ARAB AND NEAR EAST PLANT PROTECTION NEWSLETTER

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EDITORIAL

CAN DATES' PRODUCING COUNTRIES DO WITHOUT METHYL BROMIDE TO CONTROL POST-HARVEST PESTS AND BE IN COMPLIANCE WITH THE DECISIONS OF THE MONTREAL PROTOCOL?

Phoenix dactylifera **has been considered in the Middle East and North Africa as a staple food for thousands of years. The largest date production in the world is concentrated in few countries: Egypt, Iran, Saudi Arabia, Pakistan, Iraq, Algeria, the United Arab Emirates, Sudan, Oman and Morocco. These countries account for about 90% of the total dates' world production. Trade figures indicate that about 93% of dates harvested is consumed locally. Although the date palm is considered as a traditional crop, it has now been introduced in modern plantations in many countries and the world dates' production is yearly increasing.**

Pre- and post-harvest infestations of dates by various pests pose a serious problem. Most of the insects infesting date fruits during the green or the ripe stages in the field continue their development after harvest and therefore, should be controlled. Until January 2015, this problem has been addressed successfully using methyl bromide (MB). However, MB is associated with depletion of the Earth's ozone layer and, under the terms of the Montreal Protocol, was phased out in January 2005 for Non-Article 5 (developed) countries, and in 2015 for Article 5 (developing) countries, excepting for quarantine and pre-shipment fumigations.

Stratospheric ozone protects life on earth from the damaging effects of ultraviolet B radiation. In 1974, Molina and Rowland, from the University of California in the United States, proposed the hypothesis that stratospheric ozone was being broken down by volatile man-made Ozone Depleting Substances (ODS), including MB. This prediction was of enormous environmental importance and earned both of them a Nobel Prize in chemistry in 1995. In response to the resulting ozone hole being observed in the 1980s, the Vienna Convention to protect the ozone layer was set up in 1985 and in 1987, the Montreal Protocol (MP) was formed and this commenced regulation of ozone depleting gases.

Increased UV radiation on earth created by the ozone hole has many effects on organisms and human health. It affects plants and animals alike. Phytoplankton populations are reduced and this affects the food chain. In humans, increased exposure to UV-B increases the risk of skin cancer, cataracts, and a suppressed immune system. For example, the highest incidence of skin cancer is in Australia, with two out of three Australians being affected by it at some stage of their lives.

MB was included as an ozone depleting substance under the Copenhagen Amendment of the MP in 1992. The Copenhagen amendment set different phase-out schedules of 2005 and 2015 for industrialized (Non-A5) and developing (A5) countries respectively. Quarantine and Pre-shipment (QPS) uses are presently exempted from controls, although consideration is being given to further regulation.

IPM is a sustainable approach to manage field and post-harvest dates pests by combining cultural, biological, physical and chemical control methods in a way that minimizes economic, health and environmental risks. IPM technologies in the field and in packing houses include nonchemical and chemical control methods.

In the field, the main non chemical control methods are mainly cultural practices (Plastic nets , sanitation , weed and alternative hosts eradication, pruning of leaves and bunch removal, sex

pheromone traps, harvesting dates, drying…). Very few biological control methods are available and commercially used. Some chemical treatments are very effective against a wide range of pests.

New pesticides molecules and improvement of application techniques resulted in a decrease of the number of treatments, pesticides concentration and consequently the amount of residues on and in the fruits. Some pesticides widely used in the dates producing countries have been banned by the European Trade Corporations (EUREP-GAP). Recent studies conducted in some dates producing countries on pesticides residues in dates fruits showed a high concentration of some pesticides.

Dates insect infestation in the field by various pests is one of the primary causes of post-harvest losses in quality and quantity. Field infestations of pests in all date varieties pose a serious problem. Therefore, control of dates post-harvest pests starts in the field. In the dates packing houses, MB has not been used since January 2015. Complete phase-out of this fumigant has been achieved in many dates producing countries, often in advance of the 2015 deadline. Many nonchemical (heat, cold, controlled atmosphere, irradiation, combined treatments e.g. heat/CO2 and PH3/CO2) and chemical (phosphine, sulphuryl fluoride, ethyl formate , carbon dioxide) alternatives exist and are in commercial use in some countries.

Although technically feasible alternatives to MB have been identified for the pest control of all the dates varieties, various issues impacting the long-term sustainability of the proposed alternatives have been identified, such as consumer issues, installed capacity (cold storage facilities…) , regulatory factors (registration of the chemical alternatives in the producing and in the importing countries) , restrictions and or bans on chemical alternatives as a result of environmental or health concerns, costs , pest resistance (phosphine..) etc…

The increasing demand for high quality dates and the phase out of MB have created the interest for searching and adopting nonchemical and chemical alternatives to control pre- and post-harvest pest and to adopt IPM programs: prevention and suppression, monitoring , decision-making, non-chemical methods, pesticide selection, reduced pesticide use, anti-resistance strategies and evaluation. However, to obtain results similar to those obtained with MB, further research and cooperation between developed and developing countries are required.

Mohammed Besri
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❖ Crop Protection News from Arab and Near East Countries

INVASIVE AND NEW PESTS

IRAQ

New host for the bug *Oxycarinus hyalinipennis* from Iraq. Colonies of true bugs were collected at the beginning of July on fig leaves for the first time in Salman Pack area in Iraq. Damage symptoms were noticed on fig fruits in the green stage. The samples were identified as *Oxycarinus hyalinipennis* by Prof.Porcelli in Italy and confirmed later by the Iraqi Natural History Museum specialists as a cotton seed bugs. The cotton seed bugs were noticed in addition to Malvaceae plants on fruits of dates, figs, avocado and persimmon in Israel.[Mohamed Z.Khalaf and Ibrahim J.Al-Jboory (Iraq) 2016 unpublished data]

First report of gall wasp *Ophelimus* sp. on Eucalyptus leaves in Central Iraq. Samples of Eucalyptus leaves cover completely with galls from different nurseries were collected during March 2016 in Husainia region in the province of Karbala. The leaves were caged few weeks and the wasps were appeared end of April. The adults and the gall shapes were compared with another Eulophids attack Eucalyptus in different parts of the Middle East. The genus was identified as *Ophelimus* sp. which is black color,1 mm length and near the species *maskelli*.This species is different in morphology and galls symptoms than *Leptocybe invasa* the one collected in 2012 by Feyroz Hassan from Erbil.*Ophelimus maskelli* is present in all the Mediterranean countries,Middle East.USA,South Africa,Tunisia,Algeria,Iran,Jordan and Syria.[Adnan A.Lahuf, Taha M. Al-Sweedi ,Ibrahim J. Al-Jboory (Iraq). un published 2016].

IRAN

Spotted wing drosophila, *Drosophila suzukii* (Matsumura) (Diptera: Drosophilidae) an invasive fruit pest new to the Middle East and Iran. In Iran, the presence of *Drosophila suzukii* (Diptera: Drosophilidae – EPPO A2 List) was incidentally detected in October 2015 during a survey targeting the olive fruit fly (*Bactrocera oleae*). In traps placed in olive groves on the southern slopes of Elburz Mountains (near the village of Ghoushchi, Qazvin province), several specimens of *D. suzukii* were identified. This is the first time that *D. suzukii* is reported from Iran, as well as

from the Middle East. The situation of *Drosophila suzukii* in Iran can be described as follows: Present, first found in 2015, several specimens were caught in one location in Qazvin province.[Parchami-Araghi M, Gilasian E, Keyhanian AA ,(Iran), Drosophila Information Service no. 98, 59-60.2015].EPPO Reporting Service 2016 no. 6 – Pests.

First report of *Fusarium solani* causing stem rot of *Dracaena* in Iran. In July 2013, symptoms of stem rot were observed in the *Dracaena sanderiana* cuttings in greenhouses of Mahallat County, Markazi Province, Iran. The symptoms first appeared as severe wilting. Later, leaves became brown and necrotic. Symptoms on the cuttings were observed as rotted areas on the middle of the stems. The cortical tissues of the plants showed a distinct brown discoloration. Eventually, the infected plants died. The pathogen was isolated from *Dracaena* stems and identified as *F. solani* by a fragment of the translation elongation factor 1-alpha (*EF-1α*) gene. *Fusarium solani* was confirmed by a pathogenicity test, and the causal agent was re-isolated from infected *D. sanderiana* plants. To the best of our knowledge, this is the first report of stem rot caused by *F. solani* on the cuttings of *D. sanderiana*.. [Mostafa Abedi-Tizaki, Doustmorad Zafari, Jamal Sadeghi.(Iran), Journal of Plant Protection Research. 56 :(1),2016].

LEBANON

Banana Panama disease Race 4 reaches Pakistan, Lebanon, Jordan and Oman. Scientists in developing countries are scrambling to find a cure for a devastating fungus that threatens to wipe out the global banana trade and plunge millions of farmers into poverty. Around the world, farmers are fighting a losing battle against Tropical Race 4 of Panama disease, a soil fungus that kills Cavendish bananas, the only type grown for the international market. The disease was first spotted in the early 1990s in Malaysia, but has now started to wipe out crops in large parts of South-East Asia as well as Africa and the Middle East. The Tropical Race 4 pathogen, a new strain of what is known as Panama disease, escaped from Asia in 2013. By 2015, it had infected plantations in Jordan and Mozambique and Oman, as well as Lebanon and Pakistan, with many scientists fearing and epidemic in Sub-Saharan Africa. The disease can be devastating for small banana farmers, who provide much of the 17 million tonnes of Cavendish bananas traded every year-mostly to rich countries where the fruit is a popular as a healthy snack. Bananas are also a staple food in many tropical countries, and the main source of protein for more than half a billion people around the world.Tropical Race 4, a variant of the *Fusarium oxysporum* fungus, is transmitted by infected plant propagation material, but also through clothes and shoes of plantation workers **(ScienceDev.Net, February, 2016)**.

SYRIA

First record of the family Cunaxidae (Acari: Trombidiformes) from Syria with description of a new species. This is the first record of cunaxid predatory mites from Syria. Two species were collected on *Malva sylvestris* L. growing within citrus orchards: *Cunaxa capreolus* Berlese and *Cunaxa celineae* sp. nov**.** [Ziad Barbar, (Syria), Acarologia, 55 (4): 457-463.2015].

