask rose *Rosa damascena* mill L., (Rosaceae) is reported for the first time from Damascus Syria. It was collected from Rose bushes at one from 45 location during routine survey of diseases and insects affecting roses in Damascus and Damascus countryside's conducted in 2017. *C. rosa* presents as larvae

yellowish to pink were found inserted in petals of flowers of *R. damascena*, were reared on the same flowers until complete their life cycle, In mid-November all larvae entered pupation stage in brown color and was about 0.5 cm long, for about 25 days. Female and male insects appeared At the end of October early December at Lab. temperature 18- 25 °C, male and female classification and gender classification were compared with taxonomic references female/male / were classified, this record for the first time for Syrians fauna. In addition, *Rosa damascena* (Rosaceae) as host plants are reported as a new host plant for *C. rosa* flies species. **[Houda Kawas, Abdulnabi Basheer (Syria), Faculty of Agriculture, Biological Control Studies and Research Center , Damascus University, 2018]**

SAUDI ARABIA

The First Genetic Identification of Longhorn Date Palm Stem Borer *Jebusaea hammerschmidtii* (Coleoptera: Cerambycidae). Longhorn date palm stem borer *Jebusaea hammerschmidtii* (Coleoptera: Cerambycidae) is one of the serious pests that attack date palms, where the larvae feed on the inner tissue of palm trunks. This pest spread in many countries, where the date palm cultivated, such as the Arab States of the Arabian Gulf, Iraq, Egypt, Algeria, Iran and India. It is infesting weak and neglected date palm. It has been found on many date palms in Hofuf (Saudi Arabia). Adults were collected, which had some external differences in color. Through research on global gene bank databases such as (NCBI), it turns out that there was no record of this insect. For this, the Pests and Plant Diseases Unit at King Faisal University (Saudi Arabia) extracted DNA for this insect using specialized. Analyzed the genetic code of the insect after PCR and comparison with gene bank, where it turns out mismatches with any insect in the gene bank suggesting no work has been done on this insect. Therefore, Pests and Plant Diseases Unit registered the genetic identification of longhorn date palm stem borer in global gene bank under (MG564344**).[Khalid Alhudaib, Sherif Elgnany, Moustafa Almgaslah and Aziz Ajlan (Saudi Arabia), Pests and Plant Diseases Unit, King Faisal University, Hofuf, Alhasa, Saudi Arabia, 2017].**

TUNISIA

First Report of *Amaranthus spinosus* in Tunisia. *Amaranthus spinosus* (Amaranthaceae) is reported as a new alien species for the flora of Tunisia. The species is native to the tropical region of the Americas, and is naturalised throughout other regions of the tropics. The species is widespread throughout China. In the EPPO region, *A. spinosus* has been recorded as a casual species in several countries, and in Spain it is reported as invasive. *A. spinosus* is an annual plant and a prolific seed producer where each plant can produce over 200 000 seeds which are dispersed by wind, water and animals. In Tunisia, *A. spinosus* has been identified between 2012 – 2016, occurring along roadsides, public gardens and cultivated areas between 6 – 41 metres above sea level. In total, four populations were found in Bizerta, Bir Bouregba, Hammamet and Nabeul, where in the case of the latter, the largest population covers 25 m2. The authors of the current study consider the four populations are casual occurrences at present in Tunisia. [**Iamonico D, El Mokni R . Acta Botanica Croatica, DOI: 10.2478/botcro-2018-0009, 2018]. EPPO Reporting Service 2018 no. 2 –Invasive Plants.**

RESEARCH HIGHLIGHTS

ALGERIA

Population Genetic Structure and Mycotoxin Potential of the Wheat Crown Rotand Head Blight Pathogen Fusarium Culmorum in Algeria. Surveys for crown rot (FCR) and head blight (FHB) of Algerian wheat conducted during 2014 and 2015 revealed that *Fusarium culmorum* strains producing 3-acetyl-deoxynivalenol (3ADON) or nivalenol (NIV) were the causal agents of these important diseases. Morphological identification of the isolates (n FCR= 110, n FHB= 30) was confirmed by sequencing a portion of TEF1. To assess mating type idiomorph, trichothecene chemotype potential and global population structure, the Algerian strains were compared with preliminary sample of *F. culmorum* from Italy (n =27), Australia (n=30) and the United States (n =28). A PCR assay for MAT idiomorph revealed that MAT1-1 and MAT1-2 strains were segregating in nearly equal proportions, except

within Algeria where two thirds of the strains were MAT1-2. An allele-specific PCR assay indicated that the 3ADON trichothecene genotype was predominant globally (83.8% 3ADON) and in each of the four countries sampled. In vitro toxin analyses confirmed trichothecene genotype PCR data and demonstrated that most of the strains tested (77%) produced culmorin. Global population genetic structure of 191 strains was assessed using nine microsatellite markers (SSRs). AMOVA of the clone corrected data indicated that 89% of the variation was within populations. Bayesian analysis of the SSR data identified two globally distributed, sympatric populations within which both trichothecene chemotypes and mating types were represented**.[Imane Larabaa, , Houda Boureghdaa, Nora Abdallaha, Oussama Bouaichaa, Friday Obanorb, Antonio Morettic, David M. Geiserd, Hye-Seon Kime, Susan P. McCormicke, Robert H. Proctore, Amy C. Kellye, Todd J. Warde, Kerry O'Donnelle (Algeria). Fungal Genetics and Biology 103, 34–41, 2017].**

Phenotypic and Biochemical Characterization of New Advanced Durum Wheat Breeding Lines from Algeria that Show Resistance to Fusarium Head Blight and to Mycotoxin Accumulation. Durum wheat (*Triticum turgidum L.* var. *durum*) is a crop highly susceptible to *Fusarium* head blight (FHB), which results in yield losses and downgrades the quality of grains mostly due to mycotoxin contamination. Although breeding for resistance to FHB is one of the most promising strategy for minimizing crop damage, the attempts to obtain durum wheat resistant lines have been limited so far. Two potentially interesting lines were recently delivered by a breeding program based on crosses involving cultivars from Europe and Syria. Using a field experiment in Algeria with four different *Fusarium culmorum* strainsand a spray inoculation method, we demonstrated that the two breeding lines were significantly less affected than a set of commercial cultivars. The two breeding lines were shown to exhibit a higher resistance to both initial fungal infection and disease spread, and to mycotoxin contamination. In addition, a detailed analysis of phenolic acid composition of grains indicates significant differences in *p*-coumaric acid between the FHB-resistant breeding linesand the sensitive genotypes. Our results corroborate the importance of cell wall composition in preventing the diffusion of *F. culmorum* and therefore contributing to the resistance of cereals to FHB. **[S. Hadjout, S. Chéreau, V. Atanasova-Pénichon, G. Marchegay, L. Mekliche, H. Boureghda, C. Barreau, S. Touati-Hattab, Z. Bouznad and F. Richard-Forget (Algeria). Journal of Plant Pathology, 99 (3) : 671-680, 2017].**

EGYPT

External Morphology of Antennae and Mouthpart Sensillae of the Granary Weevil (Coleoptera: Curculionidae). The ultrastructure of the antennal and mouthpart sensillae for the granary weevil, *Sitophilus granarius* L. (Coleoptera: Curculionidae), adult was examined with scanning electron microscopy. The cephalic capsule bears two types of sensillae—a multibranched sensillum and a multiporous peg sensillum. The multibranched sensillum was a structure not previously reported for the granary weevil or any other insect species, and is distinguished by its torpedo-shaped appearance. The multiporous peg sensillae, formed from multiple straight tubules, are distributed on the distal one-third of the rostrum. The mouthparts bear two types of sensillae—the multiporous peg sensillae on the labrum and mandibles, and short basiconic sensillae on the labial palps. The antenna consists of eight segments arranged on the scape, pedicel, and flagellum. Each antennal segment bears sqaumiform sensillae, and five types of sensillae were identified on the club segment. These sensillae are a trichodea Type I, trichodea Type II, chaetica Type I, chaetica Type II, and double-walled basiconic. Chaetica Types I and II represented .60% of the total sensillae on the club segment. Trichodea Type II sensillae were also observed and were distinguished by the characteristic bifurcate apex. Finally, the double-walled basiconic sensillae were distinguished by the fluted cuticular surface with a grooved peg-like appearance distally**. [Nesreen.M. Abd El-Ghany and S.E. Abd El-Aziz (Egypt). J. Entomol. Sci. 52(1): 29–38, 2017].**

Searching Behavior of *Coccinella undecimpunctata* L. (Coleoptera: Coccinellidae) and Its Parasitoid *Tetrastichus coccinellae* Kurd. (Hymenoptera: Eulophidae). A current study was established in laboratories of Biological Control Department, Shandaweel Research Station, Agricultural Research Center. Herbivore induced plant volatiles may be attractive to one or more specific natural enemies. Releasing of volatiles from certain pests and host injured plants has a role in host or prey location. Response of newly emerged and starved or fed adults (for three days) for each of *Coccinella undecimpunctata* (Coleoptera: Coccinellidae) and its parasitoid adults, *Tetrastichus coccinellae* Kurd. (Hymenoptera: Eulophidae) to volatile sources were studied. Olfactory orientation was emitted from a combination of host plant and host insect that volatiles from four sources (e.g. infested sorghum

plants with aphids (corn leaf aphid (*Rhopalosiphum maidis* (Fitch) (Hemiptera: Aphididae)), crushed un-infested sorghum leaves and infested sorghum leaves plus the last larvae and newly pupated coccinellid). Results demonstrated the complexity of the use of different volatile info-chemicals generated by the different environmental stimuli. Reactions of the used *C. undecimpunctata* adults and its parasitoids were noticed and different strategies to exploit these signals were evolved. **[Mona El-Mandarawy, Gamal Karaman, Adel H. Gharib, Hossam M. El-Gepaly(Egypt). Universal Journal of Agricultural Research, 6(1): 9-17, 2018].** DOI: 10.13189/ujar.2018.060102

Laboratory Evaluation of an Entomopathogenic Fungus, *Isaria fumosorosea* wize pa208 against Two-spotted Spider Mite, *Tetranychus cucurbitacearum* (SAYED). The influence of the entomopathogenic fungus, *Isaria fumosorosea* Wize PA208 was evaluated against the two-spotted spider mite, *Tetranychus cucurbitacearum* (Sayed) under laboratory conditions at Plant Protection Research Institute, Sharkia branch, Egypt. Two different application methods; spray and dipping techniques of fungi spores suspension were tested at 25, 30±2°C and 70±5 % R.H. Mortality percentages increased with an increase of spore concentration, exposure time and temperature degrees using spray compared with dipping technique. LC50 values were 2.14×10^6 and 1.70×10^4 spores/ml after four and seven days of spray application at 30 °C, respectively. On the other hand, LC_{50} values were 8.95×10^6 and 2.77×10^6 spores/ml after four and seven days of dipping technique at 30°C, consecutively.**[El-Kawas, H. M. G.; Nabil, H. A.; Kalmosh, Fatma Sh.; Hussein, Rana H. M.(Egypt), Egypt. Acad. J. Biolog. Sci., 9: 1-6, 2017].** www.eajbs.eg.net

Natural Occurrence of the Broomrape fly, *Phytomyza orobanchia* Kalt. (Diptera: Agromyzidae) on the Weed Parasite, *Orobanche crenata* in Two Legume Crops at Sohag Governorate. Occurrence and population density of broomrape fly, *Phytomyza orobanchia* Kalt. (Diptera: Agromyzidae) were conducted at Shandaweel Research Station on the weed, *Orobanche crenata* Forsk. That parasitized the two legume crops, faba bean (*Vicia faba* L.) var. Masr 1 and pea (*Pisum sativum* L.) var. Master, during 2015/2016 and 2016/2017 seasons. Results indicated the changes in the natural infestation rates of *P. orobanchia* on the crenate broomrape, *O. crenata*. In faba bean, percentage of infested *Orobanche* capsules ranged between 2.67% to 11.41% and 5.95% to 47.24% in the seasons of 2016 and 2017, respectively. However, in pea crop, the rate of infestation ranged between 0.22% to 39.77% and 5.58% to 74.53% in 2016 and 2017 seasons, respectively. Also, the infestation rate with *P. orobanchia* in broomrape was higher in post-harvest examination of faba bean than the pre-harvest one in both seasons. **[Hosam M.K.H. El-Gepaly and Lamya M.Z. Abo Abdalla. (Egypt), Egyptian Academic Journal of Biological Sciences. A. Entomology, 10: 79-86, 2017].**

Antifungal Activity of Fabricated Mesoporous Alumina Nanoparticles against Root Rot Disease of Tomato Caused by *Fusarium oxysporium*. The present work involved the synthesis and characterization of mesoporous alumina sphere (MAS) nanoparticles to evaluate their biological activity against tomato root rot caused by *Fusarium oxysporium*, as compared with the recommended fungicide, tolclofos-methyl, under laboratory and greenhouse conditions. The effects of MAS nanoparticles on the growth of tomato plants were also evaluated and compared with those of tolclofos-methyl. The physical characteristics and structural features of MAS nanoparticles, such as their large surface-area-to-volume ratio, active surface sites and open channel pores, caused high antifungal efficacy against *F. oxysporium*. MAS nanoparticles presented an antifungal potential similar to that of tolclofos-methyl and much greater than that of the control under both laboratory and greenhouse conditions. The highest growth parameters were recorded in tomato plants treated with MAS nanoparticles, followed by those treated with tolclofos-methyl. Our study demonstrated the possible use of cylindrically cubic MAS nanoparticles as an effective alternative for the control of *Fusarium* root rot in tomato. **[Mohamed Shenashen , Aly Derbalah , Amany Hamza, Ahmed Mohamed, and Sherif El Safty. Pest Management Science, 73: 1121-1126, 2017].**

