ARAB AND NEAR EAST PLANT PROTECTION NEWSLETTER

Food and Agriculture Organization of the United Nations

Number 72 December, 2017

The Arab Society for Plant Protection and the Near East Regional Office of the FAO jointly publishes the Arab and Near East Plant Protection Newsletter (ANEPPNEL), three times per year. All correspondence should be sent by email to the Editor (aneppnl@gmail.com).

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EDITORIAL

Intra–Generation Communication

Arab Plant Protection Society was established by Arab scientific elites; specialized in plant protection field, with their accumulative and persuasive endeavors, the Arab Plant Protection Society has prospered and grew scientifically in a record time. Chaired by prominent scientists, whose determination succeeded in uniting the elite, in contrast to the political conflicts that undermined and held professional efforts apart.

This is a proposal, "a call" for different generations in the society to communicate, to connect, to jointly advocate the Arab Plant Protection Society mission and advance it forward, utilizing the latest techniques and technologies. These technologies have changed enormously in a very short time and shall continue to develop in rapid speed, keeping in mind that relying solely on traditional teaching, old books and research may no longer keep up with the fast growing developments.

In this modern day and age, world becomes a global village; programs, software and Internet networks, all at a touch of a button or a screen to be more precise! The younger generation of scientists; our students, children and grandchildren skillfully master all the mentioned high-tech tools.

It is my pleasure to openly admit that learning does not have an age, nor stops at a certain status, neither limited to an era. We must thrive to constantly learn, embrace changes, and keep with the developments in order to achieve our goals.

Let us connect, communicate older and younger generations, learn from each other and proceed toward a fast-paced brighter future.

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❖ Crop Protection News from Arab and Near East Countries

INVASIVE AND NEW PESTS

ALGERIA

First Report of *Cacyreus marshalli* in Algeria. In Algeria, unusual insect larvae on a *Pelargonium peltatum* plant were reported by a member of the public in June 2017. This plant had been bought two weeks before in a nursery located in Zeralda near Algiers. The diseased plant was sent to the University of Mostaganem which confirmed the presence of *Cacyreus marshalli* (Lepidoptera: Lycaenidae - EPPO A2 List). While re-examining lists of lepidoptera found in Algeria, it was noted that *C. marshalli* had been caught in the municipality of Rouiba (near Algiers) during a study carried out in 2009-2010. For the moment, no damage has been observed on pelargonium plants near Algiers, nor the presence of the insect reported from other parts of Algeria. The situation of *Cacyreus marshalli* in Algeria can be described as follows: Present, confirmed in June 2017 in one *Pelargonium peltatum* plant near Algiers. .[Guenaoui Y, Rekad FZ, Labdaoui ZE (Algeria), Dégâts causés par *Cacyreus marshalli* sur des pélargoniums en Algérie. *Phytoma* no. 707, 44-46, 2017]. **EPPO, Reporting Service 2017 no. 10 –Pests.**

EGYPT

The Cyst Nematodes Heterodera and Globodera Species in Egypt. A survey was conducted in three governorates Alexandria, El Behera and Sohag of Egypt during 2012-2016 and one hundred seventy-eight soil and root samples were collected for the detection of cyst nematodes. The results showed the prevalence of nine cyst nematode species associated with different crop plants: *Heterodera avenae* on wheat, *H. daverti* and *H. trifolii* on Egyptian clover, *H. leuceilyma* on Bermuda grass, *H. lespedezae* on lentil, *H. goldeni* on qasabagrass, *H. schachtii* on cabbage and sugar beet, *H. zeae* on corn and wheat and *Globodera rostochiensis* on potato. The cyst nematodes *H. leuceilyma* and *G. rostochiensis* are new records of the country and *H. lespedezae* on lentil is a new host plant record in Egypt. . [Ibrahim IKA, Handoo ZA, Basyony ABA ,(Egypt), Pakistan Journal of Nematology **35**(2), 151-154, 2017].

IRAQ

First Report of Several Fungal Strains Infecting Okra Plant in Karbala Governorate/Iraq. Root and crown rot is a significant fungal disease of different plant hosts including okra. The purpose of this study was to determine the most common fungal pathogens infecting okra plants causing this disease in Karbala governorate / Iraq. In 2016, diseased okra plants with root and crown rots symptoms were collected from several okra fields located in different parts of Karbala governorate. The fungal pathogens were isolated and identified initially based on morphological characteristics. After pathogenicity test, one isolate was selected from each similar collection of isolates for further identification using the molecular techniques; PCR, DNA sequencing and phylogenetic analysis. The results showed that the majority of fungal pathogens belonged to Fusarium genus while other were to Rhizoctonia, Curvularia and Aspergillus genera. These pathogens were recorded in the National Center of Biotechnology Information (NCBI) under the names: *Fusarium fujikuroi* strain OKra-F.fu (MF510817), *Fusarium keratoplasticum* strain OKra-F.ke (MF510816), *Fusarium solani* strain OKra-F.so (MF510823), *Fusarium proliferatum* strain OKra-F.pr (MF510820), *Rhizoctonia solani* strain OKr6 (MF510825), Curvularia tsudae strain OKr8 (MF510824) and *Aspergillus nomius* strain OKra-A.no (MF510822). This is the first record on the molecular identification of these fungal pathogens isolated from diseased okra plants in Karbala governorate/Iraq. [Adnan A. Lahuf ; Raja G. Abdalmoohsin ; Yaser N. Alhamiri and Aqbal Z. Alhblany (Iraq), Plant protection/Agriculture College/University of Karbala, Unpublished (2016)].

LEBANON

First Report of *Dactylopius opuntiae* In Lebanon. In 2012, *Dactylopius opuntiae** (Hemiptera: Dactylopiidae) was detected for the first time in Lebanon in the region of Nabatieh on *Opuntia ficus-indica* (prickly pear). The origin of this introduction remains unknown. A survey conducted in 2014 showed that the pest is widespread in Southern Lebanon and causes severe damage to *O. ficus-indica* (including plant mortality in some cases) leading to crop losses for farmers who depend on prickly pear production to increase their incomes. In 2015, new outbreaks were discovered in the region of Jezzine and Chouf, approximately 18 km away from the first site of detection. In many observed sites, the predator *Cryptolaemus montrouzieri* (Coleoptera: Coccinelllidae) was found in association with *D. opuntiae*, but predator populations were too low to regulate the pest. This is the first time that *D. opuntiae* is reported from Lebanon.[Moussa Z, Yammouni D, Azar D (2017) *Dactylopius opuntiae* (Cockerell, 1896), a new invasive pest of the cactus plants *Opuntia ficus-indica* in the South of Lebanon (Hemiptera, Coccoidea, Dactylopiidae). Bulletin de la Société entomologique de France, 122(2), 173-178, 2017]. **EPPO, Reporting Service 2017 no. 10 – Pests.**

SAUDI ARABIA

First Report of a New Jojoba (*Simmondsia chinensis*) Witches'-Broom Disease in Saudi Arabia and its Association with Infection by a '*Candidatus* Phytoplasma Australasiae'-Related Phytoplasma Strain. During a survey conducted in 2016, jojoba (*Simmondsia chinensis*) plants exhibiting symptoms of witches'-broom and small leaves were observed in the Qassim University experimental farm in Qassim Province, Saudi Arabia. Since the symptoms were indicative of possible infection by phytoplasma, molecular diagnostic assays for phytoplasma detection were employed. Based on the results of sequence, phylogenetic and restriction fragment length polymorphism analyses, the causal agent was identified as a '*Candidatus* Phytoplasma australasia'-related phytoplasma strain. This is thought to be the first report of a phytoplasma jojoba witches'-broom disease worldwide. Prior to this study, *Candidatus* Phytoplasma australasia' had never been associated with jojoba plants worldwide, although '*Candidatus* Phytoplasma australasia'-related strains have been previously reported in ornamental and vegetable plants in the Qassim region of Saudi Arabia. The results indicate that the phytoplasma has spread to a new host, highlighting the need for surveillance for this phytoplasma in Qassim region, one of the main agricultural areas in Saudi Arabia.[Omar, A. F.; Pérez-López, E.; Al-Jamhan, K. M.; Dumonceaux, T. J.(Saudi Arabia), Plant Disease , 101 (8): pp.1540 ,2017].

TUNISIA

***Potosia opaca*, an Insect Newly Found on Canary Palm (*Phoenix canariensis*) in Tunisia.** Ornamental palm tree *Phoenix canariensis* has been introduced in Tunisia at late 1800's and becomes a symbol of the city landscape in different localities. *P. canariensis* was seriously attacked since 2011 by the red palm weevil (RPW), *Rhynchophorus ferrugineus*. Recently a new pest *Potosia opaca* was detected in North of Tunisia on living *P. canariensis* trees solely or associated with RPW. *P.opaca* develops one generation per a year; adult mating takes place in June-July and females lay in humus inside decayed trunks of living palms tree. Larva lives in most accumulations of organic matter inside trunks between fibers and sheaths into close proximity with live wood. The pupa stage lasts on average 50 days. *P.opaca* lives on living trees and seems not to be associated with tree mortality. However it is essential to consider a number of indirect damage as this insect is likely becoming a vector of many pathogens.[Ben Jamâa, M.L., Boudhina, S., Dhahri, S., and Hdidi, S.(Tunisia), Tunisian Journal of Plant Protection 12: 83-90,2017].

YEMEN

The Tomato Russet Mite, *Aculops lycopersici* (Tryon, 1917) (Acari: Trombidiformes: Eriophyidae), is Recorded for the First Time in Yemen. The tomato russet mite (TRM), *Aculops lycopersici* (Tryon, 1917) (Trombidiformes: Eriophyidae), is reported for the first time in Yemen from tomatoes, *Solanum lycopersicum* L. (Solanaceae). This is the second record of *A. lycopersici* from the Arabian Peninsula after Saudi Arabia. This finding may indicate a recent introduction of this economically important and invasive species. Mites probably arrived with infested plant material or it was out there but not so far detected due to the scarcity of acarological studies in Yemen.

In the Middle East, it was first reported from Lebanon (Talhouk 1950), followed by Morocco (Lamb 1953a, b), Syria (Talhouk 1954), occupied Palestine (Harpaz 1955), Iran (Gardenhire 1959), Tunisia (Millet 1959), Cyprus (Georghiou 1960), Libya (Cavin 1961), Saudi Arabia (Gentry 1965), Iraq (Mohamed and El-Haidari 1968), Egypt (Wahab et al. 1974), Turkey (Sekeroglu and Ozgur 1984), Uzbekistan (Cheremushkina et al. 1991) and Jordan (EPPO 2014). In August 2017, the infestation symptoms, browning of leaves and change of stems from green to brown, were observed on greenhouse tomato plants in Dhamar Province, Yemen (coordinates 14°33'40.5"N, 44°23'21.7"E). The TRMs are bright whitish to yellowish in color, being about 140-180 µm long. They feed on the surface tissues of the infested plant part. The life cycle takes about 7 days which makes populations increase rapidly to very high densities with destructive impact on the plant health. Some reports showed that the acaropathogenic fungi *Hirsutella thompsonii* has a role in controlling the TRM on plants. Several acaricides have been found to be effective in reducing pest populations. Mite predators may provide a degree of biological control, particularly arboreal predatory mites of the family Phytoseiidae, *Homeopronematus anconai* (Tydeidae) and *Agistemus exsertus* (Stigmaeidae).[Mohamed Waleed Negm(Egypt), and Mohamad Alsharhi(Yemen), International Journal of Acarology ,2017]. https://doi.org/10.1080/01647954.2017.1402088

RESEARCH HIGHLIGHTS

IRAQ

Geographic Distribution of *Fusarium culmorum* chemotypes Associated with Wheat Crown Rot in Iraq. Fusarium crown rot (FCR) is an important disease of wheat and other grains that has had a significant impact on cereal crop production worldwide. Fusarium species associated with FCR can also produce powerful trichothecenes mycotoxins that pose a considerable health risk to humans and animals that consume infected grains. In this study, we examined Fusarium species of wheat from diff erent regions of Iraq that showed FCR symptoms. Twenty-nine isolates were collected overall, and the marker gene translation elongation factor 1 alpha (TEF-1α) was sequenced in order to determine their taxonomic identities. All isolates were determined to be *F.culmorum*, and primers targeting tri-cluster genes were used in order to further characterize isolates into specific trichothecene chemotype strains. Five of the 29 isolates were determined to be the nivalenol (NIV) chemotype, while the rest of the isolates recovered were the deoxynivalenol (DON) chemo type. All DON- -type isolates produced 3Ac-DON, while the 15Ac-DON-type was not detected. The majority of the NIV-type isolates originated from wheat growing regions in the mid-latitudes of Iraq, while the DON-type isolates were recovered from areas distributed broadly across the country. To the best of our knowledge, this study is the first to report on the distribution of specific *F.culmorum* chemotypes from FCR diseased wheat in Iraq.[Oadi N. Matny(Iraq), Scott T. Bates, Zewei Song (United States), Journal of Plant Protection Research, 57(1): 43–49, 2017]. DOI: 10.1515/jppr-2017-0006

Biological Control of Insect Pests in Iraq: 1) an Overview of Parasitoids and Predators Research Development. This review consider the first attempt to retrospect biological control activities of insect pests using parasitoids and predators in Iraq from its early beginning. The technology, introduction and implementation faced and still many obstacles, the most important are nation unrest and relaying heavily upon insecticides, which constrains progress in this field. However, successful cases of biological control using parasitoids and predators within the contest of Integrated Pest Management philosophy have been reported in Iraq. The first attempt occurred in the 1980s when lab reared of the predators, *Exochomus nigripennis* and *Dicrodiplosis manihoti*, were released in the field to control mealy bug, followed by rearing and releasing of the native parasitoid, *Apanteles angaleti* to control carob moth, *Ectomyelois ceratoniae* infesting pomegranate fruits and IPM programs of releasing the egg parasitoid, *Trichogramma* spp. to control *Ephestia* spp. in orchards and date fruit warehouses, spiny bollworm, *Earias insulana* and the lesser date moth, *Btrachedra amydraula.* Unfortunately, most of the studies in this area have been published in Arabic and are, therefore, not readily available internationally.[Hussain F. Alrubeai(Iraq), Academic Journal of Entomology, 10 (2): 10-18, 2017].

Effectiveness of Talstar and Decis Insecticides against Dubas bug, *Ommatissus lybicus* (Homoptera: Tropiduchidae) in Diyala Governorate, Iraq. The present study was conducted in Diyala Governorate, Baqubah district of Iraq on date palms during May 2011. The main objec ve of the study was to evaluate the effect of insecticides Talstar (Bifenthrin) and Decis (Deltamethrin) against dubas bug (*Ommatissus lybicus*), the insecticides used and data was recorded before 1 day and 1, 3 , 7, 14, 28 and 35days after application. Results indicated that

reduction in population of dubas bug after spraying of insecticides Talstar (Bifenthrin) and Decis (Deltamethrin) which recorded (12.8, 3.5, 2, 1.3, 0.5, 0.3, and 0.1) and (18.0, 8.3, 3.0, 1.6, 1.0, 1.0, 1.0) after 1, 3, 7, 14, 28 and 35 days respectively. Talstar (Bifenthrin) and Decis (Deltamethrin) were most effective insecticide against dubas bug insects and gradually increased in corrected efficacy percentage which reached (72.3, 76.7, 87.7, 95.2, 97.1 and 98.5%) and (53.0, 81.2, 88.7, 93.2, 93.2 and 93.2%) after 1,3,7,14,28 and 35 days respectively.[Hussein A. Salim, Qais K. Zewain, Kareem A. Hassan, Mahmood M. Salman (Iraq), Journal of Genetic and Environmental Resources Conservation, 5(1):24-27, 2017].