First Detection of *Leptographium* spp., a Fungus Causes Pine Decline in Syria. Pine decline caused by *Leptographium* spp. is considered one of the most dangerous diseases that threaten pine forests all over the world. Field survey revealed a general weakness in the growth of pine trees, a yellowing in and a shedding of leaves, dying branch tips, and a black coloration in the vessels of the tree. Occasionally a sudden death of the whole tree occurs. This was noticed in different forestry sites (Sanawbar Jableh, Al-Hannadi Plantation, Kurfes, Al-Boudi, Al-Haffa, Balloran, KastalMa'af, Al-Shabatlieh) in Lattakia Province, Syria, during the years 2014-2015. In order to study the symptoms and determine the pathogens in the laboratory, plant samples including branches, stems, and roots from infected trees (43 trees) were collected. The isolates from the infected tissues were cultured after a surface steriltization with Ethylic Alcohol for one minute, on PDA medium in Petri dishes (9cm). The dishes were incubated at 25^{o} C for 7 days. The results revealed frequent appearances of the *Leptographium* spp isolates in the infected samples, which were collected from Sanawbar Jableh, Balloran and Kastal Ma'af with percentages of 75.0, 33.3, 80.0, and 100.0%. However, no infections were recorded on the remaining sites. The isolates of the *Leptographium* spp**.** fungus were characterized by light-colored mycelium that immediately changes into dark grey. Its diameter was between 2.7 and 17 microns. Erect conidiophores have stipe dark-brown, thick-walled, 125.6(76.8-193.7) µm long; ramified heads up to 84.1(60-104) µm across, made up of repeatedly branching metulae, light-brown at the base becoming hyaline at the tips. Conidia are hyaline, aseptate obovate 5.19 (3.73 – 8.68) X 2.81 (1.92 – 4.39) µm. They are generated in sticky matrices via the elongation of the cells that generate them and they accumulate in sticky

masses on the tips of the conidiophores. The symptoms of the infected trees on the probed sites along with the characteristics of the isolates corresponded to the characteristics of the black stain root disease in pines that is caused by the *L.wageneri* fungus, which is the most threatening to pine forests around the world. This study is considered the first detection of the *Leptographium* spp. fungus as the main cause for the death of pine trees in Syria. [Basima Barhoum and El-Rahyeh, K, 2016. (In Press).

First Identification of Citrus Exocortis Viroid (CEVd) and Citrus Dwarf Viroid (CDVd-III) in Citrus Orchards in Syria. Following the first finding of Hop stunt viroid (HSVd) in Syria (Abou Kubaa et al., 2011), a survey of citrus was conducted during the summer 2013 to investigate the presence of other viroids in the country. Leaf samples were collected from 65 stunted trees from four commercial orchards located in Lattakia and Tartous, the most important citrus-producing areas in Syria. Each sample consisted of young leaves taken from four sides of each tree. The samples were tested for the presence of Citrus exocortis viroid (CEVd) and Citrus dwarf viroid (CDVd-III). Total plant RNAs were extracted from leaves according to Foissac et al. (2001), and used as templates for reverse transcription (RT)-PCR using specific primers for both viroids. PCR products of the expected size (297 bp and 370 bp) for CDVd-III and CEVd, respectively, were cloned and sequenced. Furthermore, previously infected budwood from five infected citrus trees were graft inoculated onto an Etrog citron (Citrus medica) indicator plants and maintained in a temperature controlled greenhouse. Biological indexing evidenced mild epinasty, leaf curling and typical stunting symptoms, confirming the presence of viroids. Results of RT-PCR showed that 24 out of 65 samples were infected by citrus viroids, including ten and eight that reacted positively to CEVd and CDVd-III, respectively, and six that showed mixed infection by both viroids. The retrieved sequences were deposited in GenBank under accession numbers LN681197 and LN681196 for CDVd-III and CEVd, respectively. To our knowledge, this is the first molecular identification of CEVd and CDVd-III in citrus trees in Syria.[R. Abou Kubaa, M. Saponari, A. El-Khateeb, K. Djelouah (Syria), Journal of Plant Pathology, 98(1),2016].

Occurrence of *Deformed Wing Virus*, *Chronic Bee Paralysis Virus* and mtDNA Variants in Haplotype K of *Varroa destructor* Mites in Syrian Apiaries. A small-scale survey was conducted on 64 beehives located in four governorates of Syria in order to assess for the first time the presence of honeybee-infecting viruses and of *Varroa destructor* mites in the country. RT-PCR assays conducted on 192 honeybees (*Apis mellifera* L.) using virus-specific primers showed that *Deformed wing virus* (DWV) was present in 49 (25.5 %) of the tested samples and *Chronic bee paralysis virus* (CBPV) in 2 (1.04 %), whereas *Acute bee paralysis virus*, *Sacbrood virus*, *Black queen cell virus* and *Kashmir bee virus* were absent. Nucleotide sequences of PCR amplicons obtained from DWV and CBPV genomes shared 95–97 and 100 % identity with isolates reported in the GenBank, respectively. The phylogenetic tree grouped the Syrian DWV isolates in one cluster, distinct from all those of different origins reported in the database. Furthermore, 19 adult *V. destructor* females were genetically analyzed by amplifying and sequencing four fragments in cytochrome oxidase subunit 1 (cox1), ATP synthase 6 (atp6), cox3 and cytochrome b (cytb) mitochondrial DNA (mtDNA) genes. Sequences of concatenated *V. destructor* mtDNA genes (2696 bp) from Syria were similar to the Korean (K) haplotype and were found recurrently in all governorates. In addition, two genetic lineages of haplotype K with slight variations (0.2–0.3 %) were present only in Tartous and Al-Qunaitra governorates.[Toufic Elbeaino, Nouraldin Daher-Hjaij, Faiz Ismaeil, Jamal Mando, Bassem Solaiman Khaled, Raied Abou Kubaa, (Syria), Experimental and Applied Acarology, 69 (1): 11-19.2016].

SAUDI ARABIA

First report of *Lucerne transient streak virus* (LTSV) on alfalfa in Saudi Arabia. An extensive survey was done in 5 high-yielding lucerne regions in Saudi Arabia, i.e. Riyadh, Qassim, Hail, Tabuk and Jouf, from 2012 to 2014. Several fields in 135 farms were surveyed in these regions and 1481 symptomatic samples were collected. Symptoms were mostly mosaic, mottling, interveinal chlorosis, crinkling and small leaves. The causal pathogen was identified as Lucerne transient streak virus (LTSV) based on serological and molecular analyses. This is thought to be the first report of LTSV in Saudi Arabia as well as in Asia.[Alshahwan, I. M.; Raza, A.; Abdalla, O. A.; Al-Saleh, M. A.; Amer, M. A. (Saudi Arabia), Plant Disease , 100 (2): 540-541,2016]. DOI 10.1094/PDIS-06-15-0720-PDN

TUNISIA

First report of the plant parasitic nematode *Tylenchorhynchus mediterraneus* on olive trees in Tunisia. Nematological analyses of soil samples collected from two olive orchards at Chott-Mariem (Center East Tunisia)

and Sbiba (Center Tunisia) showed the presence of the stunt nematode *Tylenchorhynchus mediterraneus* which has been recently described in some cultivated and native plants in Southern Spain. The morphological and morpho-biometric studies of the Tunisian populations confirmed the species identification. Phylogenetic analysis based on nuclear ribosomal DNA genes (D2-D3 expansion segments of large ribosomal subunit 28S, and internal transcribed spacer 1 or ITS1) confirmed the species identification. Further work must be performed to test the pathogenicity of this plant-parasitic nematode on olive trees. To the best of our knowledge, this is the first report of this nematode in Tunisia, and the extend of its geographical distribution to North Africa.[Guesmi, I., Hadj-Naser, F., Horrigue-Raouani, N., Cantalapiedra-Navarrete, C., Palomares-Rius, J.E., and Castillo P,(Tunis),Tunisian Journal of Plant Protection 11: 171-177].

Confirmation of *Deudorix livia* identification on *Acacia farnesiana* and its first report in Southern Tunisia. In 2012, *Deudorix livia* was responsible for severe losses in production of pomegranate trees in the regions of Gafsa and Gabes situated in Southern of Tunisia. *D. livia* was observed on some pods of *Acacia farnesiana* planted as windbreak around these orchards. Larvae of *D. livia* were observed drilling fruits to eat seeds. At present, the life cycle of *D. livia* is poorly studied. We confirmed its identification using molecular tools and reported for the first time its occurrence in Southern of Tunisia.[Mkaouar, R., Hausmann, A., and Ben Jamâa M.L. (Tunis),Tunisian Journal of Plant Protection 11: 165-169,2016].

The European wood wasp *Sirex noctilio*: Distribution, hosts and parasitoids recovered in Tunisia. *Sirex noctilio* is an invasive wood wasp pest in North America and in the southern hemisphere. Despite some reports on its presence in Tunisia, no further studies were undertaken on its distribution, hosts or potential associated parasitoids. In this paper, we confirmed the presence of *S. noctilio* in Tunisia, its widespread in several newly defined locations and its associated pine hosts. This species was widely distributed in the northern forests of Aleppo, maritime and stone pine and seemed to be absent in monospecific forests of Aleppo pine in semi-arid locations. The life cycle was completed within one year. Two parasitoid species emerged from *S. noctilio*-attacked logs which were identified as belonging to *Ibalia* and *Rhyssa* genera. Due to the apparent low abundance of *S. noctilio* and its absence in the semi-arid locations, risks of phytosanitary problems attributed to this species are of limited importance in Tunisian forests.[**Mejri, M., Naves, P., De Sousa, E., and Ben Jamâa, M.L.(Tunis), Tunisian Journal of Plant Protection 11: 157-163,2016].**

RESEARCH HIGHLIGHTS

EGYPT

Effect of sugar beet as a trap crop on the population density of *Meloidogyne incognita* infecting subsequent common dry bean. Sugar beet (Beta vulgaris L.) cv. Gazelle was planted under screen house conditions to assess its ability as a trap crop to reduce population density of root-knot nematode, *Meloidogyne incognita* on subsequent common dry bean (*Phaseolus vulgaris* L.). Treatments were made by removing whole plant or cutting sugar beet above the surface of soil in each pot 6, 12, 18, 24, 30 and 36 days after nematode inoculation. The population density of root-knot nematode as indicated by the number of galls and egg-masses on roots of sugar beet increased gradually as *influenced* by the time of gathering. Root-knot nematode started to lay egg-masses after the 18 ^{the} day to the 24 ^{the} day till the end of experiment. On subsequent common dry bean, root- knot nematode significantly ($p \leq 0.05$) reduced on that cultivar of dry bean as influenced by the tested treatments made to sugar beet i.e. cutting or uprooting (removal) and time of harvest. In general, the nematode parameters as indicated by the numbers of galls, egg-masses and hatched juveniles on roots of dry bean and number of juveniles in soil were higher on dry bean plants replacing cutting sugar beet than those on dry bean plants replacing uprooted sugar beet within the most periods. In contrast, plant growth parameters were higher for dry bean plants replacing uprooted sugar beet than parameters for plants replacing cutting sugar beet [Mahmoud M.A. Youssef and Wafaa M.A. El-Nagdi. (Egypt), Pakistan Journal of Nematology, 34(1): 87-90, 2016].