Efficacy of Rice Straw and Spent Oyster Mushroom Substrate as Organic Soil Amendments in Controlling Citrus Nematode on Valencia Orange Trees. The citrus slow decline nematode, *Tylenchulus semipenetrans* is an important and destructive pest of citrus trees in Egypt and worldwide. In order to reduce population density of citrus nematode in soil and improvement of fruit yield, a field trial was conducted for two successive seasons to evaluate the nematicidal potential of rice straw (RS) and spent mushroom substrate (SM) powders applied alone as soil amendments at the rates of 100, 200 and 400 g/tree, the liquid chemical nematicide Nemacur® 40% at the recommended dose (4 L /feddan), and a combination of a half rate of each of SM applications + a half dose of the nematicide were evaluated for controlling *T. semipenetrans* on Valencia orange trees (*Citrus sinensis* L.) in a private orchard at Nubaria region, El-Behera governorate. All treatments significantly reduced nematode populations and

increased orange yield as compared to the non-treated trees (control). The highest effective treatments in reducing number of 2nd stage juveniles (J_2) in soil were Nemacur® alone and (SM200 + ½Nemacur®) with 69.0-80.6% reduction in the 1st season, whereas in the 2nd season, the highest effective ones were Nemacur®, (SM100-200 + ½Nemacur®) and SM400 with a nematode reduction ranged between 63.6-80.4%. Also, all treatments suppressed numbers of nematode J_2 and females (F) / g root fresh weight. The highest reductions (56.2-85.5%) of J_2 and F, in the 1st season were achieved by Nemacur®, (SM50-200 + ½Nemacur®) and SM200-400. Similarly, Nemacur®, (SM50-200 + ½Nemacur®), SM200-400 and RS400 reduced numbers of J_2 and F, in the 2nd season by 57-89%. All the applied treatments inhibited reproduction factor (Rf) of nematode J_2 in soil and J_2 & F in orange roots in the 1st and 2nd seasons .The highest reduction of J_2 in soil and in roots were recorded by Nemacur®, (SM100-200 + ½Nemacur®) and SM200-400 treatments by 51.8-87.1%. However, the highest reduction rates of F (52.4-80.4%) were recorded by Nemacur®, (SM50-200 + ½Nemacur®), SM200-400 and RS400. At the harvest time, orange fruit yield was increased above 100% as compared to the control. The highest increase of fruit yield was achieved by treatments of SM400 and (SM200 + ½Nemacur®) by 108.5-105% and by 123.6-103.9% in the 1st and 2nd seasons, respectively. **[El-Saedy, M.A.M. ; Sherin, F. Awd Allah and Sandy, E. Hammad, (Egypt). Egyptian Journal of Agronematology, 16: 143-165, 2017].**

Monitoring Population of Tomato Leaf Miner, *Tuta absoluta* During Winter and Summer Evergreens of Potato Filed in Egypt. *Tuta absoluta* (Meyrick) (Lepidoptera: Gelechiidae) tomato leaf miner is a major pest of the Solanaceae family, this studs was carried out in the open field of three potato varieties (Espunta, Mondial and Pliny) at Al-Bustan, Nubaria Western Delta in Egypt in two evergreen (winter and Summer) using pheromone traps as an indicator to infestation by this pest. Also, the parasitoid *Trichogramma evanscens* (Hymenoptera: Trichogrammatidae) was evaluated to suppressing the infestation as a biological control. Also, the relationship between the adult moth of *T. absoluta* and temperature o C and relative humidity RH% throw the winter and summer evergreens studied. The result indicated that the population of *T. absoluta* adult moth in pheromone traps increased in winter evergreen during October and November (19-22°C) and summer evergreen during May and June (23o -26o C) in warm climates. The results revealed that *Tr. evanscens* gave a high significant in reducing the *T. absoluta* in open field and greatly exacerbates role of natural enemies**. [Awad, H. A.; El-Naggar, A.Z. ; EL-Bassouiny, H. M. (Egypt), Egypt. Acad. J. Biolog. Sci., 11(1): 27–32 , 2018].**

Ecological Notes and Taxonomical Revision of Family Phytoptidae Murray, 1887 (Acari: Eriophyoidea) in Egypt. Ecological notes and taxonomical revision of the species belonging to family Phytoptidae Murray were studied at four provinces (Qualiubiya, Giza, Behera, Sohag) during two years (2016- 2017). The results showed that, three species (Oziella nilotica (Abou Awad); *Mackiella phoenicis* Keifer; *Retracus johnstoni* Keifer) belonging to three genera and two tribes (Phytoptini, Murray, 1877; Mackiellini Newkirk & Keifer, 1971) were recorded and illustrated and arranged in taxonomical key. The mentioned species were varied in their occurrence rate according to different provinces and host plants. **[Halawa, A.M., Abdallah, A.M., Ebrahim, A.A. & Aiad, K.A(Egypt), .Egypt. Acad. J. Biolog. Sci., 11(1): 53–64, 2018].**

Population Density of Potato Tuber Moth, *Phthoremaea operculella* (Zeller) (Lepidoptera : Gelechidae) Infesting Potato Plants in the Field. The present study was conducted during 2014, 2105 and 2016 early summer seasons for potato (kara, variety) was performed under the field conditions , the experimental field was selected at a private farms at Shepa elnakaria village, Zagazig district and new Salhia, Hosinia district, Sharkia governorate. The present study aimed to study the impact of type soils (clay and sandy soil) on population density of *P. operculella* larvae infesting potato plants cultivated during 2014, 2015 and 2016 early summer seasons , evaluation infestation % to potato tubers and the effect of some climatic change on population density under field conditions. The statistical analysis of the total mean number of *P. operculella* larvae showed significant differentiation. The results show that the population density of *P. operculella* larvae was higher on sandy soil (518 individuals / 120 leaves) than the clay soil (332 individual / 120 leaves), These results revealed significant positive effects of maximum and minimum temperature and DP on population density of *P. operculella* during the first season 2014 in clay soil and sand soil . The combined effect (E.V) of these ecological factors on *P. operculella* showed that these factors were responsible as a group for 84 %, 15% and 35 % effects on the population density of *P. operculella* throughout seasons (2014, 2015 and 2016) in clay and sandy soil , also, these factors were responsible as a group for 72 %, 64% and 26 % effects on the population density**.[Soliaman,MH.AR.;Ammar, M. I.; Saad ,A. F.AS.; Faraj Allah, F. H.; Abd Al Raheem ,A.A.R. (Egypt), Egypt. Acad. J. Biolog. Sci., 11(1): 65– 71, 2018].**

Population Dynamic of Honeydew Moth, *Cryptoblabes gnidiella* Miller in Vineyards Orchards. This work was carried out in a private farm of vineyards orchard, at Zagazig district, Sharkia governorate, Egypt, during 2014, 2015 and 2016 seasons. The present study aim to study the effect of temperature, relative humidity and dew point on population dynamic of *Cryptoblabes gnidiella* picked by used sex pheromone traps under field condition. The results showed that average number of adults were increasing gradually from May,10 to August ,23 thenceforth decreased in period after August,23 to Dec.,6 at three seasons. Also, the results recorded 5th, 6th and 6th peaks during 2014, 2015 and 2016 seasons, respectively. Especially , 2014 season, the first peak recorded 4 adults at May,31, the second peak recorded 15.6 adults at July , 12 , the 3rd peak recorded 17.3 adults at August, 23, the 4th peak appear 13 adults at Sept.,20 and the 5th peak recorded 7.6 adults at Oct.,25 , respectively. The *C. ginidiella* adults collected from traps during 2015 season , recorded 6th peaks as follow , 10.3, 8.0, 10.33, 7.66, 9.66 and 12.66 during May,31 , Jun.,28, July, 19, August,23, Sept.,13 and Oct., 18 , respectively . On the other hand , the results during 2016, illustrate that there are highly significant correlation relationship between average number with DP, average number with air temperature, average number with (DP & RH) and average number with (air temp with DP) , but the relation is not significant between average number with RH alone , average number with (air Temp. & RH). The data illustrate that abiotic factors as (RH, DP and temperature) cause highly significant on average number of *C. gnidielLa* , the temperature effect on average number more than DP and RH.**[Heba Mohamed Elnagar (Egypt), Egypt. Acad. J. Biolog. Sci., 11(1): 73– 78, 2018].**

IRAQ

Molecular Detection of Field Predation among Larvae of two Ladybird Beetles is Partially Predicted from Laboratory Experiments. Despite the fact that natural enemies can synergistically contribute to herbivore pest suppression, sometimes predators engage in intraguild predation (IGP) that might dampen trophic cascades. DNA-based gut-content analysis has become common in assessing trophic connections and biocontrol potential by predators in field systems. Here, we developed a molecular technique that can be used to unravel predation among two ladybirds, *Coccinella septempunctata* and *Hippodamia variegata*, and their shared prey, *Aphis gossypii*. Both ladybirds may provide effective control of the pest. Therefore, understanding their likelihood to engage in IGP is crucial for conservation biological control. Ladybird specimens were collected in melon crop. DNA extraction, primer design and evaluation were conducted. Detectability of prey DNA did not differ significantly between the two ladybirds. *H. variegata* exhibited higher predation on *A. gossypii* than *C. septempunctata* (90.6% vs. 70.9%) and data correction based on DNA detectability confirmed this ranking. IGP was similar among the two species, although corrected data might suggest a stronger predation by *C. septempunctata*. Intriguingly, IGP by *C. septempunctata* was lower than predicted by laboratory bioassays, possibly due to the high complexity that arises under field conditions. Implications of our results for biological control and perspectives for ecological network analysis are discussed. **[Gabriele Rondoni, Saleh Fenjan (Iraq-Italy), Valeria Bertoldi, Fulvio Ielo, Khaled Djelouah, Chiaraluce Moretti, Roberto Buonaurio, Carlo Ricci & Eric Conti(Iraq), Scientific Reports volume 8, Article number: 2594 ,2018].**

Gene Expression Profiling of Virulence-Associated Proteins in Planta During net Blotch Disease of Barley. The proteaceous extracts of culture filtrates from *Pyrenophora teres f. teres* (Ptt) have been previously shown to induce symptoms on susceptible barley cultivars suggesting these fungal proteins are likely to contribute to net form net blotch (NFNB) disease. This research primarily aimed to study the *in planta* gene expression of 222 proteins, previously identified in culture filtrates of virulent Ptt isolates, using qPCR. Genes classified by InterPro as virulence factors, proteolytic, contributing to oxidation-reduction processes, or carbohydrate metabolic processes (CMP) including the cell wall degrading enzymes (CWDEs) had very high to extremely high expression levels. The most common temporal co-expression pattern, for 41 of the genes, was an upregulation from 24 h post inoculation (hpi) peaking at 96 hpi when necrotic symptoms became visible. The next most common pattern, for 27 of the genes, was also an upregulation from 24 hpi but peaking at 48 hpi. Genes categorised as encoding for CMP/CWDEs and involved in other metabolic processes were enriched in these patterns suggesting that the pathogen needs to access the plant tissue early in the interaction to access nutrients that can drive fungal growth. Other proteins with gene expression patterns that support a role for them in suppression of the plant defence response, particularly in the biotrophic stages of fungal growth included ceratoplatanin, LysMlike protein and proteins containing a CFEM-domain or a Jacalin-

like domain. During the necrotrophic stage, gene expression was also upregulated for proteins possibly involved in toxin production, such as isoamyl alcohol oxidase and FAD-binding domain proteins. This is the first study monitoring fungal gene expression on a large scale during the interaction between barley and the NFNB disease pathogen *Pyrenophora teres f. teres*, highlighting candidates for future functional analysis**.[Ismail, I, Able, A,(Australia-Iraq), Physiological and Molecular Plant Pathology, 98: 69-79, 2017].** https://pubag.nal.usda.gov/catalog/5660746

Evaluating Some Insecticides for Controlling the Sunn Pest *Eurygaster* spp. Puton (Hemiptera: Scutelleridae) Under Field Conditions. The sunn pest *Eurygaster integriceps* is the most important insect of cereals in Iraq and other countries. In this study, the field efficacy of 10 different kinds of insecticides with various mode of action was evaluated against sunn pest *E. integriceps* infested wheat on field at middle of Iraq. Experiments were conducted in 11 wheat fields with each field 0.5 ha, located in the middle of Iraq (Wasit and Salahudain governorates) during season 2015-2016. The wheat fields contained common varieties of wheat planted in Iraq. The population density of the pest was at its highest level (start of April 2015) of mostly nymphs, adults and eggs. The results indicated that the recommended dose for each insecticide used showed high efficacy (80.1%-93.8%) in reducing number of *E.integriceps* adults after one week of treatment, reaching 0.2-0.8 insects/m2 compared to 3.6 insects/m2 in the control treatment. These results will assist the control program of this pest and in implementing pest management practices to reduce resistance development chances**.[Mohammed Zaidan Khalaf, Hussain Fadhil Alrubeai, Ali Abdulla Sultan and Ahmad Mehdi Abdulkareem (Iraq), Journal of Agricultural Science and Technology B 7,264-267, 2017]. doi: 10.17265/2161-6264/2017.04.003**