Biological Control of the Charcoal rot Disease of Pepper Caused by *Macrophomina phaseolina.* The charcoal rot disease which caused by *Macrophomina phaseolina* (Mp) is one of the most harmful plant diseases, affected broad range of the plant species, recently economic losses were observed in various growing area of pepper. This study aimed to isolate and identify the causal agent of the disease in various pepper fields in the middle and south of Iraq and control it biologically, Result of isolation indicated that, the presence of number of the fungi and *Macrophomina phaseolina* was predominant, while it appeared in all the samples with frequency of 53.23%. Isolates of the Mp showed variety in their pathogenecity on the pepper seeds *in vitro*, isolate of Mbs-3 was exhibited 12% seed germination compared to control which was 100%. Evaluation of the antifungal activity was conducted for the rhizobacteria isolates of *Azotobacter chroococcur* (Ac), *Azospirillum brasilense* (Ab), *Enterobacter cloacae*(Ec), *Pseudomonas putida* (Pp) and *Serratia odorifera* (So) against the pathogen *in vitro*, while all of the bioagents significantly reduced the growth of the pathogen on the potato dextrose agar (PDA), treatment of the penta-inoculum of Ac+Ab+Ec+Pp+So was superior which exhibited 100% percentage of inhibition compared to the control. Under greenhouse conditions, all the bioagents significantly increased the percent of the seed germination which ranged between 87.5-100.0% compared to the negative control which was 60.0%. Treatment of the penta-inoculum was superior in controlling the disease, while it exhibited 0% percentage of the disease incidence and severity compared to negative control, which was 97.5%, 74.7% respectfully. All of the bioagents significantly increased growth criteria represented by dry weight of the plants.[Safaa. N. Hussein and Thekra Atta Ibrahim (Iraq), Accepted for Published in the Scientific Journal of Kink Faisal University, 2017].

Integrated Diseases Management (IDM) Against Tomato (*Lycopersicon esculentum* L.) Fusarium wilt. The study was conducted under pots conditions in the Bio-net House, located at Department of Plant Pathology, Sam Higginbottom Institute of Agriculture, Technology and Sciences, Naini, Allahabad, India during 2013-2014. *Trichoderma harzianum* ,spent mushroom compost, solarized soil and carbendazim have been used as soil amendments to determine their influence on the population of tomato wilt pathogen (*Fusarium oxysporum* f. sp. *Iycopersici* (Sacc.) Suyder and Hansen) FOL. A total of seven treatments were taken up in completed randomized design. The culture of FOL was added to the soil at cfu 3×10^5/ g before solarization. After solarization, FYM was applied at 100 g / pot of each treatment. *T. harzianum* at 2g, spent mushroom compost at 20 g and carbendazim at 2g / kg soil were applied in the pots. The susceptible tomato cultivar Co-3 was taken for the experiment and seven days old four seedlings per pots were maintained. These results showed that the disease intensity of FOL was significantly reduced in T5 carbendazim (17.25 %) followed by T4 solarized soil + spent mushroom compost with *T. harzianum* (19.05 %), and reduction percentage was maximum in T5 and T4 (73.61,70.86 % respectively) at 150 days after germination. Results reveal that *T. harzianum* combination with spent mushroom compost solarized soil might have biocontrol potentiality for the suppression of FOL on tomato plants.[Hussein Ali Salim , Sobita Simon, Abhilasha A.Lal (Iraq), Journal of Environmental and Agricultural Sciences 11: 29-34. 2017].

LEBANON

Recent Surveys did not Detect *Ralstonia solanacearum* and *Clavibacter michiganensis* subsp. *sepedonicus* in Potato-Growing Areas in Lebanon In Lebanon, potato cultivation covers around 11 000 ha with a production of approximately 300 000 tonnes per year. This production is mainly concentrated in the Bekaa valley in Central-Eastern Lebanon (70% of the total potato-growing area), and in the Akkar plain in Northern Lebanon (25-30%). In the past there had been reports of *Ralstonia solanacearum* (species complex) and *Clavibacter michiganensis* subsp. sepedonicus (both EPPO A2 List) in Lebanon, but outbreaks were considered to be rare and localized (Saad and Nienhaus, 1969). According to these old studies, *R. solanacearum* was reported in Akkar, only on the basis of symptoms, and this was not confirmed by diagnostic methods. *C. michiganensis* subsp. *sepedonicus* was reported in Bekaa valley where it was presumably isolated from symptomatic material. These old records were not confirmed during more recent studies, and are therefore considered doubtful. In the 2000s, studies conducted in some EPPO

Reporting Service 2017 no. 10 –Diseases13Lebanese potato-growing areas did not detected the two bacteria (Abou-Jawdah et al., 2001; Choueiri et al., 2004). Therefore, it was felt necessary to establish an extensive and reliable survey programme to assess the possible presence (or confirm absence) of both *R. solanacearum* and *C.* michiganensis subsp. *sepedonicus*. Over the longer term, the objectives were also to establish a monitoring programme, as well as a traceability system and contingency plan in case of positive findings. From 2012 to 2015, extensive field surveys were carried out in the Bekaa valley and Akkar plain to assess the occurrence of *R. solanacearum* and *C. michiganensis* subsp. *sepedonicus* (Choueiri et al., 2017). A total of 232 potato samples were collected from the Bekaa valley and 145 samples from the Akkar plain. Composite samples of 200 potato tubers were randomly collected from each field, in accordance with EC Council Directive 93/85/EEC. Twelve potato demonstration fields, designed for export of early potatoes to European markets, were established in the Akkar plain and surveyed using the same methodology. A network of 40 sampling sites in the Bekaa valley and 19 sites in the Akkar plain was established to collect and test surface water. In addition, the largest potato storage, processing and distribution facility in Lebanon was monitored. Collected plant and water samples were tested for both R. solanacearum and C. michiganensis subsp. sepedonicus and all results were negative. It is concluded that continuous efforts should be made to ensure regular monitoring for these quarantine bacteria in Lebanese potato production fields and potato industrial premises, as this will allow certification of their absence from potato lots both for export and domestic use.[Abou-Jawdah Y, Sobh H, Saad A (2001) Incidence of potato virus diseases and their significance for a seed certification program in Lebanon. Phytopathologia Mediterranea 40, 113-118.
Choueiri E, El-Zammar S., Jreijiri F, Mnayer D, Massaad R, Saad AT, Hanna L, Varveri C (2004) Phytosanitary status of potato in the Bekaa valley in Lebanon. Bulletin **OEPP/EPPO Bulletin 34(1), 117-212.**
Choueiri E, Jreijiri F, Wakim S, El Khoury MI, Valentini F, Dubla N, Galli D, Habchy R, Akl K, Stefani E (2017) Surveys of potato-growing areas and surface water in Lebanon for potato brown and ring rot pathogens. Phytopathologia Mediterranea 56(1), 87-97. Saad AT, Nienhaus F (1969) Plant disease in Lebanon. Zeitschrift für Pflanzenpathologie und Pflanzenschutz 76, 537-551. https://gd.eppo.int/taxon/CORBSE/photos.]. **EPPO Reporting Service 2017 no. 10.**

SYRIA

Susceptibility Evaluates of some Genotypes of Sorghum Against The shoot fly *Atherigona soccata* Rondani (Diptera: Muscidae). The shoot fly (*Atherigona soccata*) is one of the most important pests attacking sorghum, maize and millet. Given the lack of previous studies on the insect in Syria, the research aimed to study some aspects of biology, damage of this pest were conducted. The shoot fly, *A. soccata* is a new-recorded species on the studied genotypes from Syria. Females started oviposition on sorghum seedlings one week after emergence. Adults laid more eggs on leaf three and leaf four. Larvae tunneled in the seedlings causing wilt and finally a dead heart to sorghum seedlings. About 94.6% of the mature larvae were observed to make an exit hole in the crown of the seedlings stalk and pupate inside the stalk near the soil surface, and 5.4% in the soil besides stalk. Adults showed a preference for laying eggs among the studied genotypes, The highest eggs laying rate was 6.7 eggs /10 plants on Mayo genotype, when the minimum was 0.53 eggs / 10 plants on Ezraa7 genotype, and on these results, there was a significant difference in the average number of larvae between the studied genotypes, the highest average number of larvae (5.6 larva/ 10 plants) was on Mayo genotype, when the minimum (0.44 larva/ 10 plants) was on Ezraa7 genotype. There were significant differences between Some tested sorghum genotypes in seedling dead hearts, which ranged between 39.46% for the genotype Mayo, and 3.16% for the genotype Ezraa7.[Abdulnabi Basheer, Alaa Saleh , Nada Alahmad,(Syria), Biological Control Studies & Research Center, Damascus University,2017].

Effect of Four Strains of Plant Growth Promoting Rhizobacter (PGPR) for Peroxidase Enzyme Activity and Growth of the Tomato Plants in Greenhouse. This study was conducted to evaluate four strains of PGPR: *Pseudomonas chlororaphis* MA342, *Serratia plymuthica* HRO-C48 ,*Bacillus subtillis* B2g and *B. subtillis* FZB27 to improve peroxidase activity and some tomato growth parameters under greenhouse conditions. Bacterial strains were applied as seed treatment, irrigation roots the peroxidase enzyme activity after 33, and 49 days of treatment were recorded. The height of plant, fresh and dry weight of shoot and roots, the number of fruits and fruit weights were recorded. The results of the determination of the activity of the enzyme peroxidase in the paper samples taken from the experimental plants after 78 days of planting the seeds showed a significant superiority of the two strains B27 and MA (0.156, 0.126) nmol respectively compared to the control (0.002) nmol and after 94 days of seed cultivation there was superiority (0.393) nmol on the control (0.056) nmol and on the two strains MA and C48 (0.087, 0.056)

nmol respectively in terms of enzymatic activity. The results showed insignificant increase in the height of the tomato-treated tomatoes compared to the control, and significant superiority of the strain B27 (581.66) g compared with control (317) g and other strains in term of fresh weight of vegetative group, while there was a significant superiority of the two strains B27 and C48 (191.33, 169.5 g respectively) compared to control (111.3)g in term of dry weight of vegetative group. For the fresh weight of the root mass, the two strains B27 and B2g (142, 75.33)g respectively were significantly superior compared with control (22.33)g and the other strains. While there were no significant differences between the bacterial strains and control in term of dry weight of root, the results indicated that there were no significant differences between the treated plants and control in terms of number fruits and weight fruits.[Hanan Kawas ,Omar Hamudi, Ahmad Ahmad, Imad D. Ismail (Syria), Department of Plant Protection, Faculty of Agriculture, Tishreen University, Lattakia- Syria,2017].

Evaluation of Two Methods of Application Four Strains of PGPR to Induce Systemic Resistance Against *cucumber mosaic virus* in Tomato Plants in a Greenhouse. The study was conducted to evaluate tow ways of application of four strains PGPR *Pseudomonas chlororaphis* MA342 , *Serratia plymuthica* HRO-C48 , *Bacillus subtillis* B2g, *B. subtillis* FZB27 to induce systemic resistance in Tomato plants against *cucumber mosaic virus* (CMV) under greenhouse conditions. In Seed treatment (s): Tomato seeds submerged in suspension of *Pseudomonas chlororaphis* MA342, *Serratia plymuthica* HRO-C48 ,*Bacillus subtillis* B2g and *B. subtillis* FZB27 (10 10 cfu / ml), in seed and irrigation application (s+i):seeds were treatments in the same way, after 10 days of transplanting every transplant was irrigated with 10 ml of each suspension (10^9 /ml) , after 19 days of transplanting were inculated with CMV. The time of beginning symptoms was recorded, Disease incidence, disease severity depending on symptoms , pyroxidas enzyme activity was determined, Results of this study showed that treatment with four strains delayed the time of beginning symptoms compared with infected control. The delay in application (seeds treatment + ir) more than in (seeds treatment). The treatment with four bacterial strains decreased the diseases incidence on treated plants which ranged between (36.11%-46.65%) and (45% %- 63.33%) after 14- 30 days of inculcation Consequently. the highest percentage of reduction of infection with the strain B27 (s+i). the treatment with bacterial strains reduced the severity of infection after 14 and 30 days, the highest percentage of reduction with seed and irrigation application more than in seed treatment for all studied strains , and B27 strain by seed and irrigation application was the best significantly compared with the three strains and no significantly with C48 strain with percentage of reduction (15.14%) and (60.36%) after 14- 30 day of inculcation Consequently. The treatment with bacteria Improved the activity of peroxidase enzyme in the treatmented plants of inculcation with activity (0.039- 0.097) n mol and (0.106-0.271) n mol compared with infected control (0.021) n mol and healthy control (.022) n mol after 14 and 30 days Consequently, and B27 strain by seed and irrigation application was the best.[Hanan Kawas ,Omar Hamudi, Ahmad Ahmad, Imad D. Ismail (Syria), Department of Plant Protection, Faculty of Agriculture, Tishreen University, Lattakia- Syria,2017].

Evaluation of Four Strains of Plant Growth Promoting Rhizobacter (PGPR) to Promote Plant Growth of Tomato Plants Under the Conditions of Cucumber Mosaic Virus Infection in Greenhouse. This study was conducted to evaluate four strains of **Plant growth promoting Rizobactor** PGPR: *Pseudomonas chlororaphis* MA342 , *Serratia plymuthica* HRO-C48, *Bacillus subtillis* B2g and *B. subtillis* FZB27 to improve tomato plants grown under ***Cucumber mosaic virus*** (CMV) infection. Bacterial strains were applied in two treatments (seed, seed+irrigation). Seedling were inculcated with CMV after 19 days post-transplanting. The height of plant, fresh and dry weight of foliage and roots, the number of fruits and fruit weights were determined. The results showed the treatment with bacteria promote the growth of tomato plants , and reduced the rate of stunting tomato plants (13.1%), and reduced the rate of decline fresh weight of foliage (19.9%). the lowest rate reduction with strain B27 by treatment (seed+irrigation) (0.73%), and reduced the rate of decline dry weight of foliage (45.1%), the lowest rate reduction with strain B27 by treatment (seed + irrigation) (35.32%). and reduced the rate of decline mild weight of root (21.4%), the lowest rate reduction with strain B27 by way (seed+irrigation) (3.53%). and reduced the rate of decline dry weight of root (27.83%) , the lowest rate reduction with strain B27 by treatment (seed+irrigation) (0%), and reduced the rate of decline the number of fruits (15.34%), the lowest rate of reduction with strain B27 by treatment (seed + irrigation) (3.81%), and reduced the rate of decline the weight of fruits (18.65%), the lowest rate reduction with strain B27 by treatment (seed+irrigation) (5.03%), occurring due to infection with *cucumber mosaic virus*.[Hanan Kawas ,Omar Hamudi, Ahmad Ahmad, Imad D. Ismail (Syria), Arab Society for Plant Protection, 35,(1),2017].

Determination of the Appropriate Concentration for *Bacillus subtillis* FZB27 in Seed Treatment and Irrigation in Stimulating the Systemic Resistance in Tomato Plants under the Conditions of CMV Infection. The aim of the research was to select the best concentration of the *Bacillus subtillis FZB27* bacterial strain in stimulating the resistance of tomato plants against the *Cucumber mosaic virus* in permanent soil in protected house conditions. The results showed that bacteria reduced the infection rates in treated plants compared to the control with T1, T2, T3 (60%, 73.34%, 60%) respectively, and reduced the severity of infection in ratio(52.55%, 58.99%, 33.9%) with T1, T2 ,T3 respectively, and reduced the concentration of the virus in ratio (61.79%, 53.99%, 53.99%) with T1, T2 , T3 respectively, and reduce the ratio of infection According to ELISA (38.35%, 66.68%, 83.35%) in the three concentrations T1, T2 and T3, respectively, and the rates of inhibition of the virus (45.33%, 37.59%, 36.26%) with the three concentrations T1, T2 and T3 respectively, and the activity of peroxidase enzyme improved by bacteria in ratios (250%, 224%, 92%) with T1, T2, T3, respectively. The T1=10^8 concentration was the best-tested concentration because the concentration of virus and infection rate according to ELISA results was minimal and the rate of inhibition of the virus and the activity of the enzyme peroxidase was highest.[Hanan Kawas ,Omar Hamudi,Ahmad Ahmad, Imad D. Ismail (Syria), Department of Plant Protection, Faculty of Agriculture, Tishreen University, Lattakia- Syria,2017].