IRAQ

Effect of soil drench in mixture of *Pseudomonas fluorescens* and *Bacillus subtilis on* resistance to *cucumber mosaic cucumovirus*. The aim of this study was to evaluate the efficiency of biotic agents *Pseudomonas fluorescens*,

Bacillus subtilis in inducing resistance in tomato plants super queen cultivar against cucumber mosaic virus (cmv) under greenhouse conditions. The experiment included the identification of cmv depending on biological method*s* such as using indicator plants, cowpea *Vigna unigutate* , cucumber *Cucumis sativus, Chenopodium amaranticolor,* tobacco var. Samsun and Xanthi in addition to serological test. Results of serological test was showed positive reaction between samples which taken from infected tomato plants with CMV polyclonal antiserum as demonstrated by Immunostrip–ELISA. Double diffusion test was also resulted in positive reaction where precipitin lines were occurred between the wells that contain the antiserum cucumber mosaic virus and those containing sap extracted from infected tomato, cucumber and tobacco cultivar Samsun with virus isolate. Results of biological and serological test revealed that the virus isolate represents cucumber mosaic virus isolate. . Results of this work were indicated that induce resistance agents caused decreased in disease percentage and severity, while the growth parameters were increased compare with control treatment, which inoculated with the virus only. The use of mixture of *P. fluorescens* and *B. subtilis* by the means of soil drench after 4 days of virus inoculation was decreased the incidence and severity percentage of viral infection to 8.33% and 16.67%respectively. The best treatment was soil drench of the mixture suspension of both bacteria and inoculation of virus after 2 days of soil drench was caused high inhibition activity of virus (cmv) multiplication as demonstrated by ELISA absorbance values 76.52. The best treatment was soil drench of the mixture suspension of both bacteria and inoculation with the virus after 2 days of soil drench was caused significant increase in the activity of peroxidase after 15 and 30 days of virus inoculation was 78.253 and 61.40 respectively , on the other hand the use of mixture of both bacteria by the means of soil drench and inoculation of virus after 2 days of the treatment gave significant increase in the activity of PAL enzyme after 15 and 30 days of virus inoculation which was gave 2.311 and 1.456% respectively.[Layla Jabbar Sabier and Mysir Majeed Jarjees (Iraq), Iraqi Journal of Biotechnology,14(2):327-342, 2015].

Field Efficacy of Some Pesticides in Controlling Dust Mite Nymphs *Oligonychus afrasiaticus*. Field efficacy of nine different kinds of insecticides and mitecides with various mode of action was evaluated against dust mite nymphs *Oligonychus afrasiaticus* infested date fruits in middle and south of Iraq date palm orchards at season 2014. The results indicated that the recommended dose for each used pesticides showed high efficacy in reduction numbers of mite nymphs infested date fruits. After two weeks from treatments, the average numbers of nymphs were reduced for all kind of pesticides used, reaching zero in most treatment compared to 81.4 nymph/fruit in the control treatment. The efficacies ranged between 83.3% and 99.6% after two days of treatment and increased to become 91.2% to 100% after seven days. These results will assist in finding alternative to old pesticides and in implementing of pest management program to reduce resistance development chances.[Hussain F. Alrubeai, Mohammed Zaidan Khalaf, Jawad Bulbul Al-Zedawi and Falah Hanash Naher(Iraq), Iraqi Journal of Biotechnology,14(2): 381-387, 2015].

Impact of date palm borer species in Iraqi agro ecosystems. Insect borers are serious pests of date palms in Iraq and many other date-palm growing countries. These pests severely damage palms, reduce the quantity and quality of date fruits and weaken the trunks which eventually fall and die. Field surveys were conducted during 2011-2013 to explore the presence and distribution of different date palm borers in governorates with significant date palm orchards. Results indicated the presence of six different borers, causing significant damages to date palms: *Phonapate frontalis* F., *Jebusaea hammerschmidtii* Reich., and four belonging to *Oryctes*: *O. elegans Prell, O. agamemnon Burmeister, O. agamemnon matthiesseni* Reitter and *O. agamemnon arabicus* Fairmaire. The species *arabicus* was recorded for the first time in Iraq. The occurrence and population densities of these species were described and vary at different locations of date palm orchards.[Mohammed Zaidan Khalaf, Hussain Fadhel Alrubiae(Iraq), Emirates Journal of Food and Agriculture, 28(1): 52-57, 2016].

Integrated management for major date palm pests in Iraq. Date palm has been considered for centuries as the most important fruit tree (economically, socially and environmentally) in Iraq and other date producing countries. Dates and other palm trees products are contributing to both national economy and farmer income as well. Date palm plantations are an integral component of the citrus agro-ecosystem in irrigated regions in the central and southern of Iraq. Both date palm productivity and dates quality has been deteriorated mainly due to pests attack and other environmental and social factors. Date palm trees and fruits are affected by many principle insect pests such as Dubas bug *Ommatissus lybicus* De Berge., borers *Oryctus* spp., *Jebusae* spp and Lesser Date Moth *Batrachedra amydraula* which cause serious and significant reductions in date palm productivity and quality. Conventional insecticides have become inefficient to reach a satisfactory solution against date palm pests in addition to their negatives consequences on environment and human health. Therefore, efforts were directed towards the application of Integrated Pest Management techniques as a safe affective alternative. Based on this concept, the Iraqi agricultural policy started moving towards safe alternatives in managing epidemic pests. Direct actions were taken to implement the integrated

management programs in various agricultural systems in the country. The Harmonized Support for Agricultural Development program (HSAD) in Iraq, funded by USAID and implemented jointly by ICARDA and the Ministry of Agriculture, has devoted much effort in the dissemination of the IPM concept and application in controlling major date palm insect pests in Iraq. As a result of these joint efforts an IPM program was developed and implemented against major date palm pest in the country.[Abdul-Sattar Arif Ali, Nazar Nouman Hama (Iraq), Emirates Journal of Food and Agriculture, 28(1): 24-33, 2016].

First Record of *Psyttalia concolor* (Szépligeti) (Hymenoptera: Braconidae) as a parasitoid of the *Ceratitis Capitata* (Wiedemann) (Diptera: Tephritidae) in Iraq. In this study, *Psyttalia* (=Opius) *concolor* (Szépligeti) (Hymenoptera: Braconidae) is recorded for the first time as a parasitoid on the larvae of the *Ceratitis capitata* (Wiedemann) (Diptera: Tephritidae) in Wassit Province, Iraq. [Samira Auda Khlaywi, Mohamed Salih Abdul-Rassoul, and Ayad Ahmed AL-Taweel (Iraq), Asian Journal of Science and Technology, 7(4): 2676-2678, 2016].

Identification, Pathogenicity and Controlling of the *Macrophomina Phaseolina* (Tassi) Goid the Causal Agent of the Charcoal Rot Disease on Watermelon. Present study was carried out to evaluate the efficiency of the bioagent *Pseudomonas putida* (Pp), plant growth activator Benzo [1,2,3] thiadiazole-7-carbothioic acid-S-methyl ester (BTH) and the fungicide Beltanol (B) for control the charcoal rot disease of watermelon. All the isolates of the pathogen significantly reduced seed germination *in vitro*, the *M. phaseolina* isolate Mpa-2 exhibited entire reduction in the seed germination of 0%. The fungicide B prevented the fungal growth completely *in vitro* and bioagent Pp inhibited the pathogen's growth with 88.8% compared with the control which showed fully growth in petri plate after 7 days. In contrast, no inhibition observed in the BTH treatment. Under greenhouse conditions, combination of MPa-2+Pp+BTH treatments recorded totally seed germination compared to 65% in control with zero of disease severity corresponds to 83.3% in the control. All the examined agents found to improve the plant vigor through increasing of the fresh and plant dry weight.[Hurria H.Al-Juboory,Kamil S. Juber and Safaa N. Hussein (Iraq), Special Issue of the 2nd Scientific Agriculture Conference (JDU), 19(1), 2016].

Identification Sources of Resistance to Potato Mop-Top Virus and Its Vector *Spongospora Subterranea*. Thirty-five *Solanum tuberosum* Group Phureja clones were evaluated to identify sources of resistance to *Potato mop-top virus* and its vector *Spongospora subterranea* (the causal agent of powdery scab). Visual disease assessments were made and TAS-ELISA, qPCR and qRT-PCR were used to assess infection. In the first year, eight clones showed good resistance to PMTV and these clones were tested in a second year in order to confirm their resistance. Clones PHU951 (901) and DB441 (2) had the least infection by PMTV and powdery scab on tubers. However, there were no significant differences between the eight clones and cv. Agria (the susceptible cultivar) for infection of roots by PMTV and *S. subterranea*.[Adnan A Lahuf, AK Lees, L Torrance and A G Roberts(Iraq), Proceedings Crop Protection in Northern Britain, UK, pp.277-283, 2014].

IRAN

Biocontrol mechanisms of *Trichoderma harzianum* against soybean charcoal rot caused by *Macrophomina phaseolina*. Throughout the world, charcoal rot, caused by *Macrophomina phaseolina*, is one of the most destructive and widespread diseases of crop plants such as soybean. In this study, the biological control capability of 11 *Trichoderma* spp. isolates against *M. phaseolina* was investigated using screening tests. Among all the tested *Trichoderma* spp. isolates, inhibition varied from 20.22 to 58.67% in dual culture tests. Dual culture, volatile and non-volatile tests revealed that two isolates of *Trichoderma harzianum* (including the isolates T7 and T14) best inhibited the growth of M. *phaseolina* in vitro. Therefore, these isolates were selected for biocontrol of *M. phaseolina* in vivo. The results of greenhouse experiments revealed that disease severity in the seed treatment with *T. harzianum* isolates was significantly lower than that of the soil treatment. In most of the cases, though, soil treatment with *T. harzianum* resulted in higher plant growth parameters, such as root and shoot weight. The effects of *T. harzianum* isolates on the activity of peroxidase enzyme and phenolic contents of the soybean root in the presence and absence of *M. phaseolina* were determined in greenhouse conditions. Our results suggested that a part of the inhibitory effect of *T. harzianum* isolates on soybean charcoal rot might be related to the indirect influence on M. phaseolina. Plant defense responses were activated as an elicitor in addition to the direct effect on the pathogen growth.[Nima Khaledi, Parissa Taheri.(Iran), Journal of Plant Protection Research, 56 :(1), 2016].

Management strategies for western flower thrips in vegetable greenhouses in Iran: a review. Chemical, biological, cultural, and mechanical controls are the main strategies of the Integrated Pest Management program for *F. occidentalis*. The insecticides play an important role in the western flower thrips, *Frankliniella occidentalis* Pergande (Thysanoptera: Thripidae), management. Spinosad, pyridalyl, and botanical insecticides such as oxymatrine and azadirachtin are new and effective insecticides for the control of *F. occidentalis*. The best control finally is possible when all of the strategies are used together. Awareness on integrated pest management strategies can improve the integrated pest management strategies.[Zahra Gholam and Amin Sadeghi (Iran), Plant Protect. Sci. (52) 2: 87–98, 2016. doi: 10.17221/2/2015-PPS].