The Control of the Disease of Rotting Seeds and Cucumber Seedlings. This study was conducted to isolate and identify three isolates of the pathogenic fungus *Pythium aphanidermatum* causing seed rot and seedlings death in cucumber plants (*Cucumis sativus* L.) collected from three different regions, namely Abbasiya, Um-Abbasiyat and Qazwainiya in the province of Najaf. Pathogenicity test on cucumber seeds showed that all isolates from the three regions were pathogenic and caused seed rot. Isolate *P. aphanidermatum* from Al-Abbasiya region was the most aggressive isolate followed by the isolates obtained from Um-Abbasiyat and Qazwainiya regions that caused cucumber seed rot of 90, 74 and 72%, respectively; whereas no seed rot was seen in the control treatment. Results obtained from the polymerase chain reaction (P.C.R) of two most pathogenic isolates (*P.a*1 and *P.a*2) on cucumber seeds showed that it was possible to amplify 700-800 bp sized products. Results of the sequence analysis of nitrogen bases generated from the PCR-amplified products using BLAST showed that both isolates are belonging to the fungus *P. aphanidermatum*. The *P.a*2 was 100% identical to the globally isolated fungus that deposited at the National Center for Biotechnology Information (NCBI). The BLAST results showed that *P.a*1 had similarity of 98-998% with the isolates recoded at NCBI; therefore, this isolate was registered in NCBI as a new isolate under the GenBank accession no. MF347709**.[Hussein I. Abdulzahera, Sabah L. Alwan, Aqeel N. AL-Abedy (Iraq), Journal of Kerbala for Agricultural Sciences, 5,2,2018].** https://www.ncbi.nlm.nih.gov/nuccore/MF347709

Effect of Potassium Fertilization and Organic Nutrient (Reef Amirich) in the Population Density of Bemisia tabaci (Genn.) and Thrips tabaci (L.) on Cucumber. A field study was conducted at the college of Agriculture, Baghdad University- Jadiriyah to investigate the effect of adding potassium fertilizer and organic nutrient (Reef Amirich) on the population density of two sucking pests of cucumber, cotton whitefly, *Bemisia tabaci* and onion thrips, *Thrips tabaci* during the spring season/2016. Results indicated that potassium sulphate (50, 100 and 150 kg/ha) and organic nutrient (0.8 and 1.6ml/l) reduced both the population density of *B. tabaci* and *T. tabaci* nymphs depending on the fertilizer level of the user, the treatment 150 kg/ha for the potassium fertilizer and 1.6 ml/L for organic nutrient was the highest among others when minimized density of nymphs by 1.62 nymphs of *B. tabaci*/disk leaf and 0.38 nymph of *T. tabaci*/ disk leaf. Suggesting a possible increase in cucumber resistance to this pest as a result of the treatments, and the result showed the infestation with *B. tabaci* was higher in the second half of May, the average number of nymph were 5.35 nymph/ disk leaf, while the highest number of *T. tabaci* was observed in the first half of May, the average number reached to 2.73 nymph/ disk leaf. The result showed the interaction treatment K150A1.6 was significant superior of percentage of K and increased of content in leaves of Fe, Cu and Zn. **[Hind Ibrahim AL-Khazraji, Nida Saud Abed, Mohammed Zedan AL-Mharib, Shaymaa AL-Darraji(Iraq), J. Bio. Env. Sci. 12(2), 11-18, 2018].**

Allelopathic Effects for Three Plants Extracts on Weeds of Wheat (*Triticum Aestivum* L.). An investigation was carried out to evaluate the allelopathic effects of aqueous extracts of *Eucalyptus obligo,*

Chrysanthemum indicum and *Eruca sativa* on weeds of wheat in the research field of Kanan region, province of Diyala, Iraq during 2016-2017. A minimum number of weeds and Dry weight of weeds were significantly recorded (3.3 m-2, 15 g) respectively in *Eruca sativa* extract while maximum control of weeds % and inhibition of weeds % (71.2, 87.5%) were significantly recorded in *Eruca sativa* extract. Different yield components of wheat, such as crop height and 1000-grain weight showed maximum significantly difference 109.0 cm and 42.9 g respectively in *Eucalyptus obligo* whereas spike length, number of grains/spike, number of plants/m2 and grain yield revealed maximum significantly difference 11.8 cm, 52.6, 341and 1568 g respectively in *Chrysanthemum indicum.*[Hussein Ali Salim, Abdalsalam Awni Abdalbaki, Hussein Ali Khalid, Hana Safi Eshak, Balkees Reski, Wissam Kahtan Alwan(Iraq), Journal of Medicinal Herbs and Ethnomedicine, 3: 31-33, 2017.]. **doi: 10.25081/jmhe.2017.v3.3381,** http://updatepublishing.com/journal/index.php/jmhe/

SYRIA

Evaluation of Three Pesticides against Phytophagous Mites and their Impact on Phytoseiid Predator in an eggplant open-field. The present study aimed to evaluate the effects of two insecticides (deltamethrin and acetamiprid), and an acaricide (fenbutatin oxide) on diversity and abundance of mite fauna in replicate experiments carried out in an open eggplant field in Latakia, Syria. Each pesticide was applied three times with an interval of three weeks between two consecutive applications. Two phytophagous mites were observed in all treatments: *Tetranychus urticae* and *Polyphagotarsonemus latus*. However, the number of predatory mite species (in particular Phytoseiidae) was different according to the pesticide applied and the lowest number observed was in the fenbutatin oxide treatment. This acaricide caused high mortality of *T. urticae*, decreased the abundance of *P. latus*, and negatively affected Phytoseiidae. Acetamiprid and deltamethrin induced the resurgences of *T. urticae* (3.5-fold and 1.5-fold for the former and the latter respectively). The abundance of *P. latus* was not affected by acetamiprid but by deltamethrin. The results clarified also that these insecticides seemed harmless to Phytoseiidae [i.e. *Phytoseiulus persimilis*, *Phytoseius finitimus* and *Typhlodromus* (*Anthoseius*) *recki*]. Data obtained here are interesting for integrated management programs of the major eggplant phytophagous mites, although the generalization of these results requires some caution and additional experiments are needed. **[Barbar Ziad (Syria), Acarologia, 57 (3): 529–539, 2017].**

Susceptibility and Response of some Maize Cultivars to Natural Infestation by Large Corn Stem Borer *Sesamia cretica* L (Lepidoptera: Noctuidae) in Syria. This study was conducted at the of Field Research Station of Sianow of General Commission for Scientific Agricultural Research in Syria, to evaluate the susceptibility of six cultivars of maize (IL.257-09(P1), IL.298- 09(P2) , IL.286-09(P3), IL.255-09(P4), IL.262-09 (P5), IL.228-09 (P6)), against the natural infestation by large corn stem borer , *Sesamia cretica* Led. They were compared with control (Ghouta 82), the most growing in Syria, in the season 2015. The experiment was designed at randomized complete blocks (R.C.B.D). The highest infestation rate, dead hearts were recorded on cultivar (P4), after (3) weeks of germination and which was to 13.97% , 7.5%, It was characterized of being preferable cultivar for oviposition, whereas it was the least infestation on the cultivar (P2) 2.8% , 2.17% of dead hearts. At harvest, the highest infestation rate was at P4 (43%) ,and the lowest was at (P2) (15.1%). Syrian cultivar (P4) recorded the greatest number of holes/plant, highest number of tunnels and the longest area of stem tunneled/plant (3.25 / plant, 2.4 / plant, 12.05%), whereas the cultivar (P2) recorded.The least number of holes/plant, the lowest number of tunnels and less distance of stem tunneled/plant (1.64 / plant, 0.5 / plant, 3.12%), There were no significant differences between the different cultivars in the number of larvae in the plant where the numbers ranged from 0.2-0.8 / plant, whereas there were significant differences between them, as percentage of losing in the number of grains, it was ranged between 2.14 - 3.18%. The percentage of losing of weight of 100 tablets was between 5.7 - 9.5 %. Cultivars (P4) and (P5) recorded the highest percentage of losing of yield and reached to (23.76-23.81) %, whereas P2 recorded the lowest percentage of losing 18.7%. There were significant differences between the studied cultivars of the following qualities: Days to silking, plant height:, ear height, physiological maturity, ear length, diameter ear, number of rows per ear, number of kernels per row and 100-kernel weight. The best cultivars were P1, P2, P6 for using at subsequent breeding programs for resistance of large corn stem borer**.[Nezar Harba, Mousa Alsamara, Nadine asaad(Syria), Jordan Journal of Agricultural Sciences, 13, 2, 2017].**

Estimation of some Genetic Parameters for yield, its Components and some Morphological Traits in Three Hybrids of Maize (*Zea mays*) that Different of Resistant to Maize Stalk Borer *Sesamia cretica*. This study aimed to estimate the heterosis, degree of dominance and the inbreeding depression of three hybrids of maize (IL.298-09× IL.257-09) resistant, (IL.262-09 × IL.228-09) moderately resistance, (IL.255-09× IL.286-09) sensitive) during the growing season 2015. Results showed that over dominance gene action was obvious for one parent over the other for all traits examined had appeared clear through the values of the Degree of dominance, over their values 1, and the results showed that the environment's effect was limited to the inherit traits, the values of coefficient phenotypic variation was slightly higher than the values of coefficient genetic variation, the high significant values accompanied (at 5%) of the heterosis compared to the average of the parents and the best father, the except number of holes for the first and third hybrid, and this led to a genetic deterioration companion to Inbreeding Depression in first isolationist generation, the results showed that most of the traits had low to medium values for narrow heritability, however, that most of these qualities are subject to genetic non-additive inherited reaction in her genet**.[Nezar Harba, Mousa Alsamara, Nadine asaad (Syria), Jordan Journal of Agricultural Sciences, 13, 2, 2017].**

SAUDIA ARABIA

Effect of Combined Biotic and Abiotic Stress on Some Physiological Aspects and Antioxidant Enzymatic activity in Mungbean (*Vigna radiate* L.). Stomata conductance (gs), Shoot water content (SWC), chlorophyll pigments (chl a,b) and enzymes involved in anti-oxidant photo-protection were determined in two mungbean genotypes (Kawmay-1 and VC2010) under greenhouse conditions. The two genotypes were subjected to water deficit stress (20, 40 and 80% of field capacity) and two root-knot nematode (*Meloidogyne javanica*) infection levels (non-infected and infected at 15000 juveniles per pot). Both water deficit and nematode infection resulted to a fast decline in the chlorophyll pigments, GS and SWC in both genotypes; however, VC2010 was recorded as being comparatively resistant. Increase in antioxidant enzymes activity was detected for superoxide dismutase (SOD), catalase (CAT), ascorbate peroxidase (APX) and polyphenol oxidase (PPO) in both stresses, but this activity was more pronounced in water deficit stress than nematode infection, especially at 40% field capacity. APX and PPO production peaks recorded at 20% of irrigation in VC2010 were highest. This revealed that VC2010 genotype was tolerant to environmental stresses compared to Kawmay-1. It was conceived from the present study that water deficit stress significantly hampered the physiological representatives of plant health, while on the other hand enzymatic alterations to cope with the biotic and abiotic stresses in plants could be used for better tolerability and plant health. The results indicated that oxidative damage (ROS) produced under environmental stress can be minimized by increasing the antioxidant enzymatic activities in mungbean. **[Ali A. Alderfasi1, Areej A. Alzarqaa, Fahad A. AL-Yahya1, Shahira S. Roushdy, Ahmed A. Dawabah and Bushra A. Alhammad (Saudia Arabia), African Journal of Agricultural Research, 12: 700-70, 2017].**

Influence of Soil Texture and Moisture on the Interaction of *Meloidogyne javanica* and *Macrophomina phaseolina* on Green Beans. Root-knot/charcoal root rot disease complex caused by the interaction of *Meloidogyne javanica* and *Macrophomina phaseolina* is a serious disease complex attacking bean crop either in the field or greenhouses. In two different greenhouse tests, the influence of soil texture and moisture on the severity of the root-knot/charcoal root rot disease complex on green beans, *Phaseolus vulgaris* were examined. Results of the soil texture test indicated that the disease severity (suppression of plant growth and root-knot/charcoal root rot disease index), the nematode reproduction and the fungus growth in soil increased with the increase of sand content in the soil. Results of the soil moisture test showed that the greatest plant damage occurred at the soil of moisture level of 30% of field capacity, and disease severity decreased gradually as the moisture level was increased. **[Ahmad S. Al-Hazmi, Ahmed A.M. Dawabah, Saleh N. Al-Nadhary, Fahad A. Al-Yahya and Hamzeh A. Lafi (Saudia Arabia), Journal of Experimental Biology and Agricultural Sciences, 5: (Spl-1- SAFSAW): S148-S154, 2017].**

Molecular Characterization of Criniviruess Involved in the Etiology of Cucumber Yellowing Disease in Riyadh Region, Saudi Arabia. During the growing seasons 2014 and 2015, 134 cucumber and 103 weed samples showing typical yellowing diseases symptoms accompanied by chlorotic spots and interveinal chlorosis were collected from Riyadh region, Saudi Arabia. For this reason, RT-PCR was conducted for detection of two criniviruses, Cucurbit chlorotic yellows virus (CCYV) and Cucurbit yellow stunting disorder virus (CYSDV) which are implicated in cucurbit yellows disease. Results showed the presence of CCYV and CYSDV in cucumber samples in 61.1% and 19.4%, respectively, whereas 9% of the plants were contained mixed infection. In addition, four weed

species were identified, for the first time, as alternative hosts of CCYV; whereas CYSDV was reported only in *Malva parviflora* plants. Partial nucleotide sequencing analysis was conducted using 13 CCYV and five of CYSDV isolates originated from cucumber and wild hosts. Both viruses exhibited low genetic diversity; however, phylogenetic analysis clustered the obtained CYSDV isolates in a separated group, named the "Eastern subpopulation", while CCYV isolates were classified into subgroups IIa and IIb, among other published sequences, forming a different evolutionary lineage from group I, which contained an isolate from Iran. **[M. T. Shakeel, M. A. Amer, M. A. Al-Saleh, I. M. Al-Shahwan, A. Kamran, C. G. Orfanidou and N. I. Katis. Plant Protection Department, (Saudi Arabia), European Journal of Plant Pathology, 150:39–47, 2018].**