Determination of the Appropriate Concentration for *Bacillus subtillis FZB27* in Irrigation Method in Stimulating the Growth of Tomato Plants under the Conditions of CMV Infection. The aim of the research was to select the best concentration of *Bacillus subtillis FZB27* in stimulating the growth of tomato plants in *Cucumber mosaic virus* in the permanent soil in conditions of protected house. The results showed that the improvement ratio of the plant height were (31.72%, 39.81% , 38.66%) with The three concentrations T1, T2, T3 respectively. The improvement rates of fresh weight (91.52%, 92.7% and 51.25%) with T1, T2, T3 respectively. The improvement ratio of dry weight (14.8%, 46%, 33.79%) with T1, T2, T3 respectively. The improvement rates of fresh weight of roots (26.7% 96.15%, 34.61%) respectively. the improvement ratio of the dry weight were (29.07%, 32.43% and 14.19%) with T1, T2, and T3 respectively. The improvement ratio of fruits number improved by bacteria (33.31%, 54.12%, 52.06%) with T1, T2, T3 respectively. improvement ratio of fruits weight (66.6%, 60.54% and 59.5%) with T1, T2, T3, respectively. T2= 10^7 concentration was the best concentration in stimulating growth in tomato-treated tomato plants. .[Hanan Kawas ,Omar Hamudi,Ahmad Ahmad, Imad D. Ismail (Syria), Department of Plant Protection, Faculty of Agriculture, Tishreen University, Lattakia- Syria,2017].

TUNISIA

In Vitro Antifungal Activity of Different Plant Extracts Against *Phytophthora infestans* the Causal Agent of Potato Late Blight. Our study aimed to evaluate the in vitro antifungal activity of aqueous extracts prepared from seven medicinal plants (*Carya illinoinensis*, *Equisetum arvense*, *Rosmarinus officinalis*, *Pistacia lentiscus*, *Mentha suaveolens*, *Punica granatum*, and *Posidonia oceanica*) against A_1 and A_2 isolates of *Phytophthora infestans* the causal agent of potato late blight. The crude (100%) plant extracts were prepared by decoction and tested at various concentrations (70, 50, 30 and 10% v/v) for determining their relative effectiveness against target pathogen. Their antifungal potential was assessed based on their ability to inhibit pathogen mycelial growth, sporulation, germination and their capacity to affect pathogen in vitro and in vivo survival after treatment. Tested aqueous extracts showed a variable efficiency. For all noted parameters, the greatest inhibition rates were recorded using aqueous extracts from *P. granatum* bark and from *P. lentiscus* leaves and berries (88%) used at the concentration of 10% v/v. Their antifungal potential was expressed by lysis of mycelia and sporangia as well as inhibition of *P. infestans* mycelial growth. Chemical analysis of phenolic compounds of tested aqueous extracts revealed a close relationship between their contents in total polyphenols and the observed antifungal activity. This study clearly demonstrated that pomegranate bark and leaves or berries mastic can be explored as potential sources of bioactive molecules for potato late blight control.[Messgo-Moumene, S., Boukhalfa, R., Belaïdi, D., Beninal, L., Haddadj-Hamdi, S., and Bellatreche, M.(Tunisia), Tunisian Journal of Plant Protection 12: 19-33,2017].

Investigations Into Physiological, Biochemical, and Histological Modifications in a Vine Decline Associated with Biotic and Abiotic Factors. Tunisian table grape production has significantly increased since two decades due to vineyards regional expansion and yield improvement. But, since several years, decline symptoms on *Vitis vinifera* have been recorded in some areas. A study case of a vineyard in Naassen area (near to Tunis) was chosen to investigate the disease origin and the physiological, biochemical, and histological modifications associated with vine

decline. The investigation revealed characteristic symptoms on leaves, old and young shoots similar to decline symptoms of Grapevine Trunk Diseases. Based on cultural characteristics, laboratory investigations revealed the presence of *Phaeomoniella chlamydospora* and *Phaeoacremonium* spp., *Diplodia seriata* and *Botryosphaeria dothidea*, from root and shoot samples, respectively. These fungi are known as the main pathogens responsible for the Esca, Black dead arm and Excoriose. Molecular analysis confirmed the identification of *Diplodia seriata*. Beside morphological alterations on leaves and shoots, symptomatic vines presented significant reductions of 30 and 20% in trunk diameter and bud break rate, respectively, and delayed spring growth compared to healthy ones. Furthermore, roots and stems from declined vines contained 3 times more starch than those from asymptomatic ones. Decline survey revealed a heterogeneous dispersion of symptoms in the vineyard in accordance with water supply. The vines along the edge of vineyards are usually less watered and show more decline symptoms. Decline dynamics in time and space scales have to be considered in order to develop effective management strategies.[Bahri, B.A., Mabrouk, H., Chebil, S., and Kallel, S.(Tunisia), Tunisian Journal of Plant Protection 12: 35-52,2017].

Insecticidal and Synergistic Activities of Two Essential Oils from *Pistacia lentiscus* and *Mentha pulegium* against the Green Peach aphid *Myzus persicae*. Chemical composition of two essential oils (EOs) extracted from *Mentha pulegium* and *Pistacia lentiscus* was investigated. Volatile compounds were characterized. Major ones were pulegone (45.89%), cis-menthone (23.25 %) and trans-menthone (14.73 %) for *M. pulegium* and α-pinene (28.57%), β-myrcene (21.03%) and L-limonene (6.97%) for *P. lentiscus*. Then, the insecticidal and synergistic activities of the EOs were studied against *Myzus persicae*. The results showed that both EOs were toxic against the target pest. Aphid mortality caused by *M. pulegium* and *P. lentiscus* Eos was 86 ± 11.4 and 76 ± 11.4%, respectively. LC_{50} of the latest EO was lower than that of *P. lentiscus* with 596 and 876 ppm, respectively. In addition, no synergism was observed when both oils were mixed and used against the same aphid. Interestingly, there are no differences between toxicity of both EOs and that of the chemical insecticide leading to 70 ± 10% mortality. This study suggested that the EOs have a great potential to be used in agriculture against *M. persicae*.[Behi, F., Bachrouch, O., Ben Fekih, I., and Boukhris-Bouhachem, S.(Tunisia), Tunisian Journal of Plant Protection 12: 53-65,2017].

Population Demographic Traits and Reproductive Parameters of the Seed Beetle *Callosobruchus maculatus* infesting stored Lentil and Chickpea Commodities . This paper carried out first exhausted investigations on pest status of the cowpea weevil *Callosobruchus maculatus* on two food legumes namely chickpea (Amdoun 1 variety) and lentil (Ncir variety) during six months of storage. Data on populations' dynamic, demographic traits, reproductive parameters, juvenile and adult fitness, economic injury level (EIL) and damages (impact on germination and weight losses) were studied through this work. Results revealed that *C. maculatus* is a major pest on stored chickpea in Tunisia. Moreover, results indicated that reproductive parameters, the juvenile and adult fitness of *C. maculatus* exhibited great variations among hosts. In this respect, linear regression analysis demonstrated that hosts have significant effects on adult fitness. Results showed that host contributed respectively by 77% for body weight and 80% for body size. Chickpea was more suitable host compared to lentil, since the mortality rate of eggs and larvae and the generation duration means were higher in lentil. In addition, significant differences were observed in the Susceptibility Index of the two food legume hosts showing chickpea seeds as moderately susceptible to *C. maculatus* attacks while, lentil seeds were resistant. *C. maculatus* caused large reductions in seed germination (78% chickpea and 33% lentil for highest infestation level 80%) and seeds weight (45% for chickpea against 8% for lentil after 6 months of storage) of both hosts; the infestation levels and the weight losses were significantly different in the storage periods. Overall, this study provides reasons for farmers and traders to make a decision to take a control action against *C. maculatus* during storage. Moreover, this work pointed out the variability of economic injury levels with host legumes. [Haouel-Hamdi, S., Titouhi, F., Boushih, E., Dhraief, M.Z., Amri, M., and Mediouni-Ben Jemâa, J. (Tunisia), Tunisian Journal of Plant Protection 12: 67-81, 2017].

Postgraduate Arab Students Activities (Master and Doctorate Thesis)

Introductory Studies of Biological and Molecular Characters of Codling Moth *Cydia pomonella* L. on Two Hosts Apple and Walnut and its Parasitoids in Lattakia Governorate. This study was performed during 2011-2016 in two different regions in height above sea level, and in many orchards of apple and walnut in Lattakia Governorate. The results showed that the codling moth has two generations in Eramo region on its two hosts (apple & walnut), and has 3-4 generations in Bushraghi region on the same hosts. And the results showed the difference in the time of emergence of adults and in development of different stages of insect in studied regions according to year and the accumulative temperatures (degree-days) in each region. Also, the results showed that the development of codling moth on apple is faster than on walnut. By this study we recorded 14 species of parasitoids on codling moth, which its parasite on different stages of *C. pomonella*. on 5 constant temperatures (15, 20, 25, 30, 35) c˚, under laboratory condition on artificial diet. The results showed that the survival curve lx showed as progressive, while life expectancy ex has showed a steady decline with advancing age. By this study the molecular description of Codling moth on both apple and walnut in Eramo and Bushraghi in Lattakia Governorate, the dendogram showed that, the studded characters of *C. pomonella* separated by both of region and host. **[Shadi Ibrahim Alhaj, University of Damascus, Faculty of Agriculture, Plant Protection (Syria). (PhD, 2017)]**

Inhbition of Fungi and Aflatoxin B1 in Wheat by Local Isolate of *Lactobacillus spp.* Faleh Mahdi Sale, Food Science, Agricultural College, University of Basrah.(**PhD, 2017)].**

Effect of Bioinsecticides on Some Natural Enemies Associated with Insect Pests. The unconscious use of bioinsecticides (Dipel 2x, Radiant) and conventional insecticides (Proclaim, Aphox and Coragen), commonly used in greenhouses and potato fields to manage a wide range of insect pests, may cause effects on the natural enemies that associated with *Phthorimaea operculella Zeller*, including *Orius albidipennis* and entomopathogenic nematodes (EPNs) (*Heterorhabditis bacteriophora* BA1, *Steinernema carpocapsae* BA2 and *Steinernema feltiae* SF). *P. operculella* and their natural enemies may be adversely affected by tested insecticides when they feed on pollen, nectar or parts of plant tissues contaminated with the active ingredient; consumption the active ingredient of insecticides through the infected host insects; and contact with insecticide. On the other hand, host insect quality may be unacceptable for *O. albidipennis* or EPNs to laying eggs. Further, the accumulative impact of insecticides could be extended to the next generations by the female which exposed to a lethal or a sublethal concentration of the insecticides active ingredient. The obtained data indicated that Proclaim and Coragen were the most insecticides negatively affected on *O. albidipennis* and EPNs at all tested concentrations. However, present study served out some issues that require further consideration, such as; the influence of testing insecticides at different concentrations on studying natural enemy survival, studied different biological properties (developmental period, longevity and reproductive capacity) of the *O. albidipennis* which exposed before to insecticides inform of nymphal (1^{st}, 3^{rd},and 5^{th} instars) and adult stages. Besides, the data clarified the relationship of the insecticide- treated EPNs virulence and the mortality percentage of *Galleria mellonella* (full grown larvae) and also on the several stages of *P. operculella* (full grown larvae, pre-pupal and pupal stage). Thus, determined which insecticides accumulate its impact on the reproductive capacity of the first and second generations of insecticide- treated EPNs. Moreover, conducted the same trials with the first generation of insecticide- treated EPNs under laboratory conditions. As such, there is a dire need to assess the virulence ability of EPNs when expose to the tested insecticides outdoor, therefore, this study interested to test the virulence of insecticide- treated EPNs at field rates against the pupal stage of *P. operculella* under semi-field conditions. Data indicated that untreated (control) *S. carpocapsae* BA2 recorded the greatest percentages of mortality (100%). At all, EPNs were more compatible with the tested insecticides than *O. albidipennis* at all tested concentrations.[**Dina Atwa Hussein Ahmed, Agricultural Sciences Collage, Suez Canal University Plant Protection, Egypt** .(**PhD, 2017)].**

Non-chemical Control of the Cotton Bollworms in Cotton Fields in Assuit Governorate, Northern Upper Egypt. Cotton, *Gossypium barbadence* L., known as "white gold", is still considered one of the most important economical crops in Egypt. The low yield of cotton is caused by many factors, but the most serious ones are mainly related to the damage in green bolls caused by the cotton bollworms; the pink bollworm (PBW),

Pectinophora gossypiella (Saunders) and the spiny bollworm (SBW), *Earias insulana* (Boisd.). The main method for controlling the bollworms is still by using chemical pesticides. Therefore, there is a mounting need to develop alternate, non-chemical tools, economical and environmentally friendly methods to suppress such pest's infestation to cotton. In this study, the highest captured rates of (PBW& SBW) were recorded in September and October, which coincided with the highest numbers of green bolls. The plant age was the most important factor affecting attraction of both pests and alone was responsible for more than 50% of the variability of the populations, followed by the weather parameters. The use of pheromone trap data is vital for early warning of the population incidence, but it is not sufficient to rely on control program without inspection of green bolls and determine the infestation level. Using only one application of mating disruption technique (300 PB-Rope) early during the flowering growth stage was sufficient to maintain the moth catches and infestation % in green bolls at the lowest level as compared to the untreated area; subsequently farmers don't need to apply insecticides to suppress the infestation or to control other pests. This study is considered the first recent trial in the cotton fields at Assuit Governorate, Upper Egypt, since 1992. In addition, data proved that different rates of releases the parasitoid, *Trichogrammatoidea bactrae* (one to four releases) at the two different application dates (50% flowering and boll formation cotton plant growth stages) gave a significant reduction in % of infestation in green bolls with both pests as compared to control in the two cotton seasons. Furthermore, releasing of this parasitoid, 4 times early during the flowering stage, is recommended based on the obtained promising results. This is the first field trial of releasing this parasitoid species in the cotton fields at Assuit Governorate, Upper Egypt. Under laboratory conditions, this parasitoid was able to parasitize eggs of different host species but with different rates. Moreover, the host eggs of *P. gossypiella* and *Sitotroga cerealella* were the most preferable ones. The present study described for the first time the diversity, external morphology and ultrastructure of sensible distributed in different parts (antennae, compound eyes and wings) of both sexes in relation to rearing on different egg hosts, using scanning electron microscopy (SEM) in Assuit University. These detailed results will provide necessary background information of host location mechanisms and olfaction of the egg-parasitoid, *T. bactrae* in response to different hosts; moreover, to understand the behavior of this parasitic species in seeking and host finding particularly by females. **[Hend Omar Mohamed Sayed, (Egypt**), **Zoology Department, Faculty of Science, Assuit University, Egypt,(PhD, 2017)].**

A Study of Rose Leaf Spot and their Chemical and Biological Control. The survey results of Rose leaf spot showed high incidence of the disease in all nurseries in basrah as disease severity reach %21.4-62.3 Result also showed that *Diplocarpon rosae* and *Pestalosia macrotrich* were isolated from Rose infected with leaf spot. pot experiment revealed that fungicide Dazim and Revos-Top and the bioagent *Chaetomium globosum* and *Psedomonas fluorescens* reduce disease severity of Rose leaf spot**.[Seren Naser Khalel, , Plant Protection Department /College of Agriculture University of Basrah-Iraq, (MSc, 2017)].**

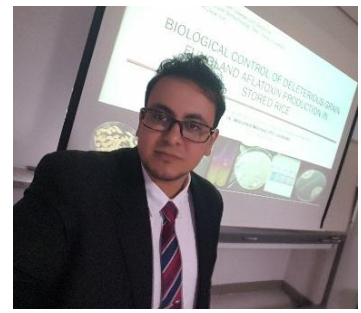
Evaluation of *Trichoderma viride* and Organic Fertilizer in the Control of Fusarium wilt and Leaf Spot of Tomato Plants. [Zahra Abdullatif Jasim, Department of Plant Protection, College of Agriculture, University of Basrah-Iraq, (**MSc, 2017)**].