JORDAN

Distribution and Host Range of the African Fig Fly *Zaprionus indianus* (Diptera: Drosophilidae) in Jordan. The African fig fly, *Zaprionus indianus* (Diptera: Drosophilidae) was recorded for the first time as a pest on date palms (var. Madjuol) in the Central Jordan Valley in June, 2012. Field trips were conducted to different orchards of fruit trees during the period from February to August 2013 in the Jordan Valley, the high lands and the desert. Flies observed flying over decomposing or rotting fruits dropped on the ground were sampled by sweeping net. Fallen fruits were collected and incubated in the laboratory until adult flies emergence. Banana baited traps seeded with dry and active yeast *Saccharomyces cerevisiae* were placed in several commercial fruit orchards. Our survey showed that *Z. indianus* was found in different ecosystems with variable abundance on many host plants in Jordan, utilizing diverse food resources. The fly was found on many fruits such as mulberry, grapes, peach, nectarine, plum, figs, date palm, sweet orange, sour orange, blackthorn, pomegranate, guava and apple. The minimum percentage of emerged adults of *Z. indianus* was 9.0%, which was recorded from fruits collected from Northern Jordan Valley during February, while the maximum percentage was 99.1% obtained from fig fruits collected from Southern Jordan Valley during June. The minimum percentage of adult *Z. indianus* in banana-baited traps was 49.7%, which was collected from peach orchard in June from Al Salt, while the maximum percentage was 93.9% on date palms in Dayr Alla in July. Our results provided basic and essential data needed for implementation of control measures against the fly population.[Amani Alawamleh, Ahmad Katbeh-Bader, Nayem Hassan, Ibrahim Al-Jboory , Jordan Journal of Agricultural Sciences, 12(2):555-564, 2016].

OMAN

First field evaluation of mass trapping system for males of the lesser date moth *Batrachedra amydraula* (Meyrick) (Lepidoptera: Batrachedridae) in sultanate of Oman. The Lesser Date Moth (LDM) *Batrachedra amydraula* (Meyrick) causes serious damage to date palms in the Middle East. Yield losses up to 50% have been reported in some countries. The sex pheromone is now available and could be used for monitoring in addition to the biocontrol alternative method. A first mass-trapping trial targeting LDM males was set up in the Sultanate of Oman in 2014. Results showed that the pheromone blend tested was very attractive with a minimum of 60 days activity: a totalof 22,283 males were captured on 132 traps all over the season, i.e. from March to June 2014. An attack percentage between 7 to 12.5% was recorded in fruit drop counts. Bearing in mind the presence of highly susceptible cultivars in this trial, these first results look very promising. In 2015, the tests will be repeated with modified technology in order to develop a management strategy including pheromone in LDM control.[Kinawy M.M, Arissian M. and Guillon M.(Sultanate of Oman). International Journal of Agricultural Research and Review, 3(5): 223-232, 2015.]

SAUDI ARABIA

Identification of the genes involved in odorant reception and detection in the palm weevil *Rhynchophorus ferrugineus*, an important quarantine pest, by antennal transcriptome analysis. The Red Palm Weevil (RPW) Rhynchophorus ferrugineus (Oliver) is one of the most damaging invasive insect species in the world. This weevil is highly specialized to thrive in adverse desert climates, and it causes major economic losses due to its effects on palm trees around the world. RPWs locate palm trees by means of plant volatile cues and use an aggregation pheromone to coordinate a mass-attack. Here we report on the high throughput sequencing of the RPW antennal transcriptome and present a description of the highly expressed chemosensory gene families. Results showed that deep sequencing and assembly of the RPW antennal transcriptome yielded 35,667 transcripts with an average length

of 857 bp and identified a large number of highly expressed transcripts of odorant binding proteins (OBPs), chemosensory proteins (CSPs), odorant receptors/co-receptors (ORs/Orcos), sensory neuron membrane proteins (SNMPs), gustatory receptors (GRs) and ionotropic receptors (IRs). In total, 38 OBPs, 12 CSPs, 76 ORs, 1 Orco, 6 SNMPs, 15 GRs and 10 IRs were annotated in the R. ferrugineus antennal transcriptome. A comparative transcriptome analysis with the bark beetle showed that 25 % of the blast hits were unique to R. ferrugineus, indicating a higher, more complete transcript coverage for R. ferrugineus. We categorized the RPW ORs into seven subfamilies of coleopteran ORs and predicted two new subfamilies of ORs. The OR protein sequences were compared with those of the flour beetle, the cerambycid beetle and the bark beetle, and we identified coleopteran-specific, highly conserved ORs as well as unique ORs that are putatively involved in RPW aggregation pheromone detection. We identified 26 Minus-C OBPs and 8 Plus-C OBPs and grouped R. ferrugineus OBPs into different OBP-subfamilies according to phylogeny, which indicated significant speciesspecific expansion and divergence in R. ferrugineus. We also identified a diverse family of CSP proteins, as well as a coleopteran-specific CSP lineage that diverged from Diptera and Lepidoptera. We identified several extremely diverged IR orthologues as well as highly conserved insect IR co-receptor orthologous transcripts in R. ferrugineus. Notably, GR orthologous transcripts for CO2-sensing and sweet tastants were identified in R. ferrugineus, and we found a great diversity of GRs within the coleopteran family. With respect to SNMP-1 and SNMP-2 orthologous transcripts, one SNMP-1 orthologue was found to be strikingly highly expressed in the R. ferrugineus antennal transcriptome. Conclusion: Our study presents the first comprehensive catalogue of olfactory gene families involved in pheromone and general odorant detection in R. ferrugineus, which are potential novel targets for pest control strategies.[Binu Antony, Alan Soffan, Jernej Jakše, Mahmoud M. Abdelazim, Saleh A. Aldosari, Abdulrahman S. Aldawood and Arnab Pain.(Saudia), Plant Protection Department, College of Food and Agricultural Sciences, King Saud University, Saudi Arabia. [BMC Genomics, 17:69, 2016. DOI 10.1186/s12864-016-2362-6].

Records for the Family Ulidiidae (Diptera, Tephritoidea) in Saudi Arabia. The Diptera family Ulidiidae or picture-winged flies known from the Kingdom of Saudi Arabia are reviewed. Six species in three genera are recognised, *Ceroxys confusa* (Becker), *C. urticae* (Linnaeus), *Melieria nigritarsis* Becker, *M. omissa* (Meigen) [Otitinae], *Physiphora alceae* (Preyssler), and *P. smaragdina* (Loew) [Ulidiinae]. Only *M. nigritarsis* and *P. alceae* were previously recorded from the Kingdom. The other four species, *C. confusa*, *C. urticae*, *M. omissa*, and *P. smaragdina* represent new country records. Additionally, the above records of *Ceroxys* are new for the Arabian Peninsula. *Physiphora smaragdina* (Loew) is known for most of Africa except South Africa. This is the third time this species is recorded outside Africa in addition to Israel and the United Arab Emirates. The Saudi Arabian genera and species are keyed and images are provided to facilitate identification.[H.M. Al Dhafer and M.S. El-Hawagry(Saudia), African Entomology, 24(1):225-232, 2016].

SYRIA

Prevalence, distribution and intraspecific variation of *Heterodera schachtii* populations from semiarid environment. A two-year survey study was carried-out to identify and determine the distribution, community characteristics and intraspecific variation of the sugar beet cyst nematode, *Heterodera schachtii* populations collected from the six major sugar beet-producing governorates in Syria, west Asia. A total of 178 composite rhizosphere soil samples were collected from the six governorates during 2009 and 2010 growing seasons as follows: Aleppo (26), Ar Raqqah (17), Dayr az Zawr (33), Idlib (34), Hamah (41) and Homs (27 samples). The nematode was originally identified on the basis of morphometrics and morphological features of the cyst vulvar cones and second-stage juveniles (J_2). The communities of *H. schachtii* were then analyzed using the criteria of frequency of occurrence (FO%), mean population density (PD) and prominence value (PV). Results showed that *H. schachtii* was the most frequent and prominent in Homs (FO%= 70.37% and PV= 23472.37) and the least frequent and prominent in Ar Raqqah (FO%= 5.88% and PV= 28.86). The highest nematode population density was also recorded in Homs in 2009 (50,545 J_2 + eggs/100 g soil) while the least was recorded in Ar Raqqah in 2010 (119 J_2 + eggs/100 g soil). The morphometric data of cyst vulvar cone, second-stage juveniles (J_2) and eggs were also subjected to a multivariate principal component analysis to analyze the relationships between the studied populations, and to identify the variables that show the highest multiple correlations with these populations. Results showed that at the high order of hierarchical cluster analysis, four populations (Idlib, Hamah, Homs and Aleppo) formed one main cluster, while Dair az Zawr and Ar Raqqah failed to form clusters and separated individually. However, at low distance value, the main cluster further subdivided to separate the Aleppo population from Idlib, Hamah and Homs populations. The morphometric distance values ranged from 0.07 to 0.61. Hamah and Homs were the closest populations while Dair

az Zawr showed the most diverse population. This study also revealed the value of J_2 body length, egg length and width, fenestral length and width and the number of bullae inside the cyst vulvar cone in determining the intraspecific variations among the Syrian populations of *H. schachtii*. [Asma M. Haidar, Khaled M. K. Al-Assas and Ahmed A.M. Dawabah. (Syria), Saudi Journal of Biological Sciences, 23: 293-296, 2016].

TUNISIA

Development of TaqMan real-time PCR markers targeting *Erwinia amylovora* chromosomal DNA.From the earliest, *Erwinia amylovora*, the causal agent of the fire blight disease was considered an invasive pest that threatened several pome fruit varieties elsewhere and disrupted their commercialization. In this work, highly specific sets of real-time PCR fluorogenic primers and probes flanking the 16S-23S rRNA intergenic transcribed spacer regions have been designed based on TaqMan chemistry. Throughout a serial of validation trials, crucial reaction parameters have been optimized. Therefore, the primer set ITSEA2 highlighted the most reliable signals in terms of gene expression. With respect to conventional PCR tools, the newly developed molecular markers provided more accurate specificity, a higher sensitivity up to 10^5 cfu/ml and a quantitative amplification of the targets.[Yahiaoui, D., Chérif, M., and Ham, J.H.(Tunis),Tunisian Journal of Plant Protection, 11: 25-35, 2016].