Characterization of Pepper leafroll Chlorosis Virus, a New Polerovirus Causing Yellowing Disease of Bell Pepper in Saudi Arabia. During the growing seasons of 2014 through 2016, a total of 336 leaf samples from bell pepper (showing leafroll and interveinal yellowing) and arable weeds were collected from Riyadh region, Saudi Arabia. The use of a polerovirus generic reverse transcription (RT)-PCR assay confirmed their presence in the bell pepper samples. Sequencing of the generic amplicon revealed high similarity (87.6 to 98.1% in nt) with four poleroviruses; *Tobacco vein distorting virus*, *Pepper vein yellows virus*, Pepper yellows virus, and Pepper yellow leaf curl virus. To further char- acterize one of these isolates (105D), a larger part of the genome (~1,300 nt) spanning approximately from the 3¢ end of ORF2 to the middle of ORF3, was amplified and sequenced. Blasting the resulting sequence revealed the low amino acid and nucleotide identity percentages in the coat protein and movement protein partial genes with viruses deposited in GenBank. Next-generation sequence was used to acquire a larger part of the genome, which resulted in the reconstruction of isolate 105D's par- tial genome (5,496 nt). Sequence similarity analysis revealed the presence of a divergent polerovirus isolate belonging to a new species that was tentatively named Pepper leafroll chlorosis virus (PeLRCV). Using a specific RT-PCR assay for this isolate confirmed the presence of this new viral species in the symptomatic peppers. Aphid transmission ex- periments showed that PeLRCV is vectored by *Aphis gossypii* and that it can infect at least five out of the 15 different plants species tested. Based on our findings, PeLRCV is a new member of genus *Polerovirus* in the family *Luteoviridae*. **[A. Kamran, L. Lotos, M. A. Amer, M. A. Al-Saleh and I. M. Alshahwan, M. T. Shakeel, M. H. Ahmad and M. Umar and N. I. Katis.(Saudia Arabia), Plant Disease, 102:318-326, 2018].**

Management of Asiatic Citrus Canker under Field Conditions in Saudi Arabia using Bacteriophages and Acibenzolar-S-methyl. Applications of formulated bacteriophages with skim milk and sucrose or nonformulated bacteriophages combined with acibenzolar-S-methyl (ASM) were compared with copper bactericides applications for suppressing Asiatic citrus canker (ACC) caused by *Xanthomonas citri* subsp. *citri* (Xcc) on leaves under greenhouse and field conditions in Saudi Arabia. Bacteriophages were applied one day prior to inoculation of Mexican lime (*Citrus aurantifolia*) plants with Xcc, then twice a week until the end of the trials. Copper hydroxide was applied once prior to inoculation and then every seven days afterward, whereas ASMwas applied one week prior to inoculation and then every 21 days afterward. Under greenhouse conditions, the incidence of ACC on leaves was reduced significantly from 75.2 to 12.8%or 18.3% for plants treated with copper hydroxide or bacteriophages in combination with ASM, respectively. Applications of formulated phages in combination with ASM as soil drench under field conditions significantly decreased disease incidence by 14.8%(Trial 1) and 16.8% (Trial 2) compared with untreated control plants. Overall, the Xcc-inoculated plants treated with bacteriophages +ASM combination showed significant ACC reduction under greenhouse and field conditions. The bacteriophages + ASM combination tested in these trials can be an effective tool in the integrated management programs of Asiatic citrus canker disease. **[Yasser E. Ibrahim, Amgad A. Saleh and Mohammed A. Al-Saleh. (Saudi Arabia), Plant Disease, 101:761-765, 2017].**

Characterization of Lettuce Big-vein Associated Virus and Mirafiori Lettuce Big-vein Virus Infecting Lettuce in Saudi Arabia. During 2014 and 2015, 97 lettuce plants that showed big-vein-disease-like symptoms and seven weed plants were collected from the Riyadh region. DAS-ELISA revealed that 25% and 9% of the lettuce plants were singly infected with LBVaV and MiLBVV, respectively, whereas 63% had a mixed infection with both viruses. The results were confirmed by multiplex reverse transcription polymerase chain reaction using primers specific for LBVaV and MiLBVV. LBVaV and MiLBVV were also detected in Sonchus oleraceus and Eruca sativa, respectively. The nucleotide sequence of LBVaV and MiLBVV Saudi isolates ranged from 94.3-100%, and their similarities to isolates with sequences in the GenBank database ranged from 93.9 to 99.6% and 93.8 to 99.3%, respectively. Olpidium sp. was present in the roots of lettuce plants with big-vein disease and it was shown to facilitate

transmission of both viruses. **[M. Umar, M. A. Amer, M. A. Al-Saleh, I. M. Al-Shahwan, M. T. Shakeel, A. M. Zakri and N. I. Katis. (Saudi Arabia), Arch Virology, 162:2067–2072, 2017].**

Molecular Characterization and Natural Host Range of *Tomato Chlorosis Virus* in Saudi Arabia. Tomato yellows disease (TYD) is a serious problem in tomato crops worldwide, in which two criniviruses are implicated: *Tomato infectious chlorosis virus* (TICV) and *Tomato chlorosis virus* (ToCV). During the growing season 2014-2015, survey of tomato-growing greenhouses was conducted in different geographical locations of Riyadh region in Saudi Arabia in order to identify the criniviruses implicated in TYD. In total, 228 leaf samples were collected from tomato plants showing typical TYD symptoms, as well as 98 from other symptomatic crops and 283 arable weeds belonging to 38 species in 22 different families. Nucleic acids extracts prepared from the samples were tested by nested reverse transcriptase polymerase chain reaction (RT-PCR) for the simultaneous detection of TICV and ToCV. In addition, 34 adult whiteflies were collected from the surveyed tomato greenhouses and analyzed using realtime PCR. Results revealed that ToCV was the only virus associated with TYD, as detected in 328 (53%) of a total of 609 tested samples (including all hosts tested), while it showed an expanded host range, as it was reported for the first time in bean, bitter gourd, eggplant and pepper in Saudi Arabia. In addition, ToCV was detected in 14 weed species belonging to 8 families. TICV was not detected in any of the tested samples. All collected whiteflies were identified as *Bemisia tabaci* biotype B (MEAM1), an efficient vector of ToCV. Sequencing analysis of 40 selected sequences of ToCV from different hosts clustered Saudi Arabian isolates into two subgroups. Almost all Saudi Arabian isolates shared high nucleotide identity among themselves (98.0-100%), while their identity was 97.1-100% with those published in NCBI. **[M.T. Shakeel, M.A. Al-Saleh, M.A. Amer, I.M. Al-Shahwan, M. Umar, N. Dimou, C.G. Orfanidou, A.M. Zakri and N.I. Katis., (Saudi Arabia), Journal of Plant Pathology, 99 (2): 415-421, 2017].**

***Fusarium* Species Associated with Date Palm in Saudi Arabia.** *Fusarium* is one of the most destructive fungal genera whose members cause many diseases on plants, animals, and humans. Moreover, many *Fusarium* species secrete mycotoxins (e.g. trichothecenes and fumonisins) that are toxic to humans and animals. *Fusarium* isolates from date palm trees showing disease symptoms, e.g. chlorosis, necrosis and whitening, were collected from seven regions across Saudi Arabia. After single-sporing, the fungal strains were morphologically characterized. To confirm the identity of morphologically characterized *Fusarium* strains, three nuclear loci, two partial genes of translation elongation factor 1 α (*tef1α*) and β-tubulin (*tub2*), and the rDNA-ITS region, were amplified and sequenced. Of the 70 Fusarium strains, 70 % were identified as *F. proliferatum* that were recovered from six regions across Saudi Arabia. *Fusarium solani* (13 %), as well as one strain each of the following species: *F. brachygibbosum*, *F. oxysporum*, and *F. verticillioides* were also recovered. In addition, five Fusarium-like strains were recognized as *Sarocladium kiliense* by DNA-based data. The preliminary in vitro pathogenicity results showed that *F. proliferatum* had the highest colonization abilities on date palm leaflets, followed by *F. solani*. Although *F. oxysporum f. sp. albedinis* is the most serious date palm pathogen, *F. proliferatum* and *F. solani* are becoming serious pathogens and efforts should be made to restrict and control them. In addition, the potential toxin risks of strains belonging to *F. proliferatum* should be evaluated. **[Amgad A. Sale, Anwar H. Sharafaddin, Mahmoud H. El_Komy, Yasser E. Ibrahim, Younis K. Hamad and Younis Y. Molan., (Saudi Arabia), European Journal of Plant Pathology, 148 (7):367–377, 2017].**

TUNISIA

Combined Effects of *Barley Yellow Dwarf Virus* (BYDV) Infection and Salinity Stress on Barley Growth and Yield Parameters. Following the current climate changes, Tunisia climate is characterized by less and more irregular rainfall together with milder and shorter winter, resulting in increased soil salinity and higher incidence of *Barley Yellow Dwarf Virus* (BYDV). The selection of productive cultivars adapted to both abiotic and biotic constraints is crucial for crop breeders, and especially for cereal breeding. In this study, the behavior of two genotypes (G1 and G2) obtained from a cross breeding (QB813-2/3/Lignee527/NK1272//JLB70-63) and the most commonly grown cultivar Rihane were compared for their responses to the combined effects of various salinity levels (0 to 150 mM NaCl) and BYDV virus infection. Rihane was the most sensitive cultivar under biotic and abiotic stress combination whereas growth and yield parameters were significantly improved in G1 and G2 genotypes under BYDV+50 mM NaCl treatment. In addition, these two genotypes were less affected by the virus infection and high salinity (100 and 150 mM NaCl) combination than Rihane. Interestingly, stress tolerance index was higher in G2, followed by G1 and Rihane, suggesting that this parameter could be a useful trait to discriminate genotypes for their performance under

multiple stress conditions**.[Najar, A., Abassi, M., Ben Ghanem, H., and Debez, A.(Tunisia), Tunisian Journal of Plant Protection 12:121-133, 2017].**

Incidence and Molecular Characterization of *Citrus Psorosis Virus* in Tunisia. In order to study the current situation of *Citrus Psorosis Virus* (CPsV) in Tunisia, field surveys were conducted in commercial orchards in Cap Bon region and 575 citrus trees were sampled. As determined by DAS-ELISA, the CPsV incidence in Tunisia was high, and ranged between 20 and 47%, according to geographical location, citrus species and varieties. cDNA encompassing the full-length RNA3 from Tunisian isolates was synthesized by RT-PCR using specific primers and two isolates were cloned and sequenced. Full length sequences of the coat protein (CP) gene were obtained and deposited in GenBank. Based on CP gene sequences, phylogenetic clustering of isolates revealed two populations, one includes isolates from Spain, Morocco and New Zealand and the other includes those from Tunisia, Spain, Italy, Mexico and Egypt. Genetic haplotype network provided evidence of the existence of two distinct clusters with an ambiguous origin. Selective neutrality test was significantly positive, suggesting a balancing selection of CPsV CP gene**.[Hamdi, I., and Najar, A.(Tunisia), Tunisian Journal of Plant Protection 12:135-147, 2017].**

Prevalence of Viruses Associated with Grapevine Rugose Wood Disease in Tunisia. To assess the prevalence and the distribution of viruses associated with rugose wood (RW) disease in Tunisian grapevines, surveys were conducted in the main Tunisian grapevine growing areas. A total of 403 samples were collected including autochthonous and international table and wine grapes, and rootstocks. All samples were analyzed by RT-PCR for the presence of *Grapevine virus A* (GVA), *Grapevine virus B* (GVB), *Grapevine virus D* (GVD), *Grapevine virus E* (GVE), *Grapevine virus F* (GVF) and *Grapevine rupestris stem pitting-associated virus* (GRSPaV), using specific primers. Molecular analysis showed that 80.9% (326 / 403) of the tested samples were infected with at least one virus. GRSPaV was the most widespread virus (51.3%), followed by GVA (47.9%), GVD (31.5%), GVF (22.3%), GVB (17.8%), and finally GVE (7.2%). According to grapevines typology, wine grapes were the most infected (93.9%) vines, followed by table grapes (87.8%) and rootstocks (75.0%). Autochthonous grapevine varieties were the less infected (65.9%). This is the first study on RW-associated viruses in autochthonous grapevines and rootstocks and the first report on the presence of GVE and GVF in Tunisian vines. **[Selmi, I., Pacifico, D., Carimi, F., and Mahfoudhi, N. (Tunisia), Tunisian Journal of Plant Protection 12:149-158, 2017].**