Effect of Host Plants, and Microbial Biopesticides on Development and Population Parameters of the Tomato Leaf Miner, *Tuta absoluta* (Lepidoptera: Gelechiidae). The tomato leaf miner, *Tuta absoluta* (Meyrick) (Lepidoptera :Gelechiidae) is an important pest that feeds on many economically important solanaceous crops. In this study, the effect of three solanaceous plants (tomato, potato and eggplant) on the oviposition behavior, development and the life table parameters of the tomato leaf-miner were investigated. Tomato was the most preferable host plant for oviposition and most suitable host for development and survival. The tomato plant had positive effects on the capacity of population increase (higher R_0 and r with lower T). The egg incubation, larval and pupal durations, oviposition periods, adult longevity and fecundity of *T. absoluta* on the three host plants were also calculated. The results showed significant differences between tomato and the two other host plants while no significant difference was found between potato and eggplant. The tomato leaf miner, *T. absoluta* 2^{nd} larval instar was exposed for one day to LC_{50} of *Bacillus thuringiensis* (Berliner) var. *kurstaki* or *Beauveria bassiana* (Balsamo) incorporated into tomato foliage. Surviving larvae were transferred into untreated foliage, in which biological and population parameters were measured. Treated larvae had a lengthy development period while non-treated larvae had shorter development period. The highest survivorship (l_x) of adults was obtained with the non-treated larvae while the lowest survivorship was obtained with *B. thuringiensis*-treated larvae. The lowest age-specific fecundity (m_x) of females was obtained with individuals treated as 2^{nd} larval instar by *B. bassiana*. The intrinsic rate of increase (r) reached its maximum with non-treated individuals while this value decreased to the minimum value

with biopesticides-treated individuals. Therefore, development, survival and reproduction of treated individuals were lower than non-treated individuals were. The reproduction period and adult longevity were the shortest considering biopesticides-treated individuals. The highest and lowest net reproductive rates (R_0) were detected considering non-treated and treated individuals, respectively. The mean generation time was increased by biopesticides treated individuals. Our study provides useful data for developing management tactics depending on the changes in the population density of the pest.[**Reham Fathy Ahmed, plant protection Department /College of Science University of Cairo-Egypt. (MSc, 2017)].**

❖ Postgraduate Arab Students Activities Abroad

Arab Society for Plant Protection congratulates Dr. Mohamed Mannaa, the Fresh Graduate and Distinguished Scientist for his Defense as well as Published 9 Articles in high Ranked Journals. On November 30, 2017, Mohamed Mannaa (Egyptian) has defended his PhD thesis in Biosystems and Biotechnology Department., at Korea University. The committee members have approved the PhD degree based on the thesis examination and the discussion conducted during the defense. The PhD thesis work was aiming at providing an eco-friendly solution to the problem of mycotoxigenic fungi and aflatoxin contamination on stored rice grains. The thesis work has contributed to further understanding to the interactions among microbial and fungal populations on stored rice grains and on the possible utilization of rice-derived bacterial strains for management of the deleterious fungal species on the grains. One of the main novel findings in the work was the illustration of the bacterial ability to biodegrade pure Aflatoxin B1 and its possible utilization for bacterial growth. More significantly, it was reported for the first time that volatile organic compounds produced by one of the selected strains has the ability to suppress Aflatoxin B1 as well as the producing fungal growth on artificial media and on stored rice grains. These volatile compounds were chemically identified and it is believed that such finding can have significant impact on management of aflatoxins levels and fungal growth on stored grains.During the period of PhD work, Dr. Mannaa has successfully published 9 research articles in prestigious indexed scientific journals and has submitted another 2 article this month for revision and publication. In 2015, Mannaa rewarded a certificate of excellence as the best conference paper submitted in the annual meeting of the Korean Society of Plant Pathology.[**Mohamed Mannaa (PhD student ,Egypt-Korea),2017].**



1- **Microbe-mediated control of *Aspergillus flavus* in stored rice grains with a focus on aflatoxin inhibition and biodegradation. [**Mohamed Mannaa, Ji Yeon. Oh & Ki Deok Kim. Annals of Applied Biology ISSN 0003-4746.2017].

2- **Microbe-Mediated Control of Mycotoxigenic Grain Fungi in Stored Rice with Focus on Aflatoxin Biodegradation and Biosynthesis Inhibition**. [Mohamed Mannaa and Ki Deok Kim, Mycobiology, 44(2): 67-78. 2016]. http://dx.doi.org/10.5941/MYCO.2016.44.2.67

3- **Biocontrol Activity of Volatile-Producing *Bacillus megaterium* and *Pseudomonas protegens* against *Aspergillus flavus* and Aflatoxin Production on Stored Rice Grains.** [Mohamed Mannaa Ji Yeon Oh and Ki Deok Kim.Mycobiology,45(3):213-219, 2017].https://doi.org/10.5941/MYCO.2017.45.3.213

4- **Draft Genome Sequence of a Biocontrol Rhizobacterium, *Chryseobacterium kwangjuense* Strain KJ1R5, Isolated from Pepper (*Capsicum annuum*). [**Jin-Ju Jeong, Hongjae Park, Byeong Hyeok Park, Mohamed Mannaa, Mee Kyung Sang, In-Geol Choi,b Ki Deok Kima, Volume 4 Issue 2 e00301-16,2016, Genome Announcements]

5- **Draft Genome Sequences of *Chryseobacterium artocarpi* UTM-3T and *Chryseobacterium contaminans* C26T, Isolated from Rhizospheres, and *Chryseobacterium arthrosphaerae* CC-VM-7T, Isolated from the Feces of a Pill Millipede. [**Jin-Ju Jeong, Byeonghyeok Park, Ji Yeon Oh, Mohamed

Mannaa, Yoo Jun Kim, Jeum Kyu Hong, In-Geol Choi, Ki Deok Kim**,** September/October 2016 Volume 4 Issue 5 e01168-16 Genome Announcements]

6- **First report of *Aspergillus awamori* as a fungal pathogen of garlic (Allium sativum L.).** [Ji Yeon Oh, Mohamed Mannaa , Gyung Deok Han , Se-Chul Chun , Ki Deok Kim, Crop Protection 85 (2016) 65e70]

7- **First Report of Dry Rot of Sweetpotato (*Ipomoea batatas*) Caused by *Diaporthe batatas* in Korea. [**Ye Ji Lee, Mohamed Mannaa, and Jin-J. Jeong, http://dx.doi.org/10.1094/PDIS-02-16-0249-PDN ,2016]

8- **Control strategies for deleterious grain fungi and mycotoxin production from preharvest to postharvest stages of cereal crops: A Review**. [Mohamed Mannaa & Ki Deok Kim. Life Science and Natural Resources Research 25:2017]

9- **Influence of temperature and water Activity on deleterious fungi and mycotoxin production during grain storage** Mycobiology. Mohamed Mannaa & Ki Deok Kim. Mycobiology 45: (4) 2017].

10- **Biocontrol activity of rice-derived antagonistic bacterial strains against mycotoxigenic *Aspergillus* and *Penicillium* spp. on stored rice grains. [**Mohamed Mannaa and Ki Deok Kim**]. Manuscripts in preparation.**

11- **Effects of temperature and relative humidity on *Aspergillus* and *Penicillium* spp. and biocontrol activity of *Pseudomonas protegens* AS15 to *Aspergillus flavus* and aflatoxins production in stored rice grains. [**Mohamed Mannaa and Ki Deok Kim**]. Manuscripts in preparation**

Microbe-mediated Control of *Aspergillus flavus* in Stored Rice Grains with a Focus on Aflatoxin Inhibition and Biodegradation. Biological control of mycotoxigenic fungi using antagonistic microbes is a promising alternative to agricultural chemicals for postharvest storage. In this study, we evaluated rice-derived bacterial strains to identify biocontrol agents to inhibit *Aspergillus flavus* in stored rice grains. Consequently, we obtained three potential biocontrol strains (*Microbacterium testaceum* KU313, *Bacillus megaterium* KU143 and *Pseudomonas protegens* AS15) from 26 tested strains that were prescreened from the 460 strains isolated from rice grains. The three selected strains proved to be effective biocontrol agents showing antifungal activity against *A. flavus* and good colonisation ability on rice grains, along with inhibition of the fungal growth and aflatoxin production. In particular, *P. protegens* AS15 greatly inhibited the aflatoxins produced by *A. flavus* on rice grains to 8.68 (percent aflatoxin reduction relative to control=82.9%) and 18.05 (68.3%) ng g−1 dry weight of rice grains, compared with the 50.89 and 56.97 ng g−1 dry weight of rice grains of the $MgSO_4$ control at 1 and 2 weeks after inoculation, respectively. In addition, strain AS15 had a significant ability to not only degrade aflatoxin B_1 (the most harmful aflatoxin), but also utilise the toxin for bacterial growth in a nutrient-deficient medium. Therefore, the selected bacterial strains could be environmentally sound alternatives for the management of *A. flavus* and aflatoxin production by reducing the fungal damage to stored rice grains. This would also reduce the human and animal health hazards associated with the consumption of fungus-contaminated rice grains. To our knowledge, this is the first report of the potential of the bacterial species *M. testaceum* and *P. protegens* as biocontrol agents for controlling aflatoxigenic *A. flavus* on stored rice grains. **[Mohamed Mannaa (PhD student, Egypt-Korea), J.Y. Oh & K.D. Kim . Annals of Applied Biology ISSN 0003-4746, 2017].**

Biocontrol Activity of Volatile-Producing *Bacillus megaterium* and *Pseudomonas protegens* against *Aspergillus flavus* and Aflatoxin Production on Stored Rice Grains. In our previous study, three bacterial strains, *Bacillus megaterium* KU143, *Microbacterium testaceum* KU313, and *Pseudomonas protegens* AS15, were selected as effective biocontrol agents against *Aspergillus flavus* on stored rice grains. In this study, we evaluated the inhibitory effects of the volatiles produced by the strains on *A. flavus* growth and aflatoxin production on stored rice grains. The three strains significantly reduced mycelial growth of *A. flavus* in dual-culture assays compared with the negative control strain, *Sphingomonas aquatilis* KU408, and an untreated control. Of these tested strains, volatiles produced by *B. megaterium* KU143 and *P. protegens* AS15 markedly inhibited mycelial growth, sporulation, and conidial germination of *A. flavus* on agar medium and suppressed the fungal populations in rice grains. Moreover, volatiles produced by these two strains significantly reduced aflatoxin production in the rice grains by *A. flavus*. To our knowledge, this is the first report of the suppression of *A. flavus* aflatoxin production in

rice grains using *B. megaterium* and *P. protegens* volatiles.[**Mohamed Mannaa (PhD student ,Egypt-Korea), Ji Yeon Oh and Ki Deok Kim.Mycobiology , 45(3): 213-219, 2017]**.https://doi.org/10.5941/MYCO.2017.45.3.213

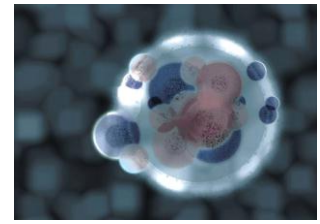
Biotype Composition of Wheat Curl Mite Populations in the U.S. Great Plains. The wheat curl mite, *Aceria tosichella* Keifer, is the most distractive arthropod pest of the bread wheat that has significant impact on yield reduction. Moreover, WCM is the only vector for the most important three viruses in the Great Plains. To date, plant resistant approach is the only sufficient method to control the WCM-viruses complex, thus it is important to elucidate the population genetic structures of WCM. Previous studies found two genetically distinct lineages of WCM. In this study, DNA was extracted from individual mite from 38 different populations in six states in central USA by using internal transcribed spacer 1 (ITS1) to characterize the WCM biotypes composition and model the spatio-temporal dynamics in prevalence of WCM biotypes 1 and 2. The results reflect that the percentage of biotype 1 and 2 is varied depend on the location. And the higher amount of cropland and grassland within a 5000m as well as the higher amount of the mean monthly precipitation during the month prior to sample, may reduce the prevalence of biotype 1. [Luaay Khalaf (**PhD Candidate- Iraq-USA)** and C. Michael Smith ,Department of Entomology, Kansas State University, 1603 Old Claflin Place, Manhattan, KS 66506, USA , luaaykahtan@gmail.com].

Identification of the CaMV Gene that Overcomes Resistance in Arabidopsis Thaliana Ecotype Enkheim (En-2). Arabidopsis thaliana ecotype En-2 is resistant to Cauliflower mosaic virus (CaMV) by preventing the systemic spread of most of its strains such as W260. However, the CaMV strain NY8153 overcomes this resistance. NY8153 infects En-2 plants by producing small chlorotic local lesions on the inoculated leaves 4-7 days after inoculation depending on the environmental conditions. Systemic symptoms of stunting, mosaic and new leaves deformation developed 11-14 days after inoculation, depending on the environmental conditions as well. In contrast to previous studies, we found out that W260 infects En-2 systemically with 5-10 days delay compared to NY8153. W260 systemic symptoms of mosaic and new leaves deformation developed 17-22 days after inoculation. It causes no stunting to En-2 plants. To identify which gene of NY8153 is responsible for overcoming the En-2 resistance, we have made several recombinant genomes constructed between W260 strain and NY8153 strain of CaMV using gene swapping between W260 and NY8153 strains of CaMV. Exchanging gene six, six and one together and gene one between W260 and NY8153 showed various roles for those genes. By switching gene I, we were able to convert the susceptibility of En-2 to CaMV strains. This suggests that gene I protein is responsible for overcoming En-2 ecotype resistance. Gene one is also responsible for W260 breaking resistance in En-2 with a significant delay comparing to NY8153. We investigated if there is any mutation by sequencing gene one and gene six of W260 and found none. We are working on identifying the source of this resistance breakage in the wild type CaMV. [**Mustafa Adhab (PhD Candidate- Iraq-USA), University of Missouri- Columbia, 2017].**

Evaluation of Stable Isotope 13C6-glucose on Volatile Organic Compounds in Different Stages of Mediterranean Fruit Fly (Medfly) *Ceratitis Capitata* (Diptera: Tephritidae). The Mediterranean fruit fly (Medfly) *Ceratitis capitata* (Diptera: Tephidae), as most of the Tephritidae species, is a pest of great economic importance around the world. For Integrated Pest Management (IPM) and biological pest management purposes, this research will investigate characterization of the broadest possible range of volatile organic compounds and the possible changing trends of volatile biological emissions during development stages of insect. During the last years, many types of research have been done to understand chemical communications between pest-pest interactions and about the insect responses to specific volatile organic compounds. An early comparison of the VOCs emitted from larvae, pupae and adult was performed. Our research focuses on the comparison of volatile compounds emitted from a different stage of Medfly using stable isotope 13C6-glucose. Gas Chromatography (GC) technique coupled with Flame Ionization Detection (FID) and gas chromatography with mass spectrometry (GC-MS) for identification of VOCs was employed. Head Space-Solid Phase Micro Extraction HSSPME method with Three-phase fiber 50/30 µm divinylbenzene/carboxen / polydimethylsiloxane (DVB/CAR/PDMS) was used. The results showed that there are different chemicals emitted in a different stage of Medfly (Larvae, pupae, and adults M/F) especially in the adult stage. GC-MS detected 27 compounds from larvae, 23 compounds from pupae and 29 compounds from adults. These different VOCs emitted in different stages of