Effect of crop management on soil bacterial communities in organic and conventional farming systems. The aim of the present study was to assess the population of bacteria isolated from organic and conventional soils and to identify antagonistic ones with a potential antifungal activity against some pathogenic fungi (*Rhizoctonia solani* and *Fusarium oxysporum)*. All cultivable bacterial isolates were evaluated for their antifungal activity and the most effective ones were identified based on 16S rDNA sequence analysis. The results showed that among a total number of 100 bacteria isolated from soil, eight isolates displayed antifungal activity against *F. oxysporum* and twenty four isolates had suppressed *R. solani* growth. The results indicated that tested bacterial species exhibited varying degree of antagonistic potential against pathogenic fungi which ranged from 22.7% using AB95 isolate to 77.2% with AB40 and AB8 tested against *F. oxysporum* and from 22.7% using AB51 and AB5 to 68.1% with AB75 and AB64 tested against *R. solani*. DNA sequencing reaction of purified PCR amplicon was carried out using 16sF and 16sR primers. Sequence alignment with the reference sequences of the databases using BLAST was performed. The most dominant genuswas *Bacillus*. Phylogenetic tree was built.[Elabed, N., Bouri, M., Rhouma, A., Ben Kheder, M., and M'Hamdi, M.(Tunis), Tunisian Journal of Plant Protection, 11: 37-49, 2016].

Effect of olive leaf extracts on the feeding, growth and metabolism of *Spodoptera littoralis*. In the present study, methanol and acetone crude extracts of olive leaf were investigated for their antifeedant activity, growth and metabolism inhibitory against the cotton leaf worm, *Spodoptera littoralis* under laboratory conditions. Two feeding tests: leaf discs and artificial diet at three concentrations (0.1, 1 and 10%) of each extract, were implemented in the experiment. Results revealed that the leaf discs bioassay was more effective than the artificial diet bioassay for the antifeedant activity and the weight loss of *S. littoralis* larvae. Acetone and methanol extracts caused strong antifeedant activity at 10% with 68.33 and 61.44%, respectively. Tests performed on growth generated a very pronounced inhibition of growth gain using leaf disc test for the two extracts and at all tested concentrations. Data indicated that the lowest relative consumption rate (RCR) and the relative growth rate (RGR) were recorded using acetone extract at 10% for leaf discs bioassay (5.88 ± 0.75 and 0.07 ± 0.05 mg/mg/day, respectively). The efficiency of the conversion of ingested food (ECI) and the efficiency of conversion of digested food (ECD) were significantly lowered using methanol extract at 10% in artificial diet bioassay (2.5 ± 0.58 and 2.55 ± 0.6%, respectively). The highest approximate digestibility (AD) of *S. littoralis* larvae was found in both extracts for the artificial diet bioassay. Moreover, larvae exposed to 10% methanol extract in artificial diet test exhibited a delayed growth rate by 17.7 days, relative to control at the same concentration, compared to 5.7 days noted using acetone extract in leaf disc test. The antifeedant activity, growth and metabolism parameters are appropriate tools in feeding tests and extracts' activity evaluation. They could provide profound understanding of the choice of the best plant extracts that could be proposed as bioinsecticides in a more environment-friendly approach.[Ben Hamouda, A., Boussadia, O., Bedis, K., Chaieb, I., Laarif, A., and Braham, M.(Tunis), Tunisian Journal of Plant Protection, 11: 63-72, 2016].

Effectiveness of kaolin treatment for the control of the olive fruit fly *Bactrocera oleae* in Tunisian olive groves. The impact of kaolin treatments (Doses D1 = 3 kg/hl and D2 = 5 kg/hl) on the olive fruit fly *Bactrocera oleae* populations was investigated during a three-year study (from 2012 to 2014) in olive grove located in Nabeul: North-Eastern of Tunisia. The results showed that kaolin based-treatment compared to dimethoate, led to a very low level of olive infestation. Kaolin had successfully suppressed *B. oleae* populations and provided season-long pest control.

However, D1 and D2 doses had almost similar effects against *B. oleae* populations. Furthermore, kaolin based-treatment seemed to have no adverse effect against parasitic activity and especially that of *Psyttalia concolor*. Eventually, based on the obtained results, it can be concluded that kaolin may be a promising alternative for the control of *B. oleae* in organic olive groves.[Gharbi, N. and Ben Abdallah, S.(Tunis), Tunisian Journal of Plant Protection, 11: 73-81, 2016].

Antifeedant and antigonadotropic effects of *Ruta chalepensis* methanolic extract against *Locusta migratoria*. The migratory locust *Locusta migratoria* is one of the most important pests due to its extensive and serious damage to crops in large parts of Africa and Asia. To identify novel new environment friendly products for the management of the migratory locust, experiments were conducted to assess the effect of a methanolic extract of *Ruta chalepensis* (*ME-Rc*) on feeding activity and different reproductive phases of *L. migratoria*. The results showed that *ME-Rc* caused a significant decline in food intake and insect digestibility. The treatment applied to adult females caused a significant lengthening of the preoviposition period and a significant reduction in both fecundity and fertility. *ME-Rc* also affected growth and development of oocytes as evidenced by measurements of ovarian weight, length and volume of terminal oocytes and ovarian index. In addition, *ME-Rc* based-treatments led to disturbances in the incorporation of haemolymph metabolites (proteins and carbohydrates) in oocytes resulting in a significant decrease in their concentrations in ovaries.[Abdellaoui, K., Miladi, M., Ben Marzouk, I., Bahloul, N., Acheuk, F., Chaira, N., and Ben Halima-Kamel, M.(Tunis), Tunisian Journal of Plant Protection, 11: 91-104, 2016].

Rigid ryegrass (*Lolium rigidum*) abundance in Tunisian Northern cereal fields and its susceptibility to selected inhibitors of acetolactate synthase (ALS) and acetyl coenzyme A carboxylase (ACCase). Rigid ryegrass (*Lolium rigidum*) is one of the most prevalent grass weed in cereal crops in Tunisia. The study was undertaken to determine its occurrence in the Northern regions of the country and to evaluate its susceptibility to selected commonly used herbicides inhibitors of acetyl Coenzyme A carboxylase (ACCase) and acetolactate synthase (ALS). The frequency of infested surveyed fields by this weed is 32%. Its abundance varied among locations and bioclimatic stages. High weed infestations (> 300 individuals/m) were located in the Northern regions of Bizerte and Bejà where weather conditions, namely the rainfall, are the most favorable. None of the tested herbicides whether in field trials or in pot experiment gave a satisfactory control of rigid rye grass. Over 80% of tested ryegrass populations in pots were resistant to clodinafop-propargyl and iodo-mesosulfuron, with high proportions of resistant plants to both tested herbicides, suggesting that rigid ryegrass has evolved resistance to herbicides commonly used to control weeds in wheat fields.[Khammassi, M., Chaabane, H., Bousselmi, A., Belbahri, N., and Souissi, T.(Tunis), Tunisian Journal of Plant Protection, 11: 105-115, 2016].

The use of IRPeQ model as indicator to estimate the risk of some pesticides on human health and environment. Different pesticides can be used by farmers to control bioagressors. To assess environmental and human health risks due to pesticide use, pesticide risk indicators are elaborated. The objective of this study was to characterize the potential risks of pesticides used and their side effects on health and environment. A census of the use of pesticides in citrus orchards was conducted among farmers in Tunisia during crop season 2013/14. Two risk indexes were calculated for each pesticide: a Health Risk Index (HRI) and an Environmental Risk Index (ERI) according to the Quebec Pesticides Risk Indicator (IRPeQ). The parameters used to follow each calculation were obtained from the registration dossier of each formulation and the international databases like Agritox, Extoxnet and PAN Pesticides. The highest HRI were obtained for the formulations based on the active ingredient methidathion (HRI= 1227), while, Success Appât® a formulation, based on spinosad as active ingredient, is the product with the lowest health risk (HRI= 12). On the other hand, its ERI was evaluated with an index of 175, according to its toxicity towards honey bees. The fungicide formulation Aliette Express® presented slightly low health and environmental risk indexes. The determination of the risk indexes HRI and ERI allowed us to compare pesticides (active ingredient and formulation) according to their potential risk and facilitate the choice of the pesticide with least risk for human health and environment.[Bouagga, A., Chaabane, H., Bahrouni, H., and Hassine K.(Tunis), Tunisian Journal of Plant Protection, 11: 133-141,2016].

Mediterranean organic prickly pear (*Opuntia ficus indica* (L.) Mill.): Characterization of plant associated microbiota and their exploitation through lactic acid fermentation. Organic prickly pear production in Mediterranean basin is constantly increasing, due to its high ecological adaptability to extreme condition, and growing demand for its food and non-food products. Fruits are characterized by pronounced flavor and high nutritional properties, whereas cladodes are less exploited for human consumption. The present study aimed to explore the endophytic and epiphytic cladodes and fruits associated microbiota and to evaluate the capacity of

selected lactic acid bacteria to enhance the antioxidant and anti-inflammatory properties of cactus cladodes pulp. Fruits and cladodes were collected from Italy and Tunisia and 12 different cultivars were investigated. The structure of the microbiota was characterized through culture-dependent and independent methods. Young cladode's pulp was fermented with lactic acid bacteria previously isolated from plant materials. The antioxidant activity was evaluated through *in vitro* assays, further confirmed through *ex vivo* analysis on intestinal human Caco-2/TC7 cells, and the profile of flavonoids was characterized. Microbial diversity and community structure showed variability on the axis fruits or cladodes, cultivar or location; whereas functional properties were more in relation to the plant part and cultivars. The use of selected functional lactic acid bacteria may exploit the cultivation of prickly pear through enhancing health-promoting features of cladodes with the perspective of producing a functional ingredient or dietary supplement. [Nadia Thligene, P. Filannino, I. Cavoski, A. Lanera , M. Gobbetti, R. Di Cagno(Tunis), PLOS One. Mar 29;11(3), 2016]

PLANT PROTECTION NEWS IN THE ARAB COUNTRIES AND NEAR EAST

THESIS ABSTRACTS OF ARAB AND NEAR EAST MASTER STUDENTS GRADUATED FROM MEDITERRANEAN AGRONOMIC INSTITUTE OF BARI 2015-2016

Survey and molecular characterization. Pepino Mosaic virus (PepMV) infecting tomato crops in Morocco. *Pepino mosaic virus* (PepMV) is currently causing great concern in the Moroccan greenhouse tomato industry, where it produces important economic losses. A survey was conducted from October 2015 to April 2016 on PepMV in seven different regions throughout Morocco. In a few plants, severe symptoms which could be associated to the virus were observed. A total of 315 samples of different varieties were collected and tested by DAS-ELISA for the presence of PepMV using a commercial kit. The obtained results showed that PepMV was widely distributed in the country with an infection rate of 21%, especially in the region of Souss Massa where 70% of the tested plants were infected. Representative samples from each region were selected and submitted for additional RT-PCR testing; 40% of the 83 tested samples were infected. Five isolates were selected for molecular characterization by sequencing the coat protein gene; all the isolates showed high nucleotide similarity with the Chilean CH2 strain (DQ000985), with a sequence homology ranging from 99.2% to 99.8%. These results should be considered for the development of control strategies for PepMV based on cross-protection using mild strains. Finally, the present study allowed the first report of *Tomato torrado virus* in the country. **[Imane Bibi (Morocco), MSc, IPM of Mediterranean Fruit Trees, 2015-2016.]**