The Spatio-Temporal Distribution Patterns of the Spider Mite, *Oligonychus afrasiaticus*, on Date Palm (Deglet Nour Cultivar) in a Pesticide Free Tunisian Oasis. Seasonal abundance of the date palm spider mite *Oligonychus afrasiaticus* on date palm (Deglet Nour cultivar), was studied between 2004 and 2006 in a pesticide-free oasis. The objectives of this study were to (i) inventory mite species present around date palm trees, (ii) quantify abundance of *O. afrasiaticus* in trees and in ground cover and (iii) to monitor *O.afrasiaticus* population dynamics and its dispersal. The first infestations of *O.afrasiaticus* on fruits varied between years, ranging from the first to the third week of July. Spider mite density increased rapidly throughout July and August during the fruit's Kimri stage, characterized by greenness. At the end of August, higher rates of *O. afrasiaticus* migrated to the palm crown. Overwintering *O. afrasiaticus* individuals were found on the pinnaes, but no overwintering individuals were found on the ground cover. Phytoseiids were very scarce, only two phytoseiid species were collected on the ground cover. During the years of observation no phytoseiid mites able to reduce the populations of *O. afrasiaticus* were found on Deglet Nour dates. Pest dispersion starts from a palm tree located at far away from the well of water. Causes of *O. afrasiaticus* outbreaks on fruits included (1) absence of predators (2) dry weather (3) no application of pesticides that suppress *O.afrasiaticus*.**[Ben Chaaban, S., Chermiti, B., and Kreiter, S. (Tunisia), Tunisian Journal of Plant Protection 12:159-172, 2017].**

Survey of Species of the Genus *Orius* in the Tunisian Sahel Region. Species of the genus *Orius* belong to the Anthocoridae family. They are polyphagous predators of small sized insects and they are of great importance in biological control. During an inventory of *Orius* species on *Chrysanthemum coronarium* flowers undertaken in 2010 and 2011 in different locations in the Tunisian Sahel region, three species were encountered namely *O. laevigatus*, *O. albidipennis* and *O. majusculus*. These species are predators of mites and small insects such as thrips, aphids, and white. The first species was the most abundant one in all localities (a total of 4358), followed by *O. albidipennis* and *O. majusculus* with 51 individuals. Temporal evolution of *Orius* species showed that activity of the predaceous bugs depends essentially on the flowering period of *C. coronairum*. *Orius* species occurred during spring period with various densities, depending on species, and increased considerably in June. *O. leavigatus* was detected in February and remained active until June. Regarding *O. albedipenis* and *O. majusculus*, their activity has begun in April-May but with different densities. Monitoring revealed the abundance of females as compared to males within *Orius* species

which indicated that females occupy a significant importance within population. **[Elimem, M., Limem-Sellemi, E., Ben Othmen, S., Hafsi, A., Ben Fekih, I., Harbi, A., and Chermiti, B.(Tunisia), Tunisian Journal of Plant Protection 12:173-187, 2017].**

Field Testing of a Sex Pheromone of *Phyllocnistis citrella*, in Citrus Orchards in Tunisia. The objective of this study is to evaluate the effectiveness of a sex pheromone lure of the citrus leaf miner *Phyllocnistis citrella* in Tunisian citrus orchards. Traps baited with 100 µg of the synthetic sex pheromone a 3:1 blend of 7Z,11Z,13E hexadecatrienal and 7Z,11Z-hexadecadienal were highly attractive to Tunisian populations of citrus leaf miner moth with field longevity for over fifteen weeks and able to attract citrus leaf miner males from a distance of 800 m**.[Slimane-Kharrat, S.(Tunisia), Tunisian Journal of Plant Protection 12:189-196, 2017]**

PLANT PROTECTION NEWS IN THE ARAB COUNTRIES AND NEAR EAST

Postgraduate Arab Students Activities (Master and Doctorate Thesis)

The Efficiency of DXN-Reishi and DXN-Spirulina Organic Food Supplement in Reduction of *Tobamoviruse tomato mosaic virus* on Three Varieties of Cold Pepper under GH Conditions .This study was carried out in laboratory of virus research and greenhouse unit of Faculty of Agriculture / University of Tikrit for purpose of evaluating efficiency of *Ganoderma lucidum* powder and *Spirulina sp.* candy in reducing incidence and severity of infection and pathogenic effects of ToMV in some local and hybrid varieties of cold pepper. The results showed that superiority of treatment with fungus *G. lucidum* reduced infection rate by 63.4%. Treatment with *Spirulina sp.* reduced the severity of virus infection by 26.7 compared with rest of the treatment and control treatment which reached 100.0% and 56.7, respectively. This was reflected in increase in total amount of chlorophyll, with highest of 47 SPD units treated with *spirulina sp.*, And 29 units of SPD in control treatment. As for the paper area, is better than treated with algae *Spirulina sp.* (31.2 cm2), and Integrative treatment with fungus and algae increased by 4 kg / plant compared with control treatment of 26.3 cm2 and 2.2 kg / plant respectively. It was found that by measuring above qualities, the Dutch MASTER F1 was superior to the rest of the experiment in most of the studied traits.[**Basma Thabab Alajily,** Supervisor: **Maadh Abdulwahab Alfahad** ,Department of Plant Protection, Faculty of Agriculture, University of Tikrit-Iraq **(MSc, 2018**)].

The Effect of Biological and Non- biological Factors on Controlling of Cucumber Seed and Root rot Disease Caused by *Pythium aphanidermatum*. The study, which was conducted on 15/1/2017, aimed to control the seed rot and seedlings death of cucumber caused by the pathogenic fungus *Pythium aphanidermatum* using friendly environmental factors including naturally compost of cow dung, the fungus *Trichoderma harzianum*, the pesticide 'Preicur-N' at six concentrations and choosing the best for field application, and lactic acid at two pH in addition to (without acid). The effect of biological agents on the efficacy of the chemical pesticide was also tested. Laboratory and field experiments were carried out after a field survey of twelve plastic houses planted with cucumber plants in Abasiyah, Um Abbasiyat and Al-Qazwainiyah districts in the province of Al- Najaf Al-Ashraf. The survey showed a variation in the incidence of seed rot and seedling deaths for cucumber plants, ranging from 45-90% in greenhouses. P. aphanidermatum was the most frequent fungus in the Al-|Abbasiyah region with frequency and occurrence rate of 40.36 and 36.84%, respectively, while the lowest rates, 32.56% and 25% were in Al-Qazwainiyah. Pathogenicity test showed that all isolates from the three regions were pathogenic and caused seed rot. The mushrooms from the areas mentioned for the purpose of testing the ability of the disease. Isolate *P.a*1 from Al-Abbasiyah region was the most aggressive isolate followed by *P.a*2 and *P.a*3 isolated from Um-Abbasiyat and Al-Qazwainiyah regions causing cucumber seed rot of 90, 74 and 72%, respectively, compared to no seed rot at all from the control treatment. In order to determine the genetic differences between the two most pathogenic isolates (*P.a*1 and *P.a*2) on cucumber seeds, polymerase chain reaction (P.C.R.) was used to multiply the PCR-amplified products that of 800- 840 bp. The results of the nucleotide sequence analysis of the nucleic acid multiplication products based on BLAST showed that both isolates are belonging to the fungus *P. aphanidermatum*. The *P.a*2 was 100% identical to the globally isolated fungus that installed at the National Center for Biotechnology Information (NCBI). The BLAST results showed that *P.a*1 had similarity of 98-99 % with the internationally registered isolates and wasrecorded in the NCBI under entry number (GenBank Accession Number) MF347709 as new isolate. On the other hand, *T. harzianum* positively affected seed germination resulted in 100% seed germination rate for all replicates with no rot. It also showed a high antagonistic ability (grade 2 according Bell scale) to *P. aphanidermatum* in the

dual culture method. All tested concentrations of 'Previcur-N' fungicide inhibited the growth of *P. aphanidermatum* in the P.D.A and organic compost medium, leading to a 100% inhibition rate. However, all concentrations of the fungicide encouraged the growth of *T. harzianum* in both media resulted in 100% growth stimulation. The heaviest bio-dry mass of *T. harzianum* was 0.274 mg where cultures were treated with the highest concentration (4.5 ml/L) of the fungicide, that significantly differed from the control that of 0.18 mg. While, the organic fertilizer extract medium was better than the P.S.B medium resulted in higher bio-dry mass of *T. harzianum*. Interaction between organic fertilizer medium and the fungicide at concentration of 4.5 ml / L gave the highest bio-dry mass of T. harzianum with no significant differences from other concentrations. All Previcur-N concentrations inhibited the radial growth of *P. aphanidermatum*, but did not inhibit *T. harzianum* growth in both tested media. The lactic acid treatments at PH of 6.5 and 6 inhibited the growth of *P. aphanidermatum* by 100%. However, they encouraged the growth of the *T. harzianum* by same proportion compared to the pH 7 of the control treatment (distilled water). The fungicide at 3 ml / L concentration resulted in highest rate of *T. harzianum* live spores compared to other concentrations. The organic fertilizer extract medium had higher live spores compared to that of P.D.A medium. Whereas, the fungicide at 2.5 ml/L interacted with the organic fertilizer extract medium resulted in the highest number of live spores compared to all other treatments.The rate of degradation of the pesticide was also affected by the type of culture media. The pesticide in the organic fertilizer extract medium degraded faster than in the P.D.A medium. After one week, the final residues below detectable level compared to 250.8 µml/ml from the control treatment. Interaction treatment of *T. harzianum* with organic fertilizer was much more affective in degrading Previcur-N in 100 g soil compared to each treatment alone for the same period. In the field experiment, interaction of all tested factors (organic fertilizer, chemical pesticide, lactic acid and *T. harzianum*) in the presence of *P. aphanidermatum* resulted in to the lowest percentage of pre and after emergence infection that of 6.2% and 6.33%, respectively, and significantly differed from the control (the pathogenic fungus only) that resulted in 43.34% and 83.33%, respectively. The effects of different treatments on some growth parameters of cucumber plants were also tested. All studied factors (organic fertilizer, chemical pesticide, lactic acid and *T. harzianum*) resulted in highest values of all measured parameters including dry weight of roots (0.35 mg), stem diameter (9.8 mm), number of leaves (10.00 leaf/plant), percentage of leaf dry material (12.83%), total plant leaf area (281.54 cm^2), leaf content of: chlorophyll (78.93 mg/100 g fresh weight), GAA (427.84 mg/100 g fresh weight), IAA (125.94 mg/100 g fresh weight), nitrogen (3.24%), phosphorus (0.60%), potassium (2.14%) and calcium (9.70%), percentage of protein (15.12%) and total solid soluble (9.3%) compared to lowest values from the control treatment that of 0.05 mg, 5.5 mm, 5 leaf/plant, 1.00%, 157.37 cm^2, 46.8%, 214.69 mg / 100 g fresh weight, 131.68 mg / kg fresh weight, 1.21%, 0.26%, 1.35%, 5.88%, 7.56%, 4.3%, respectively.[Hussein Imad Abdulzahra ALaamri, Agriculture- Plant Protection.[**Hussein Imad Abdulzahra ALaamri,** Plant Protection , Agriculture Collage ,University of Kufa-Iraq. **((MSc, 2017**)]

Resistance to Wheat Curl Mite in Arthropod-Resistant Rye-Wheat Translocation Lines. The wheat curl mite, *Aceria toschiella* (Keifer), and a complex of viruses vectored by *A. toschiella* substantially reduce wheat yields in every wheat-producing continent in the world. The development of *A. toschiella*-resistant wheat cultivars is a proven economically and ecologically viable method of controlling this pest. This study assessed *A. toschiella* resistance in wheat genotypes containing the H13, H21, H25, H26, H18 and Hdic genes for resistance to the Hessian fly, *Mayetiola destructor* (Say) and in 94M370 wheat, which contains the Dn7 gene for resistance to the Russian wheat aphid, *Diuraphis noxia* (Kurdjumov). *A. toschiella* populations produced on plants containing Dn7 and H21 were significantly lower than those on plants of the susceptible control and no different than those on the resistant control. Dn7 resistance to *D. noxia* and H21 resistance to *M. destructor* resulted from translocations of chromatin from rye into wheat (H21—2BS/2RL, Dn7—1BL/1RS). These results provide new wheat pest management information, indicating that Dn7 and H21 constitute resources that can be used to reduce yield losses caused by *A. toschiella*, M. destructor, D. noxia, and wheat streak mosaic virus infection by transferring multi-pest resistance to single sources of germplasm.**[Lina Maria Aguirre-Rojas , Luaay Kahtan Khalaf (PhD Candidate, Iraq-USA), Sandra Garcés-Carrera, Deepak K. Sinha, Wen-Po Chuang , and C. Michael Smith. Agronomy 2017, 7, 74;** doi:10.3390/agronomy7040074