Medfly were clearly displayed, and a broad range of emitted volatile compounds was successfully described. The characterization of release patterns could be useful tool for the selection of compounds and for further investigated in biological studies to understand of the key semi-chemicals involved in medfly behavior.**[Hasan AL-Khshemawee (PhD Candidate ,Iraq-Australia), Manjree Agarwal and Yonglin Ren, Entomology, Ornithology & Herpetology: 6 :2 ,1000195,2017].**

Detection of Mediterranean Fruit Fly Larvae *Ceratitis capitata* (Diptera: Tephidae) in Different Types of Fruit by HS-SPME GC-MS Method. Timely detection of Mediterranean fruit fly (Medfly) is very important so that eradication action can be taken on time. The larvae stage of this insect is the most dangerous stage as it is within the pulp of the fruit, making it hard to detect by visual inspection. In most countries at ports of entry the inspector check a small sample of fruit by visual inspection or by cutting the produce and searching for fungus and pests. This paper will investigate a quick, reliable and sensitive method to determine the presence of fruit flies. Our research focuses on developing the technology for detecting hidden infestations by using the Head Space-Soild Phase Micro Extraction (HS-SPME) method coupled with Gas Chromatography-Mass Spectrocopy (GC-MS) technique. Five different types of fruit were infested with an early stage of Medfly *Ceratitis capitata* Wiedemann (Diptera: Tephidae). We investigated to detect the differences in volatile organic compounds (VOC's) between infested and noninfested fruits by using HS-SPME with (GC-MS). The results indicated that for few chemicals no significant differences between infested and non-infested fruit could be seen, especially in the fruits with first instar. However, in case of third instar larvae infested fruits significant differences in the chemicals can be seen as compare to non-infested fruits and other instar infestations. These chemicals include ethyl (Z)-2 butenoate, 2-heptanone, anisole, β-cis-ocimene, 1,3,7-nonatriene,4,8-dimethy-,ethyl octyate, isoamyl caproate and 1β,4βh,10βhguaia- 5,11-diene, in apple. Ethyl (Z)-2-butenoate, (+)-2-bornanone, (-)-transisopiperitenol, methyl caprate, caryophyllene and farnesene in orange. Butanoic acid, 3-methyl-, 2-methylbutul acetate, sabinene, β -myrcene, octanoic acid, methyl ester, dihydrocarvone, (-)-trans-isopiperitenol and ethyl laurate in mandarin. Butyl 2-methylbutanoate, terpinen-4-ol, P-menth-8-en-2-one, E-, (3E, 7E)-4, 8, 12-trimethyltrideca-1, 3, 7, 11-tetraene and dodecanoic acid, ethyl ester in lemon. Decane, 3-methyl-, p-menth-1,4(8)-diene, 1-undecene and α-cubebene in avocado. Thus, the VOC's method could provide a possible tool for detecting tephritid larvae and this method could be adopted by industries importing and exporting fruit**.[Hasan Al-Khshemawee, (PhD Candidate ,Iraq-Australia), Manjree Agarwal, Xin Du, Yonglin Ren, Journal of Biosciences and Medicines, 5,3,2017].** http://www.scirp.org/journal/jbm/



Optimization and Validation for Determination of Volatile Organic Compounds from Mediterranean Fruit Fly (Medfly) *Ceratitis capitata* (Diptera: Tephritidae) by Using HS-SPME-GC-FID/MS. Background and Objective: The Mediterranean fruit fly (Medfly) *Ceratitis capitata* (Diptera: Tephritidae), as most of the *Tephritidae* species, is a pest of great economic importance around the world. Volatile organic compounds (VOC) emitted by *Ceratitis capitata* (C.capitata) at different life stages (larve, pupae and adults) can help us to understand the chemicals they produce when interacting. This study almed to use GC—MS technique to determine the optimal method for accurate, rapid and cost-effective of extraction of VOC from different life stages of *C.capitata*. **Methodology:** This study used HS- SPME fibre coupled with flame ionization detection (FID) and gas chromatography with mass spectrometry (GC-MS) to determine optimal method for accurate, rapid and cost-effective of extraction of VOC from different life stages of *C.capitata*. Qualitative Analysis software was use to analyse retention times and peak areas, data were then analyzed by using SPSS. **Results:** Results indicated that a 4 h extraction time using 20 insects/ sample was optimal for the detection of VOC from all life stages of *C.capitata*. **Conslusion:** For saving time, 4 h as extraction time was selected. This study provide that different stage of Medfly has specific VOCs, which in turn explain the feasibility of this method as mean of identifying stages of Medfly**.[Hasan AL-Khshemawee, (PhD Candidate ,Iraq-Australia), Manjree Agarwa and YongLin Ren ,Journal of Biological Sciences, 17(8): 347-352,2017]. DOI: 10.3923/jbs.2017.347.352**

Dr. Samer Habash , Jordanian Scientist Specialized in Plant Nematology. He started his bachelor at the University of Jordan in 2003. In 2007, he graduated and started his master program with a scholarship from Agrimatco (Agricultural Materials Company) at the same university. During his study, Dr. Habash was involved in various activities as a research and teaching assistant including nematode related research projects and teaching in the practical courses of mycology, virology, bacteriology and Nematology. In 2010, he successfully defended his master thesis titled: Effect of calphos, magphos and phosphorus fertilizers on root knot nematodes *Meloidogyne javanica* and *M. incognita* under the supervision of Dr. Luma Albanna. After graduation between the years 2010 and 2012, he worked in the University of Jordan as a research assistant on the project: **Toxicity of Jordanian zeolitic nano tuff and other engineered nanoparticles to the nematode *Caenorhabditis elegans***, under the supervision of Dr. Luma Albanna and Dr. Nidaa Salem.

At the end of the year 2012, he pursued his scientific journey in Germany after he has been selected by DAAD committee as successful candidate for a full PhD scholarship at the University of Bonn in the lab of Professor Florian Grundler (Agriculture faculty, INRES). His Dissertation title is **Identification and characterization of effector proteins of the beet cyst nematode *Heterodera schachtii***

The recent publications out of his research activities are:

1. *Heterodera schachtii* Tyrosinase-like protein - a novel nematode effector modulating plant hormone homeostasis. Habash SS, Radakovic ZS, Vankova R, Siddique S, Dobrev P, Gleason C, Grundler FMW, Elashry N. Scientific Reports 2017, 7:6874.
2. Identification and characterization of a putative protein disulfide isomerase (HsPDI) as an alleged effector of *Heterodera schachtii*. Habash SS, Sobczak M, Siddique S, Voigt B, Elashry A, Grundler FMW. Scientific Reports 2017, 7:13536.
3. Damage-associated responses of the host contributes to defence against cyst nematodes but not root-knot nematodes. Shah SJ, Anjam MS, Anwer MA, Habash SS, Lozano-Torres JL, Grundler FMW, Siddique S. Journal of Experimental Botany 2017, doi:10.1093/jxb/erx374
4. Identification of Two *Meloidogyne hapla* Genes and an Investigation of Their Roles in the Plant-Nematode Interaction. Gleason C, Polzin F, Habash SS, Zhang L, Utermark J, Grunder FMW, Elashry A. Molecular Plant-Microbe Interactions 2017, 30(2), 101-112.
5. A parasitic nematode releases cytokinin that controls cell division and orchestrates feeding site formation in host plants. Siddique S, Radakovic ZS, De La Torre CM, Chronis D, Novak O, Ramireddy E, Holbein J, Matera C, Hütten M, Gutbrod P, Anjam MS, Rozanska E, Habash S, Elashry A, Sobczak M, Kakimoto T, Strnad M, Schmülling T, Mitchum MG, Grundler FMW. PNAS 2015. 112 (41):12669-12674.

Currently, Dr. Habash is a part of Professor Grundler team as a Post-doctoral fellow at the University of Bonn as a part of the project titled (**Combinatorial creation of structural diversity for novel high-value compounds CombiCom**). samer@uni-bonn.de, habash.samer@yahoo.com

THESIS ABSTRACTS OF ARAB AND NEAR EAST MASTER STUDENTS GRADUATED FROM MEDITERRANEAN AGRONOMIC INSTITUTE OF BARI (IAMB) 2017

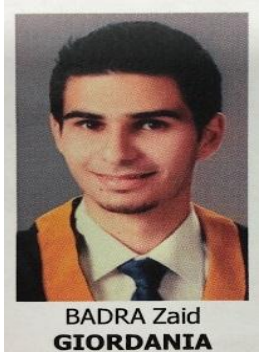
Development of Real Time Loop-Mediated Isothermal Amplification Assay for the Detection of *Verticillium dahliae* in Plant Material as Compared with Real time PCR and Conventional PCR.

The use of pathogen-free planting material is a key control measure for the efficient management of Verticillium wilt caused by the soil born pathogen *Verticillium dahliae,* in order to prevent the spread of the disease and the introduction of the pathogen into disease-free soils. Phytosanitary certification of plant propagative material depends on the availability of specific and sensitive diagnostic tools. Loop-mediated isothermal amplification (LAMP) technique emerged as one of the simplest, fast, and accurate in diagnosing plant pathogens. The main aim of this work was the development of LAMP protocol, for on-site real time detection, of *V. dahliae*, in host plants. The use of infected plant sap as a template in LAMP reaction, amplified before the DNA sample extracted from the same infected plant stem samples. Furthermore, a comparison of LAMP and real

time PCR demonstrated that LAMP is better than the real-time PCR protocol used, in terms of detecting a higher percentage of positive results from artificially infected plants with *V. dahliae*, moreover, LAMP was able to detect the pathogen starting from 7 days after the inoculation; which makes implementation of this technique suitable for early detection of *V. dahliae* and appropriate for certification schemes of pathogen-free planting material. [**AKASSOU Imane,(Morocco) MSc,, Sustainable IPM Technologies for Mediterranean Fruit and Vegetable Crops, Mediterranean Agronomic Institute of Bari,2017]** http://www.iamb.it

Assessment of Real Time Loop- Mediated Isothermal Amplification (LAMP) Assay for the Detection of *Ralstonia solanacearum*. *Ralstonia solanacearum* is the causal agent of bacterial wilt disease and considered as one of the most economic destructive plant pathogenic bacterium. *R. solanacearum* enlisted on most of quarantine plant pathogens worldwide. Therefore, rapid and accurate detection methods are significant factor to prevent the entrance and reduce the risk of spread of the bacterium in healthy regions. Several serological and molecular detection methods have been developed for *R. solanacearum*. The objective of this study was to assess the sensitivity of an innovative Real time LAMP method in comparison to standard serological (IFAS) and molecular methods (conventional PCR and RT-PCR). In addition, we evaluated the efficiency of three DNA extraction protocols from different matrixes (potato extract, soil extract and irrigation water). Results showed higher analytical sensitivity of Real time LAMP method as compared to IFAS, PCR and Real time PCR. Real time LAMP seems to be more tolerant against inhibitors presented in natural matrix, with detection limit 10-fold more sensitive than PCR methods. BioSprint 15 and CTAB DNA extraction methods improve the sensitivity of RT-LAMP and PCR assays respectively. Real time LAMP is a promising technique for rapid and high sensitivity detection of *R. solanacearum* in environmental samples**. [Iman Amer Abdelhafiz (Egypt), MSc, Sustainable IPM Technologies for Mediterranean Fruit and Vegetable Crops, Mediterranean Agronomic Institute of Bari, 2017]** http://www.iamb.it

Potential and Effectiveness of Mediterranean Native Generalist Predators on the Invasive Alien Species *Halyomorpha halys* (Heteroptera, Pentatomidae).*Halyomorpha halys* (Stål) was detected in Italy in 2012 and since then it has spread rapidly, causing severe economic losses on fruits and vegetables. However, little is known about the potential predators of *H. halys* in its invaded range. Laboratory trials were conducted on six taxa of predatory or omnivorous insects to evaluate their capacity to consume eggs, 1st, 2nd instar and one predator against the adults of *H. halys*. Survival rate of control preys in predator-excluding cages was compared to predator treatment groups to determine the effect of predator presence. Findings suggest that none of the predators was able to significantly decrease the survival rate of eggs and of 1st instar nymphs, although in some cases occasional predations on the 1st instar nymphs by few predators was observed. Only the reduviid *Rhynocoris iracundus* was able to decrease significantly the survival rate of the 2nd instar nymphs and of the adult stage. Our results demonstrated that predation tests on egg masses alone may underestimate the impact of generalist predators on other *H. halys* life stages. This is the first study performed in the European and Mediterranean areas on screening ability of some native species to predate eggs and younger nymphs of *H. halys*.**[Badra Zaid (Jordan), MSc, Sustainable IPM Technologies for Mediterranean Fruit and Vegetable Crops, Mediterranean Agronomic Institute of Bari, 2017].** http://www.iamb.it



Developing Molecular Diagnostic Tools for Large Scale Detection of Vitiviruses and Study on Their Population Genetic Structure and Transmission in Grapevine. Eight sets of degenerate primers from the RdRp gene were developed for qualitative RT-PCR simultaneous detection of Grapevine vitiviruses GVA, GVB, GVD, GVE and GVF. Other species-specific primers were designed from two different genes for an accurate identification of isolates to test their genetic variability. The first were developed from the RdRp gene, whereas the second from different sequences of the entire CP of several isolates that are present in the gene bank. Moreover, trials of transmission of GVD, GVE and GVF were performed under screen house conditions to test their transmissibility by *Planococcus ficus*. The study has shown that the developed RdRp primers were able to detect up to 100% of the positive control samples, proving their reliability in preliminary first screening of

vitiviruses in general. However, species-specific primers from the same gene were less successful. The use of specific primers from the CP gene provided information on the high genetic variability of GVA, GVB and GVE, while GVD and GVF had the most conserved CP sequences of the isolates. They also demonstrated that the clusters obtained from the phylogenetic trees' analyses present a geographical grouping of isolates. The transmission trials resulted in the transmission of GVE by *P.ficus.* [**Hamza Chammem(Tunisia), MSc, Sustainable IPM Technologies for Mediterranean Fruit and Vegetable Crops, Mediterranean Agronomic Institute of Bari, 2017].** http://www.iamb.it

Further Investigations on the Putative Causal Agent/s of the Emerging Volkamer Lemon Disease Threatening the Citrus Industry in Egypt. Volkamer disease is an emerging serious rootstock disease appeared to affect Volkamer lemon rootstock in the Mediterranean basin when tolerant rootstocks were introduced to control citrus tristeza disease. The disease is devastating citrus grown in the Egyptian newly reclaimed land. Diseased trees are usually stunted, and scraping the bark reveals gum deposits, phloem discoloration, and stem pitting. These symptoms resemble those of cachexia on mandarin and gummy bark disease on sweet orange. The disease incidence was correlated with hot climate and transmission potency, which has drawn the attention to consider citrus viroids and/or phytoplasmas as a putative causal agent. Molecular detection and characterization of several citrus viroids were performed on previously collected samples belonging to the newly reclaimed land in Egypt. Meanwhile, a biological assay of infected material was included in this investigation. Interestingly, all the assays disclosed and confirmed the absence of phytoplasmas. Whereas, HSVd and CBCVd were the most prevalent detected viroids in the symptomatic samples. Molecular characterization and biological indexing confirmed the severity of both viroids, indicating that the volkamer disease could be associated with single or mixed infection involving HSVd and CBCVd.[**Arafat Hanani (Palestine), MSc, Sustainable IPM Technologies for Mediterranean Fruit and Vegetable Crops, Mediterranean Agronomic Institute of Bari, 2017].** http://www.iamb.it