Investigation on the dispersal ability of the *Xylella fastidiosa* by vector *Philaenus spumarius* (L.) and Other Potential Vectors: *Neophilaenus campesrtis* and *Euscelis lineolatus*. *Xylella Fastidiosa* (*X.f*) is a bacterium colonizes xylem vessels of numerous plants and is transmitted by Hemipteran insects of the Cicadomorpha suborder. In Apulia, the presence of *X.f* has been associated with a disease called Olive Quick Decline Syndrome. The management of vectors is essential to limit the spread of this disease but neither information about their mobility, nor about the distance range that they can carry *X.f* is known. Therefore, the research aimed at studying the *X.f* dispersal due to vector mobility between infected and buffer zones. Three Cicadomorpha can be infected by *X.f*, *PhiIaenus spumarius* (Aphorphoridae), *Neophilaenus campestris* (Aphorphoridae) and *Euscelis- lineolatus* (Cicadellidae) were sampled. Specimens were suspected and potential vectors of *X.f* Specimens were collected in three different seasons (October 2015, February and April 2016) in olive orchards. The samples were inspected for *X.f* infection by Real Time-LAMP protocol. The results indicate that the spread of infected insects is relatively efficient: 44% of collected individuals were found positive in the buffer zone, 55% of them at 4 km distance from the infected zone. Data showed that the monitoring of the presence of spy insects (i.e. potential vectors) can be a useful approach to provide indirectly an indication of the presence of *X.f* in asymptomatic areas**. [Fatma Mahmoud Al Sabawi (Palestine), MSc, IPM of Mediterranean Fruit Trees, 2015-2016.]**

Host plant volatile compounds for the management of *Bagrada hilaris* Burmeister (Heteroptera: Pentatomidae). *Bagrada hilaris* is an herbivorous insect native of Asia and Africa that invaded Southern Europe and North America where it causes major damage to cole crops. Laboratory experiments were conducted by using *Brassica oleracea*as host plant to quantify the damage caused by15 or 40 individuals/plant. Olfactometer bioassay was undertaken to assess the role of VOCs attraction of *B. hilaris* individuals to the *B. oleracea* healthy or damaged by 15 or 40 individuals of *B.hilaris*. Other experiments were done in olfactometer by using synthetic chemical

compounds previously identified as host plant VOCs: octanal, nonanal, benzaldehyde and acetic acid, tested in blend and individually. Furthermore, the VOCs produced from healthy and bug damaged plants were collected by SPME fiber and analyzed by GC/MS. Results indicated that feeding damages of *B. hilaris* were more abundant at 40 individuals/plant rather than 15 individuals/plant. Adults *B. hilaris* were attracted to volatiles of healthy and bug damaged plants, in particular showing preference for heavy damaged plants. Attraction response was determined also by the blend of chemicals compounds at 100 µg and individually to benzaldehyde while nonanal determined repellency. VOCs analysis didn't evidence statistical difference; however the higher amounts of benzaldehyde in damaged plant confirm olfactometer results. **[Mokhtar Abdulsattar Arif (Iraq), MSc, Mediterranean Agronomic Institute of Bari, 2015-2016].**

Molecular Detection of Trophic Intractions among Lady Beetles and Aphids in Melon Crops. Molecular tools that describe the complex food webs and identify trophic interactions in the field have become widely adopted in recent years. In this study, we used PCR as a tool to detect prey remains in the guts of predators. The main objectives were to evaluate the predation and intra-guild predation (IGP) among the coccinellid species *Coccinella septempunctata* and *Hippodamia variegata*, predators of *Aphis gossypii* under field conditions, and to check whether intraguild predation is likely to reduce biological control. Species-specific primers were developed targeting the COI gene region in mtDNA of the investigated insects. The primers were specifically designed for *A. gossypii* and *H. variegata*, whereas already published primers were used to amplify the ITS-1 region in rDNA of *C. septempunctata* and the COI region of Aphididae. Primers detectability was tested using feeding trails, and was 13.41±1.99 for *H. variegata* and 9.0±1.7 for *C. septempunctata*. Predation rate of coccinellids feeding on aphids was 71.53% for *C. septempunctata* and 60.61% for *H. variegata*. The IGP was significantly higher for *C. septempunctata*, as 26% of this species preyed on *H. variegata*, while 13.63% of *H. variegata* preyed on *C. septempunctata*. Effects of intraguild predation on biological control are discussed. **[Saleh Falih Fenjan(Iraq), MSc, Mediterranean Agronomic Institute of Bari, 2015-2016].**

Incidence and molecular variability of Tunisian *Grapevine virus D* isolates. In autumn 2015, 353 grapevine samples were collected from Tunisian vineyards and assayed in RT-PCR for the presence of *Grapevine virus D* (GVD), a vitivirus associated with Rugose wood disease complex.RT-PCR showed that GVD was present in almost all cultivars analyzed. The highest infection rate was in table grapes (52.9%), with peaks in cv. Muscat d'Italie (82.6%). All wine cultivars tested had GVD infection levels ranging from 22.7% to 27.5%. Among rootstocks significant was the infection in 1103P (30%). GVD was also detected in 3 out of 63 (4.8%) spontaneous grapes of *Vitis sylvestris*. The analysis of partial nucleotide sequences of the coat protein genomic region (474 nt long) of 14 GVD isolates obtained in this study, and of other 13 isolates (11 from a previous study in Tunisia and 2 from Italy and Brazil, respectively, recovered from Genbank), showed a nucleotide identity ranging from 82.4% to100%, except for the isolate GVD-Tun7, whose the identity with all the other isolates was always below 80%. The phylogenetic tree designed on the same RNA segment revealed the presence of 7 different groups of GVD isolates, without apparent correlations to the geographic provenience or category of grapes**. [Naziha Boukhili (Tunisia), MSc, Mediterranean Agronomic Institute of Bari, 2015-2016].**

Assessment of trees suspected to show Olive Quick Decline Symptoms from *photo interpretation* of high resolution aerial images of a Xylella-free area. Since the disastrous introduction of *Xylella fastidiosa* (XF) to Italy, affecting severely the olive trees, an early detection of new infected areas has become compulsory. In fact, The IAMB laboratory, has developed a monitoring model for the rapid detection of suspected Olive Quick Decline Syndrome (OQDS)-infected plants. Through the use of the photointerpretation of aerial images technique and a field application "*XylApp"* for data acquisition, it was possible to inspect different aspects of stress visualised on the recognized trees by a phototypes key. *"XylApp"* allowed to localise all the photointerpreted plants. The results showed that no symptoms of OQDS were found in the study area and all the inspected plants tested by DTBIA, resulted negative. The inspected trees were classified on the basis of perceived symptoms in the field; 68.29% displayed OQDS-like symptoms, 10.07% with biotic and abiotic stress, 11.74% of pruned plants with mild forms of stress, 6.54% of pruned plants in excellent condition and 2.18% without problems. The statistical analysis demonstrated that there is no correspondence between the OQDS-photointerpretation levels and the phytosanitary state of the plants, while there is a significant relation between the cultural condition of the field and the agro-phytosanitary state of the inspected plants.**[Asmae Jlilat (Morocco), MSc, Mediterranean Agronomic Institute of Bari, 2015-2016].**

Amplification and sequencing of the Intergenic spacer region (IGS) of *Phaeoacremonium* spp. and *Pleurostomophora richardsiae* associated with Olive Quick Decline Syndrome in Italy, for the development of

specific PCR based detection method. The Olive Quick Decline Syndrome (OQDS) in Southern Italy is associated with *Xylella fastidiosa* and a set of aggravators fungi, such *Phaeoacremonium* spp. and *Pleurostomophora richardsiae*. Distinguishing between these fungi, using conventional molecular methods, is very difficult and time-consuming requiring the sequencing of several target genes. The aim of this study was to simplify the detection of four *Phaeoacremonium* spp. and *Pl. richardsiae*, by amplifying, cloning and sequencing the intergenic spacer (IGS) rDNA region. 3000bp were amplified and cloned for *Pl. richaradsiae* and *Pm. sicilianum*, and ~1500bp for the other species. Sequencing results show high homology of 28S and 18S rDNA regions of all the sequenced fungi. *Pl. richardsiae* sequences revealed a homology with *Pleurostomophora* spp. 28S and 18S regions, respectively with 89% and 95% similarity. Likewise, *Pm. sicilianum* sequences revealed a homology with *Phaeoacremonium* spp. 28S and 18S regions, respectively with 90% and 95% similarity. New partial IGS sequence was obtained (907bp) of *Pm. sicilianum* and (937bp) of *Pl. richardsiae*. Sequencing is still ongoing, internal primers were designed for *Pl. richardsiae* and *Pm. sicilianum* to recover the whole IGS region using primer-walking. This region represents an interest in the development of a PCR specific detection of OQDS associated fungi.[**Meriem Laidani (Algeria), MSc, Mediterranean Agronomic Institute of Bari, 2015-2016].**

Direct and indirect responses of *Vicia faba* to oviposition and feeding by the Brown Marmorated Stink Bug, *Halyomorpha halys* (Heteroptera: Pentatomidae).The Brown Marmorated Stink Bug, *Halyomorpha halys* (Stål) is an invasive pest in the U.S. and Europe, attacking over 100 hosts of fruit trees, vegetables and ornamentals. To evaluate indirect plant responses, behavioral bioassays were conducted in a Y-tube olfactometer with two generalist egg parasitoids, *Trissolcus basalis* (Wollaston) and *Trissolcus brochymenae* (Ashmead). Our findings revealed that faba bean (*Vicia faba* L.) volatiles induced by *H. halys* feeding, or feeding and ovipositing, failed to attract the wasps when compared with clean plants. However, *T. basalis* positively responded to synomones induced through feeding and oviposition by the native Green Stink Bug, *Nezara viridula* (L.). The aforementioned confirms the lack of adaptability between the invasive *H. halys* and native wasps. In contrast, faba bean exhibited direct responses to *H. halys* attack. In fact, *H. halys* nymphs developing on plants challenged by feeding and oviposition, weighed significantly less than nymphs developing on feeding treated plants. Thus, we report for the first time the priming of direct defenses of *V. faba* by *H. halys* oviposition. Finally, the relative expression of trypsin inhibitory genes was investigated. qRT-PCR analysis displayed considerable expression of "STCI" and "iaTI" in *V. faba*, when exposed exclusively to feeding, or feeding plus oviposition.**[Robert Malek (Lebanon), MSc, Mediterranean Agronomic Institute of Bari, 2015-2016].**