Oil Based Nanoemulsion of *Metarhizium anisopliae* (Metschn) Sorokin to Control Red Palm Weevil *Rhynchophorus ferrugineus* (Olivier).Oil based emulsion formulations of *Metarhizium anisopliae* were prepared, characterised and evaluated for their effectiveness against the larvae and adults of *Rhynchophorus ferrugineus*. Infested *R. ferrugineus* adults were collected from Terengganu, and *M. anisopliae* was isolated by cadavers of red palm weevil adults. Four strains were obtained and identified via morphology and molecular technique as *M. anisopliae*. The virulence of these strains was evaluated against the adult and larvae of *R. ferrugineus* by time exposure mortality bioassay. The strain coded as D1 gave the lowest LT_{50} values of 7.2 and 5.2 days at the conidia concentration of 10^6 and 10^7 spores/mL, respectively against the larvae. While against the adult, the D1 strain also gave the lowest LT_{50} values of 6 and 5 days at same conidia concentrations. Oil emulsion formulations of the most virulence isolate conidia of *M. anisopliae* were prepared through ternary phase diagram consisting of 20% (w/w) surfactant, 40% (w/w) oil and 40% (w/w) water containing 10^7 spore/mL. The surfactants and oil were first evaluated for their compatibility with conidia by using direct plating. The effect of the surfactants on conidia germination was evaluated by counting the germination rate of the conidia using a microscope. Eight oil emulsion formulations were derived and characterised. All the formulations were stable under centrifuge, storage at 26 ± 1 °C, 60 ± 5 % RH and under high temperature (54± 1 °C) for two weeks. On the particle size, seven formulations were in the range below <100 nm sizes indicating that the formulations were in the category of the nanoemulsion. The zeta potential of the formulations ranged between -7.22 to -39.06 mV, the pH ranged from 4 to 6.34, the surface tension ranged from 32.03 to 41.83 mN/m, and the viscosity ranged from 2.40 to 28.8 mPas. In the study on the toxicity of the oil nanoemulsion formulations of *M. anisopliae* conidia against the larvae, the formulation coded as E1604 gave the LT_{50} of 4.90 days while the conidia water suspension gave LT_{50} of 6 days. On adults, the LT_{50} was 2.20 days while the conidia water suspension was 5 days. Effect of oil nanoformulations on the conidia germination on the cuticle of *R. ferrugineus* was also observed, and after 20 hrs., the E1604 showed 55% germination compared to conidia water suspension of 49.8%. The formulation E1604 showed the longest germ tube of 41.34 µm and full penetration while the conidia water suspension gave 5.28 µm length of a germ tube. The E1604 recorded 100% cumulative mortality after 6 and 4 days on larvae and adults respectively. The oil nanoemulsion of *M. anisopliae* conidia shows good potential for the sustainable control of both adults and larvae of *R. ferrugineus*. [**Ali Zachi Abdulqader (Iraq-Malaysia), Universiti Putra Malaysia,Faculty of Agriculture, (Doctorate 2017), supervisor Professor Dzolkhifli Omar, PhD].[A patent based on desertation results was granted as a first oil nanoemulsion formulation of *M. anisopliae* to control wide range of insects].**

❖ Postgraduate Arab Students Activities Abroad

Korea University in Seoul, South Korea, established in 1905, is one of the top Universities in Asia and among the oldest in Korea. In 2018 Korea University was ranked the 90th in the world (QS ranking). In appreciation and encouragement to the graduate students who contribute the most to the improvement of the University ranking and reputation by their research activity and published work, Korea University hold an annual event named "KU graduate student achievement award" where more than 10 thousand graduate students of the 81 Departments composing the graduate school, compete by their published research from the previous year for the prestigious award. On 27th of February 2018 the award ceremony was held in the presence of the president of Korea University, the president of the graduate school, the deans of the college, the awardee and his professor advisor. This year Mohamed Mannaa from Egypt was honored

to receive this award as the only foreigner and the only student from Biosystems and Biotechnology Department, to get such award. The president of Korea University gave a speech to congratulate the awardee and to encourage the graduate students to continue research and further future achievements. Following receiving the award certificate, the plaque and gift, nice dinner was offered to the invitees and discussions and congratulating words were being exchanged. Before the Korea University award ceremony, the Biosystems and Biotechnology Department rewarded Mohamed Mannaa a financial grant for the top publication in 2017. Both awards were given in appreciation of the published research papers on the PhD topic that ended up by suggesting bacterial strains and their emitted volatiles as safer alternatives to the chemical control methods against the hazardous mycotoxins and their producing fungal species on stored grains.**[Mohamed Mannaa (PhD Student, Egypt-Korea, 2018].**

❖ Some Plant Protection Activities of FAO and Other Organizations

ACTIVITIES OF FAO REGIONAL OFFICE FOR NEAR EAST AND NORTH AFRICA (FAORNE)

Wrap-up Workshop for the Project TCP/RAB/3601 Titled "Preventive Measures for the Introduction and Spread of *Xylella fastidiosa*- Olive Quick Decline Syndrome in NENA Countries"

The Regional Office for the Near East and North Africa of the Food and Agriculture Organization of the United Nations (FAO-RNE) organized the wrap-up workshop of the Project TCP/RAB/3601. The workshop took place in Tunis, Tunisia 13 - 14 February 2018. The workshop aimed at reviewing the achievements, sharing knowledge, success stories, lessons learned, challenges, and recommendations and coming up with follow up action to sustain the project outcomes.

The workshop was attended by National Project Coordinators and National Consultants of the participating countries (Algeria, Egypt, Libya, Lebanon, Morocco, Tunisia, West Bank and Gaza Strip), in addition to FAO and IPPC Technical Officers, Executive Director of the Near East Plant Protection Organization (NEPPO), and Experts from CIHEAM Bari. The workshop started with a short opening statements of the project Lead Technical Officer, Representative of FAO Regional Office for North Africa and Ministry of Agriculture of Tunisia, followed by a general presentation on the project and detailed presentations by the countries on the achievements made based countries' action plans. Two working groups were created to discuss the findings, proposed recommendations, and follow-up actions/strategies. The participants discussed the suggested sustainability mechanisms to continue the project activities and how to sustain the achievements of the projects.

Fall Armyworm (FAW) Status on NENA Countries

Fall Armyworm (*Spodoptera frugiperda*) is an insect native to tropical and subtropical regions of the Americas. Its larval stage feeds on more than 80 plant species, including maize, rice, sorghum, millet, sugarcane, vegetable crops, and cotton. FAW can cause significant yield losses if not well managed. It can have many generations per year and the moth can fly up to 100 km per night. Its modality of introduction along with its biological and ecological adaptation across Africa are still speculative.

FAW was first detected in Central and Western Africa in early 2016 and since then has been reported and confirmed in all of mainland Southern Africa (except Lesotho), Madagascar, and Seychelles (Island State). To-date, FAW has been detected and reported in almost all of Sub-Saharan Africa, except in Djibouti, Eritrea, and Lesotho. For the FAW Situation in NENA countries, FAW was detected and confirmed in several states of Sudan (Blue Nile, Gedaref, Sinnar, River Nile and Khartoum States) at the end of 2017. Since the pest was detected in Sudan, it is very important that Egypt, Libya and Yemen must be on alert. The Regional Office for the Near East and North Africa (RNE) is monitoring the FAW status closely and it has been provided the support for emergence management and surveillance programme in Sudan in addition to providing 500 pheromone trap kits that will help to monitor the situation for the next three months. FAW is a dangerous trans boundary pest with a high potential to continually spread due to its

natural distribution capacity and trade. Farmers will need significant support to sustainably manage FAW in their cropping systems through Integrated Pest Management.

Congratulations for New Position

Dr. Thaer Yaseen, has been appointed as the New FAO Regional Plant Protection Officer for the Near East & North Africa, stationed in Cairo, Egypt. Dr. Yaseen is a well-known international plant protection consultant and former plant pathologist of CIHEAM-Bari. The Arb Society of Plant protection expresses to our colleague Dr. Yaseen its heartfelt congratulations and wish him all success in his new position, and looking forward for his usual continuous support to the Newsletter and the Arab Plant Protection Society from his new position.

FAO Master Session on RPW in the Sixth International Date Palm Conference (SIDPC) Abu Dhabi (UAE) Monday March 29th 2018

The section was moderated by Thaer Yaseen and started by introducing the panellist: Hassan Al Ayed, Salim Ali Al Khatri and speakers: Michael Ferry, Romeno Faleiro and Moises Fajardo

Session activities commenced by a **Follow-up on the international scientific consultation and high level meeting on Red Palm Weevil management, Rome, Italy, 29 - 31 March 2017**. The presenter highlighted the achievements of the Rome meeting and the importance of eradication of RPW in the National, Regional and also at the global level. Furthermore, establishment of the RPW trust fund was presented with the following components: i) Research, ii) Capacity development and iii) knowledge transfer. Recently (March 18th, 2018) Saudi Arabia commit $ 2million for trust fund. Trust fund will look for containment of RPW and where it possible eradication of the pest.

Michele Ferry: presented **The state of the art for the control of the Red Palm Weevil** and emphasized the technical and **socioecological aspects** of the control strategy. RPW- IPM technology is well known for over 20 years and is successful in some cases particularly where a GIS based management strategy is implemented as in the Canary Islands.

Moises Fajardo: presented the **Canary Islands, story for eradication of Red Palm Weevil** using the integrated approach (involved Regulation, awareness, inspection, mass trapping, preventive treatments and eradication of the infected palms) and focused on the involvement of GIS with adequate Centralized coordination. In the canary island RPW was eradicated in May 2016.

Romeno Faleiro: presented the **Mauritania, story for containment of Red Palm Weevil** was mainly due to: i). quick intervention by MOA, Mauritania and FAO; ii) Involvement of all stakeholders including farmers, policy makers, government officials NGOS..etc…. iii) Participatory approach was the key to the success of containment of RPW in Mauritania. iv) Intensive capacity building program including theory and practical aspects of RPW control. v) Implementing the IPM strategy along with new technologies (attract and kill, improvised pruning device that facilitated the inspection of palms). vi) RPW was last detected in Tidjikja during April 2017 vii) Pest expected to be declared as eradicated in Tidjikja, Mauritania in April 2020

It was concluded that **Governance is the key factor for management of such a pest with emphasis on the following points:**

- Feeding knowledge (Capacity building);

- The use of multidisciplinary program;
- Adoption of a participatory approach (farmers, private sector, government and NGOs);
- Raising awareness in the society and evaluation of the socio economic impact;
- Enforcing phytosanitary measures (inspection, fast eradication, quarantine measures, and appropriate legislations);
- Implementation of RPW pilot project to control the pest.

Some Activities of Plant Protection in Food and Agriculture Organization of the United Nation (FAO-UN) and other Organizations

DESERT LOCUST SITUATION

Warning level: CALM

General Situation of the Desert Locust during February 2018 and Forecast until mid-April 2018 provided by the FAO Emergency Centre for Desert Locust (ECLO).

General Situation

The Desert Locust situation continued to remain calm during February No significant rain fell for the third consecutive month in the winter breeding areas along both sides of the Red Sea during February. Consequently, unusually dry and unfavourable breeding conditions persisted in most areas. No locusts were reported except for scattered solitarious adults at two places on the Red Sea coast of Sudan. The poor rainfall this year has kept locust numbers very low in the traditional winter breeding areas at the time of year when locusts generally increase in number. Low temperatures and poor rainfall so far in the spring breeding areas suggest that breeding is likely to be limited and on a very small scale this year in Northwest Africa, the interior of Saudi Arabia and in southeast Iran and southwest Pakistan during the spring. Unless unusually heavy rainfall occurs followed by substantial breeding, it can be anticipated that only very low numbers of locusts will be present at the beginning of the summer in the Sahel of West Africa and Sudan, and along the Indo-Pakistan border.

Western Region

No significant rain fell, and ecological conditions were mainly dry. No locusts were reported. During forecast period the situation is expected to remain calm. Isolated adults may appear in parts of the Spring breeding areas along the southern side of the Atlas Mountains in Morocco. No significant developments are likely.

Central Region

No significant rain fell, and ecological conditions were drying out in coastal areas of Sudan and Saudi Arabia. Isolated solitarious adults were present in a few places of Tokar Delta in Sudan. During forecast period the situation is likely to remain calm. Low numbers of adults may appear in the interior of Saudi Arabia and breed on a small scale if rainfall occurs. Scattered adults are likely to be present on the Red Sea coastal plains in Yemen where small-scale breeding could occur. No significant developments are likely.

Eastern Region

No locusts reported. During forecast period Low numbers of solitarious adults may appear in the spring breeding areas of southwest Pakistan and southeast Iran and breed on a small scale if rains fall. No significant developments are likely.

For more up to date information about the Desert Locust situation and forecasts, visit the FAO's Desert Locust website: http://www.fao.org/ag/locusts/en/info/info/index.html and FAO Commission for Controlling the Desert Locust in the Central Region http://desertlocust-crc.org.

Source: The FAO Desert Locust Bulletin issued monthly in English and French by the Desert Locust Information Service, AGP Division (Rome, Italy; and Arabic version by the Commission for Controlling the Desert Locust in the Central Region (FAO Regional Office for Near East, Cairo, Egypt http://desertlocust-crc.org).

ACTIVITIES OF FAO COMMISSION FOR CONTROLLING THE DESERT LOCUST IN THE CENTRAL REGION (CRC)

January 2018 - National Training of Trainers Course

The Commission for Controlling the Desert Locust in the Central Region (CRC), in cooperation with Center for Locust and Migratory Pests Control, Saudi Arabia, organized the National training course of Training of Trainers on Desert Locust Survey and Control Operations, the course held in Jeddah, Saudi Arabia, during 14 - 22 January 2018. Fifteen trainees attended the course ***National EHS Training Course***

The Commission for Controlling Desert Locust in the Central Region (CRC) in cooperation with the Desert Locust Control Centre of OMAN organized a National training course on Implementation of Environmental and Health Standards in Desert Locust Control Operations, Muscat, Oman, during 21 - 25 January 2018

February 2018- 10th Sub-Regional Training Course

The Commission for Controlling the Desert Locust in the Central Region (CRC), in cooperation with the Locust Control Department of the Republic of Sudan, organized the 10th Sub-regional training course in the field of Desert Locust campaign management, participants were invited from the invasion countries (Bahrain, Kuwait, Jordan, Lebanon, Qatar, Iraq, Syria, and UAE) and Sudan. The course held in Port Sudan, during 4-11 February 2018, with the participation of 19 trainees.

March 2018- With a view to assessing the potential use of drones (UAVs) in the field of DL survey and control operation to improve the quality of surveys and an early reaction of locust populations in remote areas. FAO, represented by the Desert Locust Control Commissions in the Western (CLCPRO), Central Region (CRC) and the Desert Locust Information Service (DLIS), in cooperation with the specialized company HEMAV, has tested the use of drones in Desert Locust surveys and control operation. The assessment conducted in Nouakchott, Mauritania, from 4-9 March 2018. The results of the assessment were positive with the need for some adjustments to suit user in this area.