Innovative Postharvest Management to Control Citrus Sour Rot . Sour rot of citrus fruit, caused by *Galactomyces geotrichum*, can cause important economic losses for postharvest citrus industry. Nowadays, no efficient control method against this pathogen is available. This work aims to evaluate the efficacy of some innovative control methods as ozone (O_3), electrolyzed water (EW), potassium sorbate (KS) and passive refrigeration system (PRS). *G. geotrichum* inoculated and non-inoculated citrus fruit were used to evaluate disease incidence, severity, pathogen sporulation, colony forming units (CFU), fruit hardness and sugar content. Results showed that 0.3 µl L^{-1} of O_3 reduce disease incidence, severity and sporulation. Washing citrus with EW eliminates *G. geotrichum* population and reduce disease severity under PRS. Moreover, mandarin fruit stored under PRS, EW +O_3, EW+KS+O_3 and KS display a better quality and a significant control of sour rot as compared to the control. In addition, treating 'Marzaiolo mandarino' fruit with KS under PRS can reduce disease severity, incidence, sporulation and CFU of *G. geotrichum* by 82.02%, 57.89%, 94.12% and 90.69% respectively, without affecting the quality of the fruit stored. These results show that it is possible to control sour rot without affecting the quality of citrus fruit by low cost and easy to use strategies**.[Nihed Jerbi (Tunisia), MSc, Sustainable IPM Technologies for Mediterranean Fruit and Vegetable Crops, Mediterranean Agronomic Institute of Bari, 2017].** http://www.iamb.it

Molecular, Biological and Epidemiological Analyses of a Novel Caulimo-like virus infecting olive (Olea europaea L.). The full-length genome sequence of a novel olive-infecting virus, for which the provisional name Olive latent virus 4 (OLV-4) is proposed, was determined by Next-generation and conventional sequencing. Its genome comprises 8940 nt, covering four open reading frames (ORFs), *i.e.* the putative coat protein (CP), movement protein (MP), Reverse-transcriptase (RT) and Translational transactivator (TAV) proteins, with an estimated molecular weight of 52.7, 51.5, 77.3 and 45 kDa, respectively. All genes shared the highest identity (ca. 35%) with members of *Solendovirus* and *Cavemovirus* genera of the family *Caulimoviridae*. The phylogenetic tree constructed with the amino acids of RT\RNase H domains sequences allocated OLV-4 close to both genera but in a single clade as a distinct species of a new putative genus. Based on PCR assays results, OLV-4 was found (i) to be prevalent in *ca.* 67.5% of olive trees, without being associated to

any apparent symptom in infected trees, (ii) to be present in the outer membrane of the exine of pollen (iii) to be carried by five different insects species and (iv) to be transmissible to progeny olive seedlings and mechanically to an herbaceous host, i.e. *Nicotiona occidentalis*.**[Sadallah Abderraouf (Algeria), MSc, Sustainable IPM Technologies for Mediterranean Fruit and Vegetable Crops, Mediterranean Agronomic Institute of Bari, 2017].** http://www.iamb.it

Isolation and Molecular Characterization of *X. fastidiosa* from Different Hosts Present in Apulia Region (Italy). .[Marko Stancic (Serbia), MSc, Sustainable IPM Technologies for Mediterranean Fruit and Vegetable Crops, Mediterranean Agronomic Institute of Bari, 2017]. http://www.iamb.it

Detection and Molecular Characterization of Phytoplasmas Affecting Pepper in the Southeast Region of Turkey. Salih Yilmaz (Turkey), MSc, Sustainable IPM Technologies for Mediterranean Fruit and Vegetable Crops, Mediterranean Agronomic Institute of Bari, 2017]. http://www.iamb.it

Development and Comparative Analysis of RT-PCR and Real-Time (TaqMan®) PCR techniques for the detection of olive viruses. Ramona Mihaela (Romania), MSc, Sustainable IPM Technologies for Mediterranean Fruit and Vegetable Crops, Mediterranean Agronomic Institute of Bari, 2017]. http://www.iamb.it

Laboratory and Field Studies on Biorational Control Strategy of Tomato Leaf Miner *Tuta absoluta* Meyrick (Lepidoptera: Gelechiidae) in Morocco. Mohamed Ghanem(Morocco), MSc, Sustainable IPM Technologies for Mediterranean Fruit and Vegetable Crops, Mediterranean Agronomic Institute of Bari, 2017]. http://www.iamb.it

❖ Some Plant Protection Activities of FAO and Other Organizations

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

Wrap up of the FAO TCP Project to strengthen its Capacity in Fruit Flies Surveillance and Management in Lebanon. The wrap up workshop of the TCP/LEB/3502 project on "Fruit Flies Surveillance and Management in Lebanon" was held in Beirut on Friday 20th of October 2017.

The project was launched in December 2014 to assist Lebanon in preparing and implementing a national programme for surveillance and management of fruit flies Lebanon, in addition, to develop the capacity of the National Plant Protection Organization, the Lebanese Agriculture Research Institute (LARI) and other partner agencies in fruit flies identification, management, eradication and enforcement of phytosanitary measures.

The project enabled an effective national coordination and partnering among all relevant Government authorities and stakeholders involved in fruit flies management and control, including, NGOs, Academia, Airport and Seaport Security, Customs, Lebanese Aviation Company, ..etc.

Around 100 national staff has been trained through the project by nine internationally recognized experts on "Fruit flies surveillance, identification, management, eradication, biotechnology aspects for identification and management of fruit flies, implementation of the relevant phytosanitary measures, phytosanitary treatments, Pest Risk Analysis, phytosanitary inspections". A Cost Benefit Analysis of Fruit Flies Management Strategies in Lebanon has been carried out at end of the project.

Around 2400 farmers have benefited from the field awareness raising seminars, in addition to awareness sessions to several stakeholders: Airport Authorities, Airline Companies, Airport Security, Fruit and Vegetable Traders, ..etc.

The project succeed to create a unique cooperation between the Ministry of Agriculture and Airport and Aviation Authorities that resulted in production of warning video could be played in the airplanes traveling to and from Lebanon, and warning signs and monitors permanently placed in different places at the Beirut Airport to help in eliminating the risk of movement of fresh fruits through passengers.

The wrap up workshop gathered representatives of all authorities and stakeholders involved to presents the outcomes of the project, and come-up with recommendations and follow up actions for sustainable programme for monitoring and management of invasive fruit flies.

DESERT LOCUST SITUATION

Situation level: Calm

General Situation of the Desert Locust during October 2017 and Forecast until mid-December 2017 provided by the FAO Emergency Centre for Desert Locust (ECLO).

The Desert Locust situation continued to remain calm during October. Seasonal rains ended in the summer breeding areas of the Sahel in West Africa and Sudan as well as along the Indo-Pakistan border. Consequently, vegetation was drying out and locust numbers were decreasing. Small-scale breeding continued in western Mauritania but locust numbers remained low. A second generation of breeding is thought to be underway in one area on the Red Sea coast in Eritrea where good rains have fallen since May. During the forecast period, small-scale breeding will cause locust numbers to increase slightly along both sides of the Red Sea as well as in western Mauritania, which could perhaps extend to southern areas of Western Sahara.

Western Region. The situation remained calm during October. Small-scale breeding continued in western Mauritania but locust numbers remained low. Limited breeding occurred on the Tamesna Plains in northern Niger and low numbers of adults were seen in southern Algeria near the border with Mali. During the forecast period, small-scale breeding will continue in western Mauritania and is likely to extend towards the northwest and into adjacent areas of the Western Sahara in southern Morocco, causing locust numbers to increase slightly.

Central Region. The locust situation remained calm in the region during October. Vegetation dried out and no locusts were seen in the summer breeding areas of the interior in Sudan. In the winter breeding areas, a second generation of breeding may be in progress in a relatively small area on the central coast of Eritrea where hoppers were starting to gregarize and ground teams treated 2 ha. Elsewhere, ecological conditions were favourable for breeding on the Tihama coast of Yemen and were improving in Saudi Arabia and Sudan. The situation remains unclear in Yemen due to prevailing insecurity that prevents field surveys. During the forecast period, small-scale breeding is expected to occur along both sides of the Red Sea, causing locust numbers to increase slightly. Regular surveys should be undertaken, especially in Eritrea.

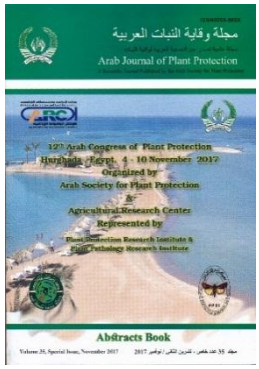
Eastern Region. The locust situation continued to remain calm in the region during October. Only a few locusts remained in the summer breeding areas of Pakistan near the border with India. No locusts were seen during regular surveys in India or on the coastal plains in southeast Iran. No significant developments are likely during the forecast period.

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.

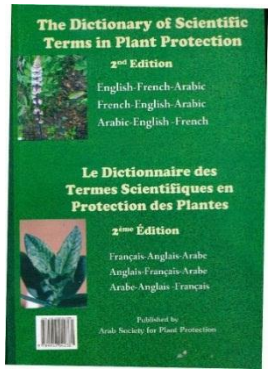
Source: The FAO Desert Locust Bulletin issued monthly in English and French by the Desert Locust Information Service, AGP Division (Rome, Italy; and Arabic version by the Commission for Controlling the Desert Locust in the Central Region (FAO Regional Office for Near East, Cairo, Egypt http://desertlocust-crc.org).

12th Arab Congress of Plant Protection.

The 12th Arab Congress of Plant Protection organized by the Arab Society of Plant Protection (ASPP) in collaboration with the Agriculture Research Center in Egypt represented by the Plant Protection Research Institute and Plant Pathology Research Institute was held during the period 5-9 November 2017 in Hurghada, Egypt. A total of 267 scientists and graduate students from Egypt, Jordan Sudan, Syria, Lebanon, Morocco, Algeria, Tunisia, Libya and Saudi Arabia participated in this event. In addition, experts from outside the region; USA, United Kingdom, Italy and Pakistan also participated in this congress. International organizations such as the Food and Agriculture Organization of the United Nations (FAO), International Center for Wheat and Maize (CIMMYT), International Center for Agricultural Research in the Dry Areas (ICARDA) and the European Plant Protection Organization (EPPO) were also represented in this meeting. The congress program included four symposia, 29 oral paper presentation sessions and two poster sessions, where 298 scientific papers in all plant protection disciplines, such as economic entomology, fungal, viral and bacterial diseases, nematodes, plant extracts, pesticides, weeds, biological control, integrated pest management and beneficial insects, were presented and discussed.



During the Congress, ASPP launched the Second Edition of "The Dictionary of Scientific Terms in Plant Protection" and put for sale at a reduced price. This dictionary in 810 pages includes 15,000 scientific terms in three languages: Arabic, English and French. This volume was the outcome of a collaborative effort of around 100 volunteer scientists representing all plant protection disciplines, who worked hard to finish this task over the past five years. During the last day of the congress, the ASPP Executive Committee decided to give a free copy of the dictionary to all congress participants. During the farewell dinner, all members of the organizing committee who contributed to the congress success were acknowledged and awarded an appreciation certificate.



ASPP president announced the names of society members who received the society "fellow" award, an honor given to society members who had a distinguished scientific record in any of the plant protection disciplines, and who served the society in different capacities during the past few decades and since its establishment. ASPP Awards and Honor Committee Chairman **Dr. Ahmad Katbeh** selected for this congress the following members: **Dr. Abdelrahman Saghir** from Lebanon, **Dr. Ibrahim Jboory** from Iraq, **Dr. Safaa Kumari** from Syria and **Dr. Ahmed Dawabah** from Egypt. ASPP president presented to the awardees the special plate prepared for this occasion.

Dr. Abdul Rahman Al Saghir: A founder member of the ASPP, researcher in the field of Weeds, published more than 200 refereed scientific papers, worked as the editor- in- chief for the Arab Journal for Plant Protection for 6 years, Chairman of the executive committee for the third Arab Congress for Plant Protection which was held at Al Ayn, United Arab emirates in 1988.

Dr. Ibrahim Al Jboory: Academics and researcher in the field of Entomology and Acarology, vice president of the ASPP 2014-2017, editor-in chief of the society newsletter 2014-present, published more than 114 scientific articles, has a national and international academics and research contributions, society supporter, editor of acaricides chapter in the book Safe Applications of Pesticides, member in the entomology and mites translation terms in the Dictionary of Scientific Terms in Plant Protection, established a world wide website on date palms and dates as well as another website for encouraging the scientists writing a scientific blogs.

Dr. Safaa Kumari: A researcher in Plant Virology published more than 130 refereed scientific papers and more than 100 abstracts in scientific meetings. She attended almost all congresses and workshops organized by the ASPP, since 1988. She is an active member of the editorial board of the Arab Journal of Plant Protection (Assistant Editor: 1996-2003; Associate Editor: 2003-present), and she participated in editing the abstracts books of the Arab Congresses of Plant

Protection. In addition, she scanned the old volumes of the AJPP and uploaded them on ASPP website. She acted as the Chairman of the Publication Committee (2004-2009) and 3 books (Nematology, Virology, Pesticides) were published by ASPP during this period; and Chairman of the Translation Committee (2010-2017) which resulted in the publication of the Dictionary of Scientific Terms in Plant Protection-2nd edition in 3 languages (2017).

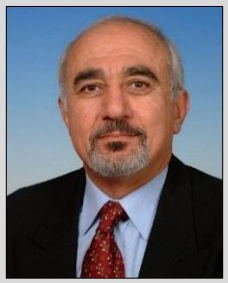
Dr.Ahmed Abdel-Samie Mohamed Dawabah: Nematologist, published more than 70 research articles in international and Arabic scientific periodical journals and more than 50 articles in international and Arabic scientific conferences. Translated into Arabic two international books; "Plant Nematode Control" edited by John Whitehead, and Plant Resistance to Parasitic Nematodes" edited by J. Star et al. Participated as an editor and author of 6 chapters in the book entitled "Plant Nematodes in the Arab Countries" and as an author of a chapter in the book entitled "Safe Applications of Pesticides". Chairman of nematodes committee of the book entitled "Terms in Plant Protection Dictionary". Member of the Publication and Translation Committees of the ASPP, member of the editorial board of the "Arab Journal of Plant Protection", and the society Newsletter.

ASPP president also awarded a special plate to the Chairman of the Congress Organizing Committee **Dr. Mortada Eissa** a special plate in recognition of his efforts, which contributed to the success of the meeting. In addition, a special certificate and a financial award was given to the top five graduate students who gave presentations during the congress; the students Iman Amer from Egypt, Hasna'a Samama from Morocco and Samya Mghandaf from Tunisia, for the best oral presentations; and Rayane Saifi from Algeria and Majdouleen Ahmad Mustafa from Sudan for the best poster presentations.