Evaluation of anti-nematode effect of some medicinal plants against Meloidogyne spp. associated with tomato crop in Morocco. Two experiments were carried out to evaluate nematicidal potential of aqueous extracts of three plants species *In vitro,* and oils of two others plants species *In vivo* against *Meloidogyne* spp. I n the first experiment, aqueous extracts were prepared from leaves of olive(*Olea europea*) , leaves of eucalyptus (*Eucalyptus globulus*) and seeds of kurrajong (*Brachychiton populneus*); concentrations of 10%, 1%, 0,1%, 0,01% and 0,001% of each aqueous extracts were applied in Petri dishes containing freshly hatched second stage larvae of *Meloidogyne* spp. Significant nematostic effect is provided by concentration 10 % which induces immobility rate of 91,66%, 88,33% and 68,33% for *Brachychiton populneus, Eucalyptus globulus and Olea europea* respectively after 72 hours of exposure. However, lethal effect of these extracts didn't exceed 64% after 96 hours of exposure. In the second experiment, oils were extracted from *Artemisia herba-alba* and *Artemisia absinthium*; three concentrations (200, 500 and 1000 ppm) plus chemical control the most used in Souss –Massa region (Rugby 10ml/pot) were applied on potted tomato plants following completely randomized blocks design. All concentrations contribute to decrease of *Meloidogyne* larvae and root damages compared to positive control; the highest nematicidal effect was obtained by the concentration 1000 ppm which provide reduction rate of 84%, 81,1% and 79% for chemical control, oil of *Artemisia herba-alba* and *Artemisia absinthium* respectively.**[Adil Mrich (Morocco), MSc, Mediterranean Agronomic Institute of Bari, 2015-2016].**

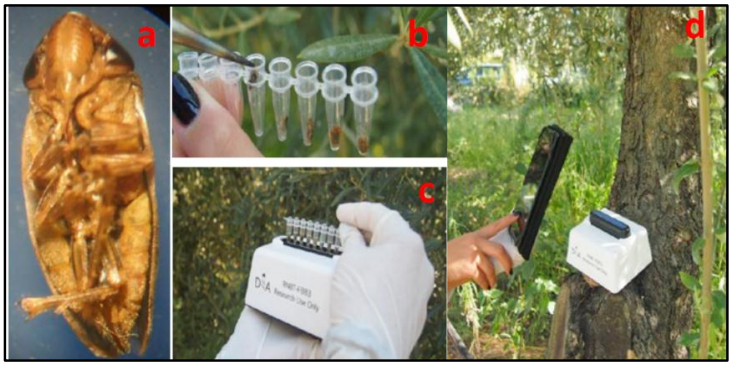
Sequence completion and molecular analysis of RNA-1 and RNA-2 of Artichoke Italian latent virus from grapevine and RNA-2 of gladiolus and artichoke isolates. The complete sequences of both genomic RNAs of *Artichoke Italian latent virus* (AILV) from grapevine isolate (denoted AILV-V) (RNA-1, 7,338 nts and RNA-2, 4,630 nts) and the RNA-2 sequences (4,629 nts) of two AILV isolates recovered from gladiolus and artichoke (denoted AILV-G and AILV-C, respectively) were determined. All RNAs contained a single open reading frame encoding polyproteins of 255,76 kDa for AILV-V RNA-1, and 149.62 KDa, 149.58 kDa and 149.58 kDa for AILV-V, AILV-C and AILV-G RNA2, respectively. P1 of AILV-V showed the highest amino acids (a.a) identity with

Tomato black ring virus, TBRV (79 %), whereas p2 of the three AILV isolates showed the highest a.a identity with TBRV and *Grapevine Anatolian ringspot virus* (GARSV). Among the three isolates, P2 of AILV-C and AILV-G were the most close, sharing 90% of identity. The phylogenetic tree analysis confirmed the close relationship of AILV isolates to members of subgroup B of the genus Nepovirus. All recombination programs used, highly predicted putative inter- and intra-species recombination events between AILV and nepoviruses of subgroup B [(GARSV, TBRV and *Grapevine chrome mosaic virus*, GCMV)]; and AILV isolates, respectively. This study reports for the first time the full genome sequences of AILV from grapevine and AILV RNA-2 from gladiolus and artichoke**.[Imen Belgacem (Tunisia), MSc, Mediterranean Agronomic Institute of Bari, 2015-2016].**

Molecular characterization of Italian populations of bacterial endophytes, isolated from olive knots caused by *Pseudomonas savastanoi* pv. *Savastanoi*. Olive knot disease caused by *Pseudomonas savastanoi* pv. *savastanoi* is considered one of the most serious diseases affecting the olive trees in all parts of the world, especially in the Mediterranean countries. Recent studies have shown that these nodes contain the bacterial community of diverse races and which cooperates with the pathogen in modulating the severity of the disease. Among these bacteria, those that belong to the genera Pantoea, Pectobacterium, Erwinia addition to Curtobacterium. The goal of this research is to characterize the bacterial community and the role played during the various stages of the development of the disease, especially bacterial species belonging to the *Pantoea* and *Erwinia* which have been isolated from infected 80 olive trees were collected from some areas within Italy. The technique is applied (Rep-PCR) using a pair of primers (Primer) developed by versalovic and others in 1994 in addition to the positive isolates available in the laboratory of the University of Perugia-Italy. Also conducted polymerase chain reaction assay for the presence of 16S rRNA gene, using a pair of specialized prefixes, and the reaction product is encrypted in a research center in the Netherlands. As it was also used to check the presence of the gene *hrp* / *hrc* dating back to the dynasty *Pantoea agglomerans* DAPP-PG 734. Has compared the genetic code of the outputs of the PCR reaction with the genetic code of the genome of these bacterial species (*Pantoea agglomerans, Erwinia toletana and Erwinia oleae*) and in GenBank. This study showed that the disease is widespread in olive groves in Italy and are abundant. Results of Rep-PCR reaction and the presence of many of the packages in the gel, ranging in size from 300 to 3,000 a pair Nichaelotidi. At the same time, it was ascertained the presence of the gene *hrp* / *hrc* in some bacterial isolates. While genetic kinship tree show based on the genetic code resulting from encrypting 16S rRNA gene similarity with a high degree isolates available in GenBank. [**Inas Al-Zuhairi (Iraq), MSc, Mediterranean Agronomic Institute of Bari, 2015-2016].**

Other Activities of IAM-BARI

On-site detection of *Xylella fastidiosa* in host plants and in "spy insects" using the real-time loop-mediated isothermal amplification method. A recent severe outbreak of *Xylella fastidiosa* associated with 'olive quick decline syndrome' (OQDS) was reported in Apulia (Southern Italy). In this study an on-site real-time loop-mediated isothermal amplification (real-time LAMP) was developed for detecting *X. fastidiosa* in host plants and insects. A marked simplification of the DNA extraction procedure was obtained by heating the samples in a portable Smart-Dart device and using an optimized enhancer reaction buffer. The connection to a tablet or Smartphone allowed to visualize the results of the reaction in real time. Compared to PCR and ELISA, with which it showed comparable results in terms of sensitivity and reliability in the *X. fastidiosa* detection, this simplified real-time LAMP procedure proved to be "user friendly", displaying the advantages to be an on-site detection method of easy handling, rapid execution and low cost. [**Thaer Yaseen, Sandro Drago, Franco Valentini, Toufic Elbeaino, Giuseppe Stampone, Michele Digiaro And Anna Maria D'onghia,** CIHEAM - Istituto Agronomico Mediterraneo, Phytopathologia Mediterranea, 54(3):488−496, 2015, www.fupress.com/pm.]



Postgraduate Arab Students Activities (Master Thesis)

Isolation, purification, characterization and antiserum production of Potato leafroll virus. A field survey was conducted in 6 potato growing regions in Damascus Countryside province during 2012-2013. 98 morphologically infected samples were examined depending on serological tests (ELISA) using *Potato leaf roll virus* (*Polerovirus*, *Luteoviridae*,PLRV), *Potato virus Y* (*Potyvirus*, *Potyviridae*,PVY), *Potato virus X* (*Potexvirus*, *Alfaflexiviridae*,PVX), *Potato virus S* (*Carlavirus*, *Betaflexiviridae*, PVS), *Potato virus A* (*Potyvirus*, *Potyviridae*, PVA) and *Potato virus M* (*Carlavirus*, *Betaflexiviridae*, PVM) antisera. The infection percent was 81.6% whereas 18 samples didn't give any reaction toward antisera used. Viral disease percent was was high in Zakia (%95.8), Beat-Saber (%93.3) and Kesweh (%92.8) whereas Sa'sa had the lowest percent (64.2%). PVY (63.3%), PVX (34.7%) and PLRV (20.4%) were the most prevalent viruses in potato samples, while PVA, PVM and PVS were not detected. Moreover, mixed virus infections were observed in some of collected samples (complex infection). Spread of viral infection may be due to the use of un-certified potato seeds, for this reason, extra surveys should be devised, working on antisera produced from local viral strains and improve of viral detection methods. Syrian *potato leafroll virus* (PLRV) isolate (SP25-12) after multiplication on *Physalis floridana* leaves were harvested 3-4 weeks after inoculation. Semi-purified virus was yielded either using or without a cellulose enzyme 0.4 and 0.2 mg/500g tissue plant respectively. The A260/A280 for PLRV was 1.81 to both semi-purification ways. A rabbit was immunized with increasing amounts of the semi-purified PLRV. Serum were tested by ELISA showed low specificity and sensitivity in the detection of infected samples, it is recommended to go about improving the methods used in purification and antisera production. A semi-purified viral preparation was obtained from local Syrian (PLRV) isolate (SP25-12) from Damascus countryside during 2012. The purification was done using phosphate buffer 0.5 M, followed by clarification and precipitation with polyethylene glycol (PEG) by differential centrifugation. The green peaches aphids *Myzus persicae* Sulzer transmission was tested using several dilutions of semi-purified PLRV sucrose solution 20% through membrane feeding. Results of Enzyme-Linked Immuno Sorbent Assay showed successful transmission of PLRVand infection on *Physalis floridana* inducing different symptoms on leaves like chlorosis, yellowing and veins clearing after 3 to 4 weeks of infection. The transmission rate of PLRV ranged from 20 to 70%. The method can be used in order to obtain large amounts of infected plant tissue with a view to purification of the virus and antiserum production. A total of 29 potato leave samples collected from Syria; Lattakia, Tartous, Homs and Damascus countryside, during spring 2012, 2013 and 2014, were examined for detection of *potato leafroll virus* PLRV using DAS-ELISA. The positive samples were selected to detect coat protein (CP) gene by Reverse transcription-polymerase chain reaction (RT-PCR). Results indicated that the viral disease incidence was the highest in Tartous, then Lattakia, but the lowest incidence was in Damascus countryside. The analysis of detection PLRV by RT-PCR was negative for two samples. CP gene specific primers successfully amplified 650 bp fragment without nonspecific band. Failure of PLRV detection by DAS-ELISA may suggest that the antibody-conjugated polyclonal antibody (PAb) could not recognize Syrian isolates. Moreover, results may also suggest that the PLRV concentration in the leaf samples was too low to detect by DAS-ELISA. Nevertheless, detection of PLRV with RT-PCR has further proved its high sensitivity compared to serological methods.[**Mayadah Adib Hajali. Damascus University, Faculty of Agriculture, Department of Pant Protection, Damascus-Syria. (Master Thesis 2015)].**

The Influence of Some Factors on the Efficiency of the Pathogenicity of Some Fungi Isolated and Commercial Formulations in Some Computer Performance of Some Lepidoptera Order Insects. [Noor.H.Al–Rubyaee, Technical Collage of Al-Furat Al Awsat, Almusaib Technical Collage-Iraq.(Master 2016)].