ARAB SOCIETY FOR PLANT PROTECTION NEWS

The Arab Journal of Plant Protection is now indexed by SCOPUS-ELSEVIR

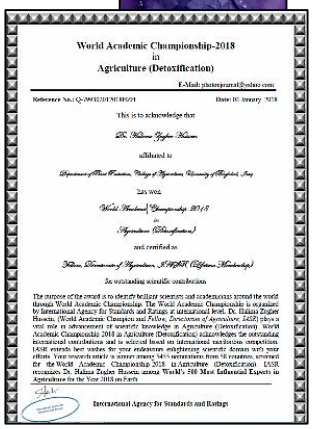
The Editor-in-Chief of the Arab Journal of Plant Protection (AJPP) received a note from SCOPUS Evaluation Team indicating that the AJPP, the official journal of the Arab Society for Plant Protection will be indexed by SCOPUS. On the reasons that justified acceptance, the letter said, "This journal fills a nice niche in the area of plant protection in the Middle East. The Editors have a solid standing in the area of plant protection and the members of the editorial board represent the geographical areas the journal is focused on". Effective October 17, 2017, AJPP was added to the SCOPUS list of indexed journals, with a journal identification number of 21100819201. Detailed information on journals indexed by SCOPUS can be obtained from the following link: htpps://blog.scopus.com/posts/titles-indexed-in-scopus-check-before-you-publish

ASPP MEMBER NEWS

Lifetime Achievement Award in Plant Resistance to Insects . Dr. **Mustapha El Bouhssini**, principal entomologist at the International Center for Agricultural Research in the Dry Areas (ICARDA), received the prestigious award "Lifetime Achievement Award" in plant resistance to insects at the 23rd symposium on plant resistance to insects held in Rothamsted, Harpenden, Hertfordshire, UK, 6-9 March 2018. This award is bestowed by the International Association of Plant Resistance to Insects (IPRI) every two years to scientists who have made major scientific contributions in the area of host plant resistance to insect pests. Dr. El Bouhssini contributed to the development of resistant varieties to Hessian fly in Morocco and other germplasm carrying resistance to Russian wheat aphid, chickpea Leaf miner, and Sunn pest. This germplasm has been shared widely with collaborators for use by breeders for the development of resistant cultivars to insect pests. Dr. El Bouhssini has had a very successful and rewarding career in the area of integrated pest management. The "Lifetime achievement award" in plant resistance to insects in 2018 is his 14th awards, 5 received at ICARDA, 2 in Morocco and 7 from international associations/institutions.

Agricultural Development International".is an independent nonprofit organization based in Florida dedicated to helping reduces hunger and malnutrition to achieve food security in the Middle East and Africa. The organization is focusing on strengthening agricultural research and agricultural higher education, improving the capacities of agricultural ministries and empowering the private sector. Last year, Agricultural Development International announced the 2017 annual awards for outstanding Iraqi research papers in Agriculture and Forestry. Sixty applicants from the Ministry of Science and Technology, Ministry Agriculture, University of Baghdad, Kufa University, Nahrain University, Dohuk University, Tikrit University, Sulaimani University, Wasit University, Foundation of Technical Education, Muthana University, Salahaddin University in Erbil, Thi-Qar University and Isra University applied for these awards. On December 2017, ADI announced the winners for 2017 outstanding research papers awards in the field of Agriculture and Forestry in Iraq. A team of agricultural experts from the US and Iraq evaluated the received papers. The winning papers were selected based on: originality, the economic value, the practical value, the scope of work and the quality of the journal and its impact factor.Dr.Saleh Bader the representative of the organization in presence of Dr. Ibrahim B. Abdulrazak, Director General Agricultural Research Directorate, Ministry of Science and Technology, Baghdad-Iraq delivered the award to the winner Dr.Mohamed Zeadan Khalaf for his valuable research ''Impact of Date Palm borer species in Iraqi agroecosystem''. ASPP congratulates Dr.Khalaf for this award wishing him more success in date palm pest researches.

World Academic Championship-2018 in Agriculture (Detoxification). International Agency for Standards and Ratings honored **Dr. Halima Zugher Hussein from Iraq** with World Academic Championship -2018 in Agriculture (Detoxification) for great scientific contribution World Academic Champion -2018 in Agriculture (Detoxification) Fellow Directorate of Agriculture, International Agency for Standards and Rating


World Academic Championship-2018
in
Agriculture (Detoxification)

The purpose of the award is to identify brilliant scientists and academicians around the world through World Academic Championship. The World Academic Championship is organized by International Agency for Standards and Ratings at international level. Dr. Halima Zugher Hussein, (World Academic Champion and *Fellow, Directorate of Agriculture, IASR*) plays a vital role in advancement of scientific knowledge in Agriculture (Detoxification). World Academic Championship-2018 in Agriculture (Detoxification) acknowledges the outstanding international contributions and is selected based on international meritorious competition. IASR extends best wishes for your endeavors enlightening scientific domain with your efforts. Your research article is winner among 5455 nominations from 58 countries, screened for the World Academic Championship-2018 in Agriculture (Detoxification). IASR recognizes **Dr. Halima Zugher Hussein** among World's 500 Most Influential Experts in Agriculture for the Year 2018 on Earth.

Scientific Books

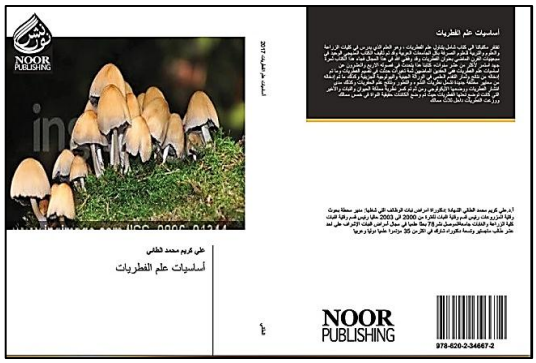
➢ Tools for Varroa Management, a Guide to Effective Varroa Sampling and Control, Healthy Bees, Healthy People, Healthy Planate.

Dr.Muzahim Ayoub Al-Sayegh, University of Mosul, College of Agriculture and Forestry has accomplished the translation of the book titled'' Tools for Varroa Management, a Guide to Effective Varroa Sampling and Control, Healthy Bees , Healthy People , Healthy Planate'' which is edited by a honey bee health coalition. The Honey Bee Health Coalition was formed in 2014 as a cross-sector effort to promote collaborative solutions to honey bee health challenges. The diverse Coalition brings together beekeepers, growers, researchers, government agencies, agribusinesses, conservation groups, manufacturers and brands, and other key partners dedicated to improve the health of honey bees and other pollinators. The Coalition's mission is to collaboratively implement solutions that will help to achieve a healthy population of honey bees while also supporting healthy populations of native and managed pollinators in the context of productive agricultural systems and thriving ecosystems. A major tenet and founding principle of the Coalition is the recognition that the current decline in overall honey bee health is a multi-factorial problem, and all stakeholders have a role to play in managing bee health issues. The Coalition is focusing on accelerating improvement of honey bee health in four key areas: forage and nutrition, hive management, crop pest management, and outreach, education and communications. As part of the hive management focus area, the Coalition has developed this "Tools for Varroa Management" Guide that beekeepers can use to help focus on more effectively controlling the Varroa mite in their hives For more information visit at http://honeybeehealthcoalition.org

To download the English version click on the link beside: https://honeybeehealthcoalition.org/wp-content/uploads/2017/04/HBHC Guide_Varroa_Mgmt_6thEd_7April2017_c.pdf

➢ **Principles of Mycology**:

This book is the result of an effort that lasted more than ten years The book dealt in the twenty-four chapters on the basics of the science of fungi In the past two decades there have been changes in the classification of fungi and the results the fruits of scientific progress in genetics and molecular biology as well as the introduction of various new standards Including the theories of evolution and the results of the science of fossils as well as the extent of the spread of fungi and their ecological status and then broke the theory of the two Kingdoms of animala and planta and the last under which the fungi were placed . Where the eukaryotes were placed in five kingdoms and distributed fungi within three kingdoms. The genetic basis was the main determining factor for the classification of modern fungi. On this basis, we discussed the general characteristics and economic importance of fungi and nucleus cycles of fungi, The second chapter deals with the methods of reproduction in fungi, including asexual reproduction and sexual reproduction. The third chapter is devoted to the nutrition of fungi. Chapter 4 discusses the traditional and molecular methods used in the classification of fungi. In Chapter 5 we discussed the first Kingdom, the Kingdom of true fungi, In 6,7and 8 chapters, we discussed the fungal divisions , Chytridomycota ,Zygomycota and Ascomycota , the most important general characteristics of them and their classification, and the most important classes,orders and families. In chapters 9, 10, 11, 12 and 13, we talked about the fungi classes Archiascomycetes ,Plectomycetes ,Pyrenomycetes ,Discomycetes and Loculomycetes and the general characteristics and classification of the most important orders and families .Chapter Fourteen discusses the subdivision Deuteromycotina and its most important general characteristics and classification, and the most important classes, orders and families . While Chapter fifteen dealt with the division Basidiomycota and its most important general characteristics , classification, and the most important classes,orders and families . While Chapters 16, 17, 18 and 19 describe the Classes: Gasteromycetes, Hymenomycetes, Urediniomycetes and Ustilaginomycetes, and the most important general characteristics of them and their classification, and the most important orders and families. The twentieth chapter is devoted the second kingdom Chromista (Pseudomycota) and the most important general characteristics. Chapter Twenty-one included the division oomycota and its general characteristics, classification and the most important class oomycetes , and its classification of the most important orders and families . We explained in Chapter Twenty two the third kingdom Protista and its general characteristics and classification .The last two chapters included the Division: Plasmodiphoromycota and its most important general characteristics and their classification, and the most important classes, orders and families.**[Ali Kareem Al-Ta'e, University of Mosel, Collage of Agriculture and Forestry, Iraq, 2017].**



GENERAL NEWS

The Egyptian Society of Acarology was founded in 2005 at the Faculty of Agriculture, Cairo University, Egypt. It aimed to promote research in all aspects of Acarology; to consolidate the activities of Egyptian acarologists and coordinate their communication with acarologists of the world. ACARINES is the journal of the Egyptian Society of Acarology issued once a year since 2007, and publishes original refereed scientific papers in all areas related to acarology. The journal website is http://ajesa.journals.ekb.eg/

11th International Congress of Plant Pathology, 29 July-3 August 2018, Boston, USA.

Leading experts from around the world will present in this event the latest advances and innovations, celebrate progress, and set a vision for assuring plant health in a global economy. The vision of the congress – an engaged world community of plant health scientists advancing knowledge for a safe, affordable, secure supply of food, feed and fiber for a growing population—reflects the broad and unique position plant pathology holds within the international community of scientists. The meeting program highlights the latest information on:

- Trade regulations
- Sustainable production
- The global spread of pathogens

- Innovations in pathogen detection
- Environmental protection for a growing population
- Agriculture systems for the future
- The impact of plant industries on the world economy

For more information on the congress and how to register check the congress website: www.icpp2018.org

SELECTED RESEARCH PAPERS

- **Molecular and Morphological Identification of the Mealybug, *Phenacoccus solani* Ferris (Hemiptera: Pseudococcidae): First report in Egypt**. Y. Dewer R. S. Abdel-Fattah S. A. Schneider, First published: 12 March 2018. doi.org/10.1111/epp.12458

- **Faunistic Survey of Aphidoidea (Hemiptera) and Associated Predatory Ladybirds in Orchards, Yazd Province, Iran.** M. Heidari Latibari, M. Zare Khormizi, E. Sahamian L. Dehghan Dehnavi , G. H. Moravvej, First published: 25 March 2018. doi.org/10.1111/epp.12456

- **Managing Grapevine Trunk Diseases With Respect to Etiology and Epidemiology: Current Strategies and Future Prospects**. David Gramaje, José Ramón Úrbez-Torres, Mark R. Sosnowski, 102, (1): 12-39, 2018. doi.org/10.1094/PDIS-04-17-0512-FE

- **An Innovative Root Inoculation Method to Study *Ralstonia solanacearum* Pathogenicity in Tomato Seedlings.** N. Singh, T. Phukan, P. L. Sharma, K. Kabyashree, A. Barman, R. Kumar, R. V. Sonti, S. Genin, and S. K. Ray. 108(4): 436-442, 2018. doi.org/10.1094/PHYTO-08-17-0291-R

- **A Hypersensitivity-Like Response to Meloidogyne graminicola in Rice (*Oryza sativa*).**Ngan Thi Phan, Dirk De Waele, Mathias Lorieux, Lizhong Xiong, and Stephane Bellafiore, 108, (4): 521-528,2018. doi.org/10.1094/PHYTO-07-17-0235-R

- **Molecular Characterization and Functional Analysis of PR-1-Like Proteins Identified from the Wheat Head Blight Fungus *Fusarium graminearum***. Shunwen Lu and Michael C. Edwards, 108 (4): 510-520, 2018. doi.org/10.1094/PHYTO-08-17-0268-R

- **Insecticide Resistance Status in the Whitefly, *Bemisia tabaci* Genetic Groups Asia-I, Asia-II-1 and Asia-II-7 on the Indian subcontinent.** N. C. Naveen, Rahul Chaubey, Dinesh Kumar, K. B. Rebijith, Raman Rajagopal, B. Subrahmanyam & S. Subramanian. Scientific Reports, 7:40634, 2017. DOI: 10.1038/srep40634.