Towards the end of the ceremony, the ASPP President announced the names of the elected members of the new ASPP Executive Committee who will serve for the period 2017-2020 and is composed off:

Executive Committee of the Arab Society for Plant Protection (2017-2020)

	**President** **Dr. Ibrahim Al-Jboory** Nationality: Iraqi Specialization: Entomologist, Acarologist Current address: University of Baghdad College of Agriculture-IRAQ ijboory@gmail.com
	**Vice President** **Dr Bouzid Nasraoui** Nationality: Tunisian Specialization: Plant Pathology Current Address: National Research Agronomic Institute of Tunisia (INRAT) University of Carthage Avenue Hedi Karray, 1004 Tunis-Menzah -TUNISIA nasraouibouzid2012@gmail.com
	**Secretary-Treasure** **Dr. Mustafa Haidar** Nationality: Lebanese Specialization: Weed Control Current address: Plant Sciences Department Faculty of Agricultural and Food Sciences American University of Beirut P.O. Box 110236, Beirut -LEBANON mhaidar@aub.edu.lb

	**Member & Chairman of Publication Committee** **Dr. Safaa Kumari** Nationality: Syrian Specialization: Plant Virologist Current address: International Center for Agricultural Research in the Dry Areas (ICARDA) Terbol Station, Beqa'a, Zahle-LEBANON s.kumari@cgiar.org
	**Member & Chairman of Honour and Awards Committee** **Dr. Ahmad Katbeh Bader** Nationality: Jordanian Specialization: Insect Taxonomist Current address: Department of Plant Protection, Faculty of Agriculture, University of Jordan Amman, 11942-JORDAN Ahmadk@ju.edu.jo
	**Member & Chairman of Membership Committee** **Dr. Hassan Dahi** Nationality: Egyptian Specialization: Entomologist Current address: Agricultural Research Center - Plant Protection Research Institute 7 Nadi Elsid, St., Dokki – Giza-EGYPT hassandahi@yahoo.com
	**Member & Chairman of Translation Committee** **Dr. Houda Boureghda** Nationality: Algerian Specialization: Plant fungal disease and Biocontrol Current address: Département de Botanique Ecole Nationale Supérieure Agronomique (ENSA) El Harrach- Algiers- ALGERIA hou.boureghda@gmail.com
	**Member & Editor-in-Chief, AJPP** **Dr. Khaled Makkouk** Nationality: Lebanese Specialization: Plant Virologist Current address: National Council for Scientific Research (CNRS) Zahia Selman Street, Jnah Beirut- LEBANON khaled.makkouk@cnrs.edu.lb

2017 Arab Impact Factor for the Arab Journal of Plant Protection.

The 2017 Arab Impact Factor for the scientific journals that publishes their articles in Arabic was released on October 15, 2017. The Arab Journal of Plant protection received an impact factor of 2.50 compared to 1.69 for the previous year. The 2017 report included the evaluation of around one hundred journals, and the Arab Journal of Plant Protection had the second highest impact factor. Those who are interested to know more about the 2017 report can check the following link: http://arabimpactfactor.com/index.php. The Arab Society for Plant protection is proud of this achievement over the years. Thanks to the efforts of the scientists who publish their findings in the AJPP, to the referees who contribute significantly to improving the articles quality, and to the editorial board who is trying hard to bring the journal to the level of respected journals, regionally and globally.

GENERAL NEWS

Workshop at ICARDA on the Occasion of the "International Phytosanitary Awareness Week"

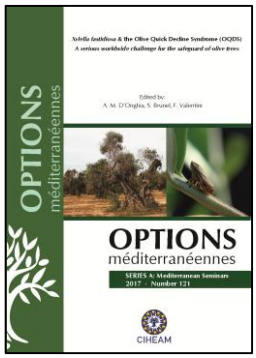
The Germplasm Health Units (GHUs) of CGIAR centers teamed up to organize the 'International Phytosanitary Awareness Week' from 23 – 27 October 2017. The ultimate aim of this event, organized under the auspice of the 'GENEBANK PLATFORM', is to increase awareness about the phytosanitary challenges and organizational responsibilities in ensuring distribution of healthy seed for food and agricultural R&D. Activities of this week included reaching out to researchers in CGIAR and national institutions to inform about the policy and procedures of international exchange of seed (germplasm) and biological materials, risks to seed health, CGIAR practices in germplasm exchange and showcase tools and technologies for seed health testing and phytosanitary controls.

The seed Health Laboratory of ICARDA, organized a one workshop on November 2nd at Terbol Station, Beqa'a Valley, Lebanon on the occasion of the "International Phytosanitary Awareness Week". Nine persons from Quarantine Department/Lebanese Ministry of Agriculture including Mr Charles Zarzour, Head of Import/Export Department at Ministry of Agriculture were joined the workshop. The workshop was opened by a welcome note and history of ICARDA by Dr Hassan Machlab, ICARDA Country Manager, Lebanon. Dr Safaa Kumari (Head of Seed Health Lab/Virologist, ICARDA) gave a presentation on "seed-health testing at ICARDA" followed by a useful discussion with ICARDA and participants on the procedures of seeds exchange and shipments documents (e.g. Phytosanitary Certificate, Import Permit) for the incoming and outgoing seeds. After a short break, participants visited ICARDA Gene Bank together with Dr Mariana Yazbek (ICARDA Gene Bank Manager, Lebanon) and Seed Health Lab with Dr Kumari.

Xylella fastidiosa & the Olive Quick Decline Syndrome (OQDS), A serious worldwide challenge for the safeguard of olive trees.

OPTIONS mediterraneennes Series A:Mediterranean Seminar 2017-number 121,CIHEAM
Edited: By A.M. D'Onghia, S. Brunel, F. Valentini
2017, Number 121.

Over the last few years, olive trees (*Olea europaea*) have seriously been threatened by the bacterium *Xylella fastidiosa*, a devastating quarantine organism which affects about than 380 host plants worldwide including crop, ornamental, forestry and natural vegetation species. In 2013, the first outbreak of X. fastidiosa was reported in Puglia (Italy). It was a serious shock for the European and Mediterranean regions since it was associated with the olive quick decline syndrome (OQDS); furthermore, it was reported to infect more than 28 plant species (except grapevine and citrus), and to be rapidly vector-transmitted by the spittlebug *Philaenus spumarius*. After the finding in Italy of the subspecies pauca strain CoDiRO, several interceptions of Xylella occurred in Europe and new outbreaks of different subspecies of the pathogen were reported in France (2015), Germany (2015) and Spain (2016). Thanks to the support of CIHEAM, FAO, IPPC and IOC for the organization of two dedicated international workshops, this book represents a unique opportunity for the main national and international stakeholders to find the most updated information on X. fastidiosa and its vectors, with a focus on the latest experience and knowledge acquired in Europe. It includes short notes on the breakthrough of research, the current legislation and other initiatives at EU, Mediterranean

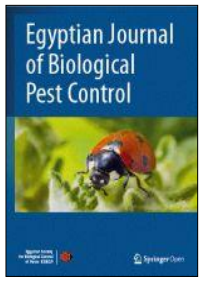


and worldwide level on the pathogen, its vector(s), host plant species, surveillance, detection and control measures. In addition, a complete list of scientific publications of the last 10 years is also provided. The information and experiences reported in this book constitute a basis to build national phytosanitary capacity, awareness-raising and advocacy campaigns to combat X. fastidiosa.

Articles: http://om.ciheam.org/option.php?IDOM=1031
Full Book click: http://om.ciheam.org/om/pdf/a121/a121.pdf

Egyptian Journal of Biological Pest Control (EJBPC) (*Abbreviation: Egypt J. Biol. Pest Control)* Silver Jubilee (1991-2016)

The Egyptian Society publishes the journal for Biological Control of Pests (ESBCP) since 1991. It is a scientific international journal, issued in four volumes annually in the field of biological and integrated pest control. The journal publishes original research papers, review articles, scientific notes and short communications in the areas of biological, non-chemical and integrated pest control. The journal has been evaluated internationally since 2008 and possesses an estimated annual IMPACT FACTOR. The CAB International Association in England publishes annually the full texts of the journal scientific papers according to its agreement with ESBCP.



The journal is listed among the specific scientific journals in the E-publisher associations; Elsevier & Thomson and Reuters & ISI & Scopus & Direct Science & Springer. Abstracts of the journal published papers, since 1991 up to 2017, are available on the journal website: www.ejbpc.com, provided with a dynamic search facility. The journal is marketed internationally through the agreements with the American publishers; ProQuest & EBSCO.

Silver jubilee (1991-2016) of the Journal

The first 25-year phase represents the success of this journal nationally and internationally. Starting July 2017, EJBPC, a new phase has been launched, as its accepted articles will be published (Online) through the collaboration with the International Publisher Springer-Nature. Therefore, for a new submission, you can register and sign up for the EJBPC article alerts at: https://ejbpc.springeropen.com/.

Biological and Applied Environmental Research (BAER)

Biological and Applied Environmental Research (BAER) is an electronic, peer reviewed and open access journal publishes, in English, original research articles, reviews, checklists, short communication and book reviews on all disciplines of biological and applied environmental sciences. The journal makes published research articles immediately available for download and share by readers, and this will ensure a wide distribution for the articles. Manuscripts submitted are critically reviewed by at least two referees selected in the field of the manuscript subject. The Editor-in-Chief is responsible for all decisions regarding publication and a decision will be made in consultation with an Associate Editor. Submissions must be original in that the article is not published or submitted for publication elsewhere. BAER is registered in the Swedish National Library, Kungliga Biblioteket (Stockholm), as indicated in the attached photo (ISSN 2002-6153). The journal is published in Gothenburg and is supervised by an editorial board of highly skilled scholars of different biological and environmental specialities. The journal is currently published biannually. Article processing charge (APC) is US $ 125 for each article paid upon completion of manuscript revision as recommended by reviewers. To view publication instructions, please visit the journal's website (www.baerj.com). For more information on article submission, please contact us at editor@baerj.com. Hope to receive your scientific contributions for submission in favour of publication in BAER, with best wishes and regards.

Worldwide Literature of Mites (Acari) on Palms (Arecaceae), a Bibliography [1912-2015] . Mites (Acari) differ in their feeding habits (phytophagous, predacious, omnivorous, scavengers, etc.) in agricultural ecosystems. Information about mites associated with palm trees worldwide is scattered. Several papers with new records or new taxa on palms have been published in the last 20 years. However, many papers on the subject were published long ago and are difficult to access. This bibliography lists more than 800 references covering

aspects of faunistic, biological and ecological works on palm mites (arranged alphabetically). It was developed to provide sources of background information for researchers interested in palm mites. The search for literature was conducted basically on various mite groups reported on palm trees. Many of the publications cited could not be seen, so cannot confirm the accuracy of those citations. Errors were noted in some of the checked citations, usually in pagination or year of publication. We hope that this bibliography will help to direct new research to fill the gaps in our knowledge of the mites associated with palm trees. Our respected readers, in this worldwide literature review, it is impossible to avoid errors. You are kindly requested to inform the authors (waleednegm@yahoo.com; chwflech@usp.br) if an error is encountered and/or a publication was missed.[Mohamed W. Negm (Egypt) Department of Plant Protection, Faculty of Agriculture, Assiut University, Assiut, Egypt https://sites.google.com/site/mitesonpalms/home

Cochineal of Cactus: High Threat on Prickly Pear in Tunisia.

The cochineal called *Dactylopius opuntiae* is one of the most important pests that affect the prickly pear known in Tunisia by the name "Hindi". This latter appellation seems somewhat unusual at first but we can understand it if we know that the prickly pear is called *Opuntia ficus-indica.* Here, it does not mean the Asian India but the Occidental India of the American Indians since the origin center of the prickly pear is the south region of the North America, from which it was carried to and sprayed in Europe from the 16th century, then toward many other regions of the world including particularly the North Africa and the Arab Mashreq. It should be noted the extreme importance of the prickly pear which can develop in the semi-arid and arid areas where it leaves for long time with the remarkable capability of resistance to drought due to their pads which store a lot of water and hence it plays an essential role in the desertification control and in the conservation of the biological diversity around it. The countryside inhabitants in many regions plant this culture as a barrier around their properties and benefit at the same time of its delicious fruit and its pads as animal feed. The fruit is also exploited in the industries of medicines, coloration and cosmetic. The cochineal of cactus is a Hemiptera, which attacks the prickly pear at the surface of the pads and fruits and generally settle as dispersed and various sized colonies, implanted at the foot of the spines. The damages are always caused by the adult females and the larvae whose bodies are oval to rounded, with dark purple color that becomes light red when crushed and this latter color is the typical carmine color of the insect. In contrast, the adult male causes no damages. The adult females and the larvae secrete filamentous white waxes that protect them as covering and allow them to move from one pad to another. The infested pads show yellowing areas which enlarge more and more leading ultimately to the fall down of attacked pads and the death of the trunk with 100% of damages when the affection is heavy. This pest exists presently in few regions of the world that are 9 countries: United States, Mexico, Australia, Ceylon, India, South Africa as well as the Palestinian Territories and Morocco since 2014 an recently Cyprus since 2016. Hence, it can be noted that the existence of the pest in Palestine and Cyprus threats the Mashreq Arab countries, whereas the arrival to Morocco of this insect is a high threat to the rest of the Maghreb countries regarding the geographical, economic and social continuity between these countries. The cochineal of cactus on the prickly pear in Morocco was firstly discovered late 2014 in the Khemis-Zmamra region and early 2015 in the Sidi Bennour region in the zone of Doukkala-Abda and these regions are situated at the south of the Casablanca city where this pest had spread on a surface of 100 km ray in two years. The control of the cochineal of cactus infesting the prickly pear is a laborious work regarding the hard penetrating in the prickly pear cultures which are usually established on marginal, rugged and very extended lands. And according the current Moroccan experience, with the support and the advising of FAO, the control is a priori mainly based on the chemical method pending the development of other biological and cultural methods and the selection of resistant or at least tolerant varieties to the pest. For this reason, Tunisian competent services of the ministry of agriculture should prepare well their capacity buildings of human, material and fund sources for this high threat because the spread of such pests and diseases occurs easily between neighboring countries and the examples are numerous as was the cases of the tomato miner, the red palm weevil, the pome fruit fire blight, etc. The issue is then very serious regarding the extreme importance of the culture of the prickly pear for a very large number of farmers and animal breeders and the dependence of subsistence resources of many countryside inhabitants on this culture which provides human food an animal feed, in addition of the possibility of its transformation and industrialization. Tunisia is considered among the first countries of the world with regard to the prickly pear culture surface which is estimated to

Symptoms caused by cochineal of cactus on pads and fruits of prickly pear

600,000 ha whose the majority exist in the arid regions of the center of Tunisia, and it is crucial to provide the maximum of effort to conserve these cultures and to protect them from all types of bioaggressors. [Dr. Bouzid Nasraoui, National Agronomic Institute of Tunisia University of Carthage, Tunis, Tunisia, September 2017]

The National Agronomic Research Institute of Tunisia (INRAT) is the oldest agronomic research institution in Tunisia, created in 1913. It works with more than 100 researchers acting in all agriculture-related fields. It encloses 7 big Research Laboratories and has 5 agricultural experimentation units. Since its creation, it has not stopped contributing to the agricultural development of Tunisia and to participate in the rise of the research in the world. Among other institutions, it was at the origin of the first works on the genetic selection of wheat in the world. It just comes to obtain the national award of the best institution of scientific research and technology 2017 in Tunisia.

Opening of Nominations for the 10th Session 2018 of Khalifa International Award for Date Palm and Agricultural Innovation

Khalifa International Award for Date Palm and Agricultural Innovation, the Secretariat General of the Award announced opening of nominations for the 10th Session/2018.Opportunity is allowed for all the farmers, producers**,** researchers, academics and lovers of the date palm tree and agricultural innovation around the world to for one of the Award's five categories, namely: Distinguished Innovative Studies and Modern Technology Category, Distinguished Producers in Date Palm Sector Category, Pioneering and Sophisticated Innovations Serving the Agricultural Sector Category, Pioneering Development and Productive Projects Category and Influential Figure in the Field of Date Palm and Agricultural Innovation Category. Prof. Abdelouahhab Zaid, Secretary General of Khalifa International Award for Date Palm and Agricultural Innovation pointed out that, after 10 years, the diagram of the Award is steadily growing forward at all the levels the Award has reached. Prof. Hilal Hamid Said Alkaabi, Member of the Board of Trustees of the Award, pointed out that the total number of candidates to the various categories of Khalifa International Award for Date Palm and Agricultural Innovation was 1010 participants, representing 48 countries around the world. The percentage of Arab participants in the Award was 87.5%, representing 20 Arab countries and including 9.3% participants from the UAE. The percentage of foreign participants, however, was 12.5%, representing 28 countries around the world.Alkaabi added that the highest participation rate at the Arab level over the last ten years was from Egypt with 189 participants followed by Iraq with 114 participants. Saudi Arabia was the third with 107 participants and Algeria fourth with 95 participants. The UAE was the fifth among the Arabs with 84 participants during ten years. At the world's level, India has had the highest participation rate over ten years with 26 participants; USA was the second with 13 participant and Italy the third with 12 participants. At the categories level, the "Best Distinguished Studies and Researches Category" recorded the highest participation rate so far with 607 participants. The "Best Developmental Project Category" came second with 160 participants and the "Best Distinguished Influential Figure Category" third with 134 participants.