- **Application of Arbuscular Mycorrhizae *Glomus iranicum* var. *tenuihypharum* var. *nova* in Intensive Agriculture: A Study Case.** Félix Fernández Martín, Jesus Juarez Molina, Emilio Nicolás Nicolás, Juan José Alarcón, Martín Kirchmair, Francisco José García, Antonio José Bernabe Garcia and Camille Bernal. Journal of Agricultural Science and Technology B 7,221-247, 2017.

- **Status of *Phytophthora* and *Huanglongbing* Diseases of Citrus Causing Decline in Coorg Mandarin in India.** Priti Sonavane and Venkataravanappa Venkataravanappa, Journal of Agricultural Science and Technology B 7, 248-263, 2017.

PAPERS PUBLISHED IN THE ARAB JOURNAL OF PLANT PROTECTION (AJPP) VOLUME 35, ISSUE 3, DECEMBER 2017

BIOLOGICAL CONTROL

Susceptibility of different stages of the cotton leaf worm *Spodoptera littoralis* (Boisd.) to the fungus *Beauveria bassiana* (Bals.) Vuil. under laboratory conditions. M. Ahmad, I. Gazal and L. Rajab (SYRIA)**.** Pages 131-138.

Effect of some Rhizobacteria species on phenol contents and photosynthesis pigments in tomato plants inoculated with *Cucumber mosaic virus* (CMV). R.M. Al Shami, I.D. Ismail and Y. Hammad (SYRIA)**.** Pages 139-144.

MOLECULAR RESISTANCE

Molecular and functional assessment of a *Chitinase* gene in chickpea. F. Khatib, B. Al Askar, N. Al Skhny and M. Baum (SYRIA & MOROCCO)**.** Pages 145-154.

BENEFICIAL INSECTS

Molecular characterization and phylogenetic analysis of *Deformed wing virus* that infects honey bees in Syria. H.S. Barhoum, H. Adib Al-Roz and A.M. Mouhanna (SYRIA). Pages 155-163.

HOST RESISTANCE

Study of the susceptibility of some local melon cultivars to infestation with some sucking insects and their associated predators. R. Al-Jassany and M. Shaker Mongi (IRAQ)**.** Pages 164-170.

Screening of lentil genotypes for resistance to *Bean yellow mosaic virus* and effect of mixed infection on the susceptibility of some resistant lentil genotypes. A. Kanawaty, S.G. Kumari, J. van Leur and H. Hammadi (SYRIA, LEBANON & AUSTRALIA). Pages 171-177.

CONTROL

***Barley yellow dwarf virus*-PAV management using seed-treatment with the insecticide imidacloprid.** A. Najar, I. Ben Fekih, H. Ben Ghanem, S.G. Kumari and A. Varsani (TUNISIA, LEBANON, USA). Pages 178-184.

PAPERS, WHICH WILL BE PUBLISHED IN THE ARAB JOURNAL OF PLANT PROTECTION (AJPP), VOLUME 36, ISSUE 1, APRIL 2018

Research Papers

- **Distribution of honey and pollen forestry trees important to honey bee in Syrian coast using geographic information systems**. N. Hujeyj, R. El-Mohamed, F. Al-Ghmaz, M.M. Al-Zoubi and M.S. Krubez (SYRIA).
- **Population dynamics of the phytophagous mites' predators in lemon orchards in Lattakia Governorate, Syria.** S. Korhayli, Z. Barbar and L. H. Aslan (SYRIA).
- **Effect of the aqueous and alcoholic extracts of Rosemary (*Rosmarinus officinalis* L.) to control the bee parasite *Varroa destructor* Oud.** N. Hujeyj, B.S. Khaled, M. El-Elan, H. Kuhayl, A. El-Menoufi and M. Hasan (SYRIA).
- **Virulence of two local isolates of the fungus *Beauveria bassiana* (Balsmo) to the pre-pupae and adults of the olive fruitfly *Bactrocera oleae* (Rossi).** A.F. El-Habib, D.H. Nammour and A.Y. Ali (SYRIA).
- **Association of crop production practices on the incidence of wilt and root rot diseases of Chickpea in the Sudan.** Omyma Elmahi Mohamed, Seid Ahmed, Murari Singh and Nafisa Elmahi Ahmed (SUDAN, MOROCCO, JORDAN).

Symposia papers presented at the 12th Arab Congress of Plant Protection, Hurghada, Egypt, 5-9 November 2017

- **Building bridges between disciplines for sustainable crop protection.** Rangaswamy Muniappan and E. A. Heinrichs (USA).
- **IPM to control soil-borne pests on wheat and sustainable food production.** Abdelfattah A. Dababat, Gul Erginbas-Orakci, Fateh Toumi, Hans-Joachim Braun, A. Morgounov and R.A. Sikora (TURKEY, MEXICO, SYRIA, GERMANY).
- **Risk analysis and its impact on prevention and control measures of economic important pests.** Martin Ward (FRANCE).
- **Molecular tools developed for disease resistant genes in wheat, barley, lentil and chickpea: a review.** Aladdin Hamwieh, Fida Alo and Seid Ahmed (EGYPT, MOROCCO)
- ***Xylella fastidiosa* and the olive quick decline syndrome in southern Italy**. Giovanni P. Martelli (ITALY)
- **Experience gained from efforts to contain an olive decline in southern Italy and research needs to manage it in the Mediterranean region.** Thaer Yaseen (ITALY).
- **Impact of climate change on plant diseases and IPM strategies.** Sahar Zayan (EGYPT)
- **Impact of Climate change induced by global weather engineering technology of "Chemtrails" on Plant Protection.** Monir M.M. El Husseini (EGYPT)

EVENTS OF INTEREST

2018 - 2019

2-5 MAY,2018	3rd ICIEM 2018 International Conference on Integrated Environmental Management for Sustainable Development. Sousse- Tunisia. www.iciem-conference.com
4-7 June , 2018	8th Meeting of the IOBC-WPRS WG "Integrated Protection of Olive Crops" Florence, Italy. www.eleducation.it/iobc2018/
10-13 June, 2018	15th International Trichoderma and Gliocladium Workshop (TG2018), Salamanca (Spain). tg2018.fundacionusal.es
2-6 July, 2018	XI European Congress of Entomology Naples Italy. http://www.ece2018.com/
29 July – 03 Aug, 2018	11th International Congress of Plant Pathology (ICPP2018), Boston, Massachusetts, USA. www.icpp2018.org
July 29 -August 02, 2018	The III Latin American Congress of Acarology (III CLAC), and VI Brazilian Symposium of Acarology (VI SIBAC). Pousada dos Pirineus, Brazil. http://www.clac3sibac6.com.br/.
12-16 August, 2018	XXX International Horticultural Congress "IHC2018", Istanbul-Turkey http://www.ihc2018.org/en/
1 September, 2018	1st Intl. Biocontrol Conference, Symposia on invasive weeds and invasive arthropods , Bangalore, India www.plantprotection.org
2 - 8 September,2018	XV International Congress of Acarology in Antalya, Turkey. http://www.acarology.org/ica/ica2018/
12-14 September 2018	-10th European Conference on Pesticides and Related Organic Micropollutants in the Environment. -16th Symposium on Chemistry and Fate of Modern Pesticides 10thMGPR – -International Symposium of Pesticides in Food and the Environment in Mediterranean Countries, Bologna, Italy)
4-7 October 2018	IX International Agriculture Symposium "AGROSYM 2018"-Bosnia & Herzegovina. CIHEAM-IAMB, Italy. www.Agrosym.Rs.Ba/Index.Php/En
19 -24 July,2020	XXXVI International Congress of Entomology, Helsinki, Finland. www.ice2020helsinki.fi

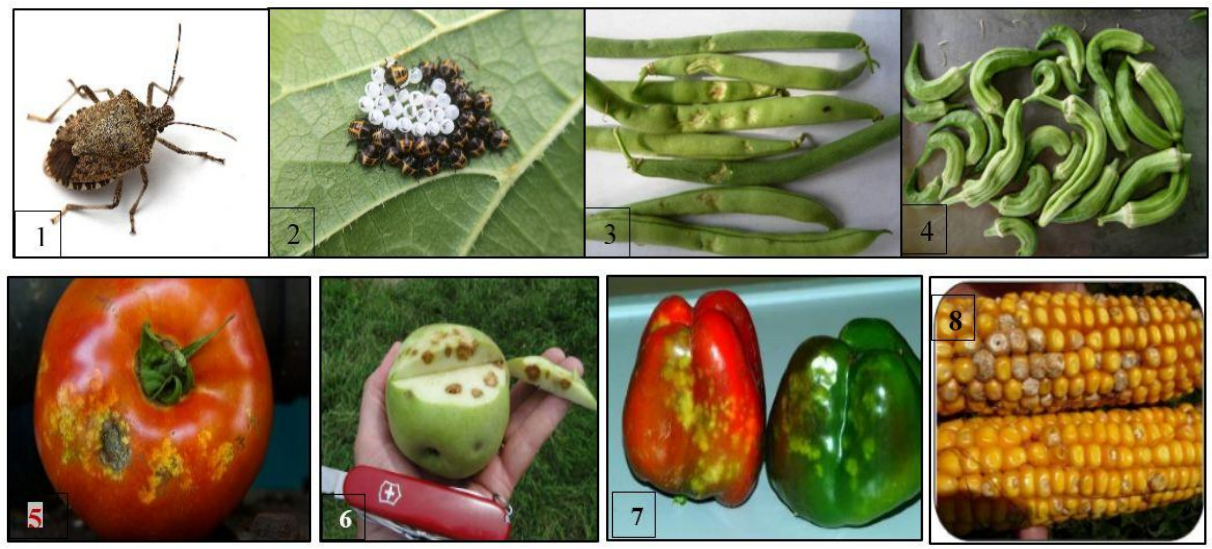
ASPP CONFERENCE MEMORIES 1994 , SOFITEL HOTEL ,EGYPT

From right to left :Dr. Abdulhameed Hussein ,Dr.Saeed Abdulatheem, Dr.Saeed Omarah, Dr.Hussein Yousif, Dr.Samir Alfateh,Dr.Yousif Afafifi, Mr.Mohsin Amin, Dr.Ahmad Abdah, Dr.Idris Salam.The photo was taken at the closing ceremony of the Arab Conference for Plant Protection held in Sofitel Hotel,Maadi,Egypt 1994.

SELECTED PESTS

The Brown Marmorated Stink Bug, *Halyomorpha halys* Stal (Heteroptera: Pentatomidae), is an invasive, herbivorous insect species that was accidentally introduced to the United States from Asia in 1996. Additional invasions have been detected in Canada (2008), Switzerland (2008), Lichtenstein (2009), Germany (2012), France (2013), Italy (2013), Greece (2014), and Hungary (2014). Suggesting this invasive species could emerge as cosmopolitan pest species (Rice et al., 2014).

In North America, *H. halys* has become a major agricultural pest across a wide range of commodities. *H.halys* is a generalist herbivore, capable of consuming > 100 different species of host plants, often resulting in substantial economic damage. Its feeding damage resulted in US $37 million of losses in apple in 2010, but this stink bug species also attacks other fruit, vegetable, field crop, and ornamental plant species (Rice et al., 2014). (Cited from Robert Malek, 2015-2016.Msc thesis, IAMB).



References of the Photos:

1- https://www.amerinursery.com/growing/how-destructive-is-stink-bug/

2- https://www.amerinursery.com/growing/how-destructive-is-stink-bug/
3- https://www.plantmanagementnetwork.org/pub/php/brief/2012/stinkbug
4- https://content.ces.ncsu.edu/brown-marmorated-stink-bug-1
5- http://www.spinazzegroup.com/en/single-row-insect-net-against-stink-bug/bmsbcatoctinapple3c-2/
6- http://articles.extension.org/pages/73595/exclusion-of-brown-marmorated-stink-bug-with-selective-screening-for-organic-production
7- https://www.pioneer.com/home/site/us/agronomy/crop-management/soybean-insect-disease/brown-marmorated-stink-bug/

The Editorial board of the Arab and Near East Plant Protection Newsletter highly appreciates the contribution of several Arab scientists in this issue, namely:

Khalid Alhudaib (Saudia Arabia), Aziz Ajlan (Saudi Arabia), Nesreen.M. Abd El-Ghany(Egypt), Hossam M. El-Gepaly(Egypt), Ziad Barbar(Syria), Jounar Aziz Ebrahim (Syria), Houda Boureghda(Algeria), Hani El-Kawas (Egypt), Mohammed Zaidan Khalaf (Iraq), Hussein I. Abdulzahera (Iraq), Mohsen Amin (Egypt), Maadh Abdulwahab Alfahad(Iraq), Basma Thabab Alajily(Iraq), Saleh Fenjan (Iraq), Luaay Kahtan Khalaf (Iraq-USA),Mohamed Mannaa (Egypt-Korea), Ali Kareem Al-Ta'e (Iraq), Mozahim Al-Saegh(Iraq), Ali Zachi Abdulqader (Iraq-Malaysia), Thaer Yaseen-Bari-FAO), Mustapha El Bouhssini (Morocco- ICARDA), Halima zugher(Iraq), Mamoon Alalawi (FAO-Egypt), Anne-Sophie Roy (France-EPPO), Hind Ibrahim AL-Khazraji (Iraq), Hussein Ali Salim(Iraq), Ismail Ahmed Ismael (Australia-Iraq),

News and announcements from all, on any aspect of plant protection in the Arab world, are invited for the Newsletter. Contributions from the Executive Committee of the Arab Society for Plant Protection and from the four Subject Matter Committees, as well as from national societies in the Arab region dealing with any aspect of plant protection, are kindly requested and highly appreciated.