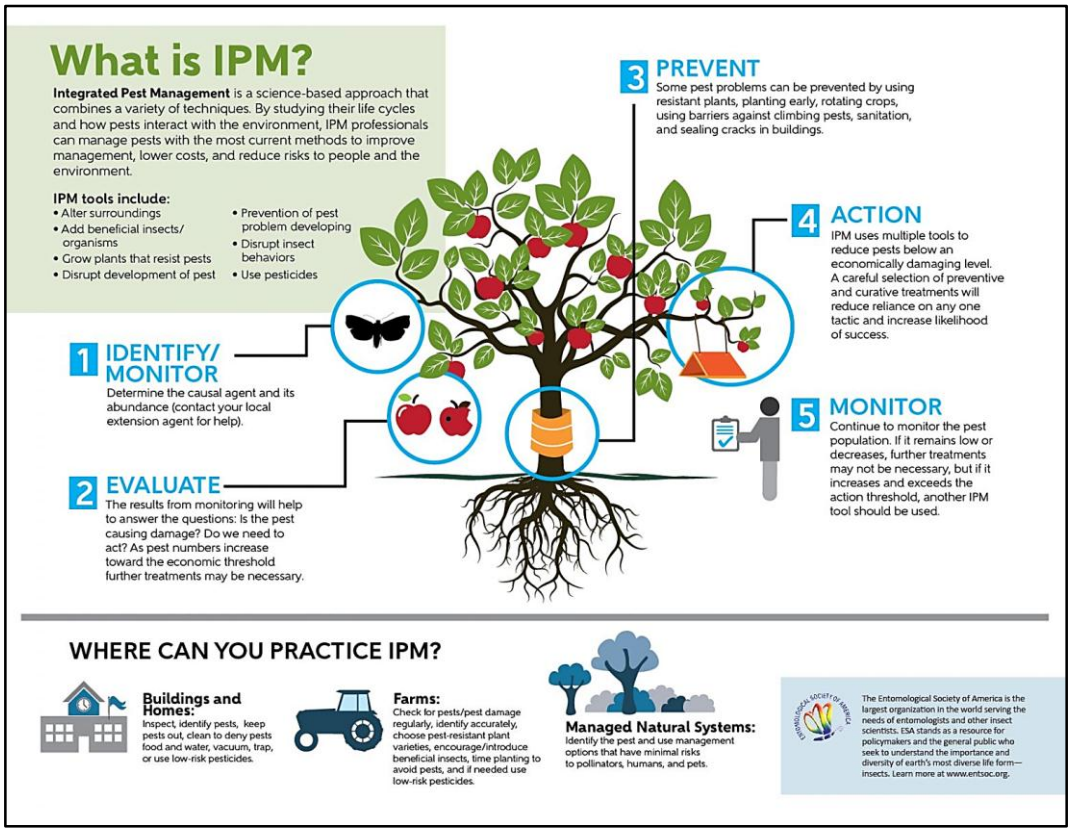
6th International Conference of Date Palm 19–21 March, 2018

Abu Dhabi will host the 6th International Conference of Date Palm on March 18 - 20, 2018 aims a specific scientific and academic presence from world countries. Organized by Khalifa International Award for Date Palm and Agricultural Innovation in collaboration with University of the United Arab Emirate and the International Centre of Bio-saline Agriculture under the slogan "Date Palm and Challenges of Future Outlook". The conference aims at providing an opportunity for updating of scientific knowledge and foresight of the various challenges of production, propagation, protection and marketing of date palm around the world. The 6th International Conference of Date Palm will be a valuable opportunity for updating knowledge and exchange of scientific experiences in date palm and future challenges among all concerned parties, organizations and research centers around the world.

New Infographic: Integrated Pest Management

The new illustrated infographic published by ESA titled "What is IPM?" Outlining the fundamental steps of integrated pest management and its applications, the infographic is a great resource for public outreach and education efforts. (It would also look great hanging in your office or lab!)

Source: eNews of the Entomological Society of America, November **15, 2017.**



ASPP MEMBERS IN THE NEWS

Out of Iraq, Research Flourishes

Liam Doyle, Daily Minnesota Newspaper. Assistant professor, Oadi Matny stands inside the greenhouse where he works on the St. Paul campus 2015.


MINNESOTA DAILY
U reacting to online attacks
Out of Iraq, research flourishes
Wanted: equality of bathrooms

A visiting researcher finds a better workplace at the University.

BY PARKER LEMKE plemke@mndaily.com

During his six months at the University of Minnesota, plant pathologist Oadi Matny has had access to equipment, chemicals and facilities that, he said, far outstrip the laboratory resources available to him in his native country, Iraq. By using them, Matny has harnessed molecular tools and DNA sequencing techniques to study the genetic diversity of the soil-borne fungal pathogen Fusarium sp, a cause of crown rot disease that can attack the roots and seed spikes of wheat. His six-month visit has also meant a " Matny, an assistant plant protection professor at the University of Baghdad since 2006, said he is working to turn his Twin Cities visit into an extended,

SELECTED RESEARCH PAPERS

- **Allelopthic effects of *Ziziphus jujuba* and *Z. lotus* leaf extracts on *Triticum durum* and *Lens culinaris.*** **[**Elaloui, M., Ghazghazi, H., Ennajah, A., Ben Youssef, I., Ben Othman, N., and Laamouri, A. Tunisian Journal of Plant Protection 12: 1-10,2017.]

- **Effect of ploidy level of *Trigonella foenum-graecum* on its allelopathic potential. [**Omezzine, F., and Haouala, R. Tunisian Journal of Plant Protection 12: 11-18, 2017].

- **Management of Insect Pests of Stored Sorghum Using Botanicals in Nigerian Traditional Stores**. [Suleiman M. and Rugumamu C. P., Journal of Stored Products and Postharvest Research, Vol.8 (9), pp. 93-102, 2017]. DOI: 10.5897/JSPPR2017.0247

- **Ozone to Control *Rhyzopertha dominica* (Coleoptera: Bostrichidae) in Stored Wheat Grains. [**Gutierres Nelson Silva1, Lêda Rita D'Antonino Faroni, Paulo Roberto Cecon, Adalberto Hipólito de Sousa and Fernanda Fernandes Heleno, Journal of Stored Products and Postharvest Research, Vol. 7(4), pp. 37-44, April 2016]. DOI: 10.5897/JSPPR2015.0197 .

- ***Anethum graveolens*, A new host of Meloidogyne incognita in Turkey** İ. Kepenekci† and O. Pakistan Journal of Nematology. 35 (2): 215-216, 2017.

- **First report of *Meloidogyne javanica* on *Berberis vulgaris* in Iran**. M. Behdani† , F.J. Afshar , M.R. Mirzaee. Pakistan Journal of Nematology, 35 (2): 155-156, 2017.

PAPERS PUBLISHED IN THE ARAB JOURNAL OF PLANT PROTECTION (AJPP) VOLUME 35, ISSUE 2, AUGUST 2017

BIODIVERSITY

Genetic diversity of tomato leaf miner using RAPD molecular markers
F. Khatib, A.N. Trissi, Z. Aleisa and M. El-Bouhssini (SYRIA & MOROCCO)
Pages 49-57
http://dx.doi.org/10.22268/AJPP-035.2.049057

BIOLOGICAL MANAGEMENT

Effect of four strains of plant growth promoting rhizobacter (PGPR) for peroxidase enzyme activity and growth of the tomato plants under greenhouse conditions.
H. Kawas, A. Ahmed, O. Hammoudi and I. Ismail (SYRIA)
Pages 58-66
http://dx.doi.org/10.22268/AJPP-035.2.058066

HOST RESISTANCE

Genetic parameter study for yield parameters and its components studied for three hybrids of maize (*Zea mays*) under artificial infestation with the large corn stem borer *Seamier cretica*
N. Harba, M. Alsamara and N. Asaad (SYRIA)
Pages 67-77
http://dx.doi.org/10.22268/AJPP-035.2.067077

BIOLOGICAL RESISTANCE

Induced systemic resistance in tomato to root knot Nematodes by *Beauveria bassiana* and a mixture of mycorrhizal fungi

D.L.E. Al-Sandooq and F.A. Fattah (IRAQ)
Pages 78-83
http://dx.doi.org/10.22268/AJPP-035.2.078083

CHEMICAL CONTROL

Effect of some insecticides on the apple spider mite and predatory mites
J. Al-Abdallah and N. Al-Zoghbi (SYRIA)
Pages 84-92
http://dx.doi.org/10.22268/AJPP-035.2.084092

BIOLOGICAL CONTROL

The role of some fungal and bacterial biological control agents in inducing resistance to the fungal pathogen *Rhizoctonia solani* in cucumber plants
R.M. Abed, H.M. Aboud and A.H. El-Mousawy (IRAQ)
Pages 93-102
http://dx.doi.org/10.22268/AJPP-035.2.093102

Virulance of the entomopathogenic fungus *Beauveria bassiana* against the tomato leaf miner*Tuta absoluta* (Meyrick)
Z. Al Eisa, A.N. Trissi, F. Khatib and M. El Bouhssini (SYRIA & MOROCCO)
Pages 103-109
http://dx.doi.org/10.22268/AJPP-035.2.103109

Susceptibility* of the egg stage of potato tuber moth *Phthorimaea operculella* to native isolates of *Beauveria bassiana
N.H. Alsaoud, D.H. Nammour and A.Y. Ali (SYRIA)
Pages 110-116.
http://dx.doi.org/10.22268/AJPP-035.2.110116

SURVEY

Survey of nematodes associated with Burley and Virginia flue-cured tobacco fields along the Syrian coast
M. Kaser Ali and N. Allouf (SYRIA)
Pages 117-125.
http://dx.doi.org/10.22268/AJPP-035.2.117125

BENEFICIAL INSECTS

Influence of brood type on infestation with varroa mite in colonies of local Syrian honeybees
N.Y. Daher-Hjaij and A.K. Alburaki (SYRIA)
Pages 126-129
http://dx.doi.org/10.22268/AJPP-035.2.126129

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

- **Molecular and functional assessment of a *Chitinase* gene in chickpea.** Fateh Khatib, Basel Al Askar, Nahed Al Skhny and Michael Baum (SYRIA & MOROCCO).
- **Molecular characterization and phylogenetic analysis of *Deformed wing virus* that infects honey bees in Syria.** Humam Shaaban Barhoum, Hisham Adib Al-Roz and Ahmad Mohamed Mouhanna (SYRIA).
- **Screening of lentil genotypes for resistance to *Bean yellow mosaic virus* and effect of mixed infection on the susceptibility of some resistant lentil genotypes.** Aya Kanawaty, Safaa G. Kumari, Joop van Leur and Hassan Hammadi (SYRIA, LEBANON & AUSTRALIA).
- **Study of the susceptibility of some local melon cultivars to infestation with some sucking insects and their associated predators.** Radhi Al-Jassany and Mohamed Shaker Mongi (IRAQ).

- **Effect of some Rhizobacteria species on phenol contents and photosynthesis pigments in tomato plants inoculated with *Cucumber Mosaic Virus* (CMV).** Ramez M. Al Shami, Imad D. Ismail and Yaser Hammad (SYRIA).
- ***Barley yellow dwarf virus*-PAV management using seed-treatment with the insecticide imidacloprid.** Asma Najar, Ibtissem Ben Fekih, Hajer Ben Ghanem, Safaa G. Kumari and Arvind Varsani (TUNISIA, LEBANON & USA).
- **Susceptibility of different stages of the cotton leaf worm *Spodoptera littoralis* (Boisd.) to the fungus *Beauveria bassiana* (Bals.) Vuil. under laboratory conditions.** Mohammad Ahmad, Ibtisam Gazal and Lobna Rajab (SYRIA).

EVENTS OF INTEREST

2018 - 2019

10-13 January, 2018	Zoologe Congress Zoocong- 18, Sustainable living environment for all creatures.India. www.stxavierstn.edu.in/
5 - 6 February, 2018	Global forum for innovations in agriculture 2018, ABU DHABI |-UAE, Abu Dhabi National Exhibition Centre. http://innovationsinagriculture.com/
7-9 March, 2018	The 23rd Biannual International Plant Resistance to Insects Symposium. RoCRE, Rothamsted Research, Harpenden, Hertfordshire, AL5 2JQ. UK. https://www.rothamsted.ac.uk/
19-20, March ,2018	Bio Control Africa, Nairobi, Kenya .www.newagconference.com
19 - 21 March, 2018	Sixth International Date Palm Conference Abu Dhabi, United Arab Emirates
19–22 March, 2018	9th International IPM Symposium. Baltimore, Maryland, USA. https://ipmsymposium.org/2018/posters.html
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)
19 -24 July,2020	XXXVI International Congress of Entomology, Helsinki, Finland. www.ice2020helsinki.fi

SELECTED PESTS FROM ARAB AND NEAR EAST COUNTRIES

Fig wax scale insect *Ceroplastes rusci* L. (Homoptera: Coccidae) collected for the first time by Ibrahim Al-Jboory on rubber plant *Ficus* spp. in Jordan.

Scale Insects on Fig Trees, *Ficus caricus* collected by Mohamed Zeadan Khalaf from Fig orchard variety Wazeri (yellow color) in Salman Pack area,Iraq. Samples have been sent to the scale insect taxonomist to confirm the identification.

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

Mohamed Amer (Iraq), Abdulnabi Basheer (Syria), Aziz Ajlan (Saudia Arabia), Oadi N. Matny(USA-Iraq) Bouzid Nasraoui (Tunis),Farhan Mhaisen (Iraq), Ayman Omar (Saudia Arabia), Hasan Hadi(Iraq-Australia), Mohamed Waleed Negm(Egypt), Adnan A. Lahuf (Iraq), Hanan Kawas (Syria), Luaay Khalaf (Iraq-USA), Mustafa Adhab (Iraq-USA), Mohammed Zaidan Khalaf (Iraq), Mohamed Mannaa (Egypt-Korea), Samer Habash (Jordan), Elia Choueiri (Lebanon), Ali Al Masri (Bonn, Germany), Arafat Hanani (Palestine-Bari), Imane Akassou,(Morocco-Bari), Iman Amer Abdelhafiz (Egypt-Bari), Badra Zaid (Jordan-Bari), Sadallah Abderraouf (Algeria-Bari), Nihed Jerbi (Tunisia-Bari), Hamza Chammem(Tunisia), Safaa. N. Hussein ,Thekra Atta Ibrahim (Iraq), Ana M.D'Onghia ,(CIHEAM), Sara Brunel (CIHEAM), Franko Valentini(CIHEAM), Mamoon Alalawi (FAO), Anne-Sophie Roy (France-EPPO), Farhan Mhaisen (Iraq), Mohsen Amin(Egypt). Khalid Djelouah (Italy),Hind Omar(Egypt),Seren Naser(Iraq-Basrah),Zahraa Abdullateef(Iraq-Basrah),Riham Ahmad Fathy(Egypt).

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.