Biological Control of Two Spotted Spider Mite *Tetranychus urticae* Koch (Acari:Tetranychidae) by Using some Fungi Isolated from the same pest on Eggplant. [Sabreen Kadhum Alwan, Technical Collage of Al-Furat Al Awsat, Almusaib Technical Collage-Iraq.(Master 2015)].

Postgraduate Arab Students Activities PHD Dissertations & Articles

Effect of dual biotic stress on plant volatile synomones used by an egg parasitoid. The field of multitrophic interaction is fast, developing research area that is tacking major new challenge. It is obvious that the study of plant defense is central to multitrophic theory: Plants can defend themselves directly against herbivores, but also indirectly by emitting volatiles that attract parasitoids and other natural enemies. Knowledge of the mechanisms underlying the induction of this Herbivore induced plant volatiles (HIPVs), and of the response of the parasitoids, is progressing

rapidly. The presence of non-host can affect the reliability of plant information and these HIPVs can influence parasitoid community persistence and stability. To understand the functioning of multitrophic system. Information is needed to know how parasitoids deal with such complexity and to identify the mechanisms involved. In this dissertation, we investigated the potential disrupting effect of a non-host herbivore (*Sitona lineatus*), attacking either above or below-ground plant organs, on attraction of egg parasitoids (*Trissolcus basalis*) to volatiles produced by *Vicia faba* plants that are also infested with their typical hosts (*Nezara viridula*). Our results demonstrated that attraction of this wasp was disrupted by both larvae and adults of *S. lineatus* when foraging for *N. viridula* eggs laid on *V. faba* plants. From a chemical point of view, PLS-DA analysis of the odor blends from the different treatments supports the behavioral data, with significant changes to odor profiles of *V. faba* plants as a consequence of single or dual herbivore attack. We conducted further chemical analysis using GC-FID and GC-MS to identify volatile compounds emitted by *V. faba* plants that are attacked individually or concurrently by *N. viridula* and *S. lineatus ;* the main purpose was to identify the blend of compounds that play a role in egg parasitoid recruitment, and how that blend is altered or disrupted by *S. lineatus* feeding. Due to technical issue related to volatile collection system used, we were not able to obtain interpretable results. Therefore, we were not able to identify the compounds. Our final objective was to investigate for the first time the molecular response of *V. faba* plant to different activities of the piercing sucking insect *N. viridula*. Also behavioral response of naïve *T.basalis* towards different treated *V. faba* plants was evaluated. We found a systemic activation of salicylic acid (SA) in the presence of *N. viridula* footprints and oviposition. Contrary there was no activation of jasmonic acid (JA) pathway. However, additional molecular analysis is in course to verify this aspect. Behavior test confirmed that *T. basalis* attracted to oviposition induced plant volatiles (OIPVs) emitted by *V. faba* plants as a consequence of oviposition and feeding activity of the host *N. viridula*. [**Rihem Moujahed, (Tunisia), Universita Degli Studi Di Palermo, Italy. (Doctorate 2016)].**

Utilization of Rice-Originated Antagonistic Bacteria for Aflatoxin Control on Stored Rice. At the storage period, rice is prone to attack by several fungal species, among them, *Aspergillus flavus* is a predominant species, frequently isolated from stored rice. The *A. flavus* is known for the production of the carcinogenic aflatoxins, which have many adverse effects on human and animal health. In this study, the previously selected rice-originated antagonistic bacteria (*Bacillus megaterium* KU143, *Microbacterium testaceum* KU313 and *Pseudomonas protegens* AS15) have been tested against an aflatoxigenic strain of *A. flavus,* in dual-culture test on liquid media (*in vitro*) and on unhulled rice bioassay test (*in vivo*). As a result, the 3 selected bacteria have significantly reduced the fungal population (expressed in mycelia dry weight for the *in vitro* test and colony forming unites for the *in vivo* test) and reduced levels of aflatoxins production in both tests. Moreover, in order to test the direct aflatoxin biodegradation ability, the three selected bacteria were cultured in nutrient broth amended with 10 ng/ml of pure aflatoxin B1; 3 days after incubation, aflatoxin B1 level was assessed. As a result, only *Pseudomonas protogens AS15* had significantly reduced aflatoxin B1 in comparison to the control treatments. Further, for assessment the effect of the used concentration of aflatoxin B1 on the population of the tested bacteria, bacterial population was assessed for 8 days on media supplemented with and without aflatoxin B1. Taken together, the results have indicated that the three selected bacteria effectively suppressed the growth of an aflatoxigenic strain of *A. flavus*, and consequently reduced the produced aflatoxin. More interestingly, the bacterial strain *P. protogenes* AS15 had exhibited aflatoxin biodegradation ability on liquid media. These results suggest potential effective biocontrol bacteria that could be utilized for control of aflatoxigenic *A. flavus* as well as biodegradation of aflatoxin and could serve as sources of antifungal and anti-aflatoxin compounds. [Mohamed Manaa,(**Egypt),**Laboratory of Plant Disease and Biocontrol, College of Life Sciences and Biotechnology, Korea University, Seoul 02841, Korea. (**Doctorate proposal 2016)**].

Microbe-Mediated Control of Mycotoxigenic Grain Fungi in Stored Rice with Focus on Aflatoxin Biodegradation and Biosynthesis Inhibition. Rice contaminated with fungal species during storage is not only of poor quality and low economic value, but may also have harmful effects on human and animal health. The predominant fungal species isolated from rice grains during storage belong to the genera *Aspergillus* and *Penicillium*. Some of these fungal species produce mycotoxins; they are responsible for adverse health effects in humans and animals, particularly *Aspergillus flavus*, which produces the extremely carcinogenic aflatoxins. Not surprisingly, there have been numerous attempts to devise safety procedure for the control of such harmful fungi and production of mycotoxins, including aflatoxins. This review provides information about fungal and mycotoxin contamination of stored rice grains, and microbe-based (biological) strategies to control grain fungi and mycotoxins. The latter will include information regarding attempts undertaken for mycotoxin (especially aflatoxin) bio-detoxification and microbial interference with the aflatoxin-biosynthetic pathway in the toxin-producing fungi.[Mohamed Mannaa

(**Egypt)** and Ki Deok Kim, Laboratory of Plant Disease and Biocontrol, College of Life Sciences and Biotechnology, Korea University, Seoul 02841, Korea. 44(2): 67-78,2016.

First Report of Dry Rot of Sweetpotato (*Ipomoea batatas*) Caused by *Diaporthe batatas* in Korea. Sweetpotato (*Ipomea batatas* Lam.) is a highly nutritious root vegetable that is cultivated and consumed worldwide. In August 2015, dry rot symptoms of wrinkled, shrunken roots with brownish lesions and carbonaceous black tissues beneath the surface of the infected lesions were observed on sweetpotatoes. The potential causal agent was isolated consistently from the margin of symptomatic lesions of diseased sweetpotatoes; a pure culture of isolate SP-d1 was used for further tests. The observed colonies and microscopic structures were consistent with previous descriptions of *Diaporthe batatas* (formerly *D. phaseolorum*). For molecular identification of SP-d1, we analyzed sequences of ITS1-5.8S rRNA-ITS2 region, β-tubulin, and the translation elongation factor (TEF) 1-α. Phylogenetic analyses were conducted, SP-d1 was constantly clustered with the type strain of *D. batatas* CBS 122.21^{T}. The sequences of the ITS region (Accession No. KU577616), β-tubulin gene (KU577614), and TEF 1-α (KU647703) have been deposited in GenBank. A culture of SP-d1 (KCCM 60586) also has been deposited in the Korean Federation of Culture Collections, Seoul, Korea. Pathogenicity of SP-d1 was tested, shrunken, dark-brownish symptoms identical to those of sweetpotato dry rot were observed. To fulfill Koch's postulates, the fungus was successfully reisolated from the symptomatic tissues and reverified through sequence analyses of the same genes using the reisolated mycelia. To our knowledge, this is the first report of sweet potato dry rot caused by *D. batatas* in Korea. [Y. J. Lee, Mohamed Mannaa **.(Egypt),** J.-J. Jeong, H.-U.Lee, W. Kim, K. D. Kim, Laboratory of Plant Disease and Biocontrol, College of Life Sciences and Biotechnology, Korea University, Seoul 02841, Korea. Plant Disease, http://dx.doi.org/10.1094/PDIS-02-16-0249-PDN, 2016].

First report of *Aspergillus awamori* as a fungal pathogen of garlic (*Allium sativum*). Garlic (*Allium sativum* L.) is one of the oldest horticultural crops and an important element for cuisines worldwide, especially in Korea. After isolating several black aspergilli from brownish lesions with black spores on garlic bulbs, we identified a representative isolate GL-125 through molecular analysis of its internal transcribed spacer (ITS)1-5.8S rRNA-ITS2 region, β-tubulin gene, and calmodulin gene. Morphological features of GL-125 were also compared with those of the *Aspergillus awamori* type strain NRRL 4948^{T}. As a result, GL-125 was identified as *A. awamori* by neighbor-joining and maximum-likelihood methods with the examined gene sequences. The macro-morphological (colony growth and color) and micro-morphological (stripes, vesicles, metulae, phialides, and conidia) features of GL-125 were also similar, compared with those of NRRL 4849^{T}. Furthermore, we conducted pathogenicity tests for GL-125 and NRRL 4948^{T} against garlic cloves, using pin-prick inoculation with spore suspensions. Both GL-125 and NRRL 4948^{T} were pathogenic on garlic cloves producing brown to pinkish sunken, water-soaking lesions with white mycelia and black spores in the center. These isolates were successfully re-isolated from the lesions, thereby fulfilling Koch's postulates, whereas no fungal mycelia were isolated from water-inoculated cloves (control). The identities of the re-isolated mycelia were re-confirmed by sequence analyses of the previously examined genes. To the best of our knowledge, this is the first report of *A. awamori* as a fungal pathogen of garlic.[Ji Yeon Oh, Mohamed Mannaa**(Egypt),** Gyung Deok Han, Se-Chul Chun, and Ki Deok Kim. Plant Disease and Biocontrol, College of Life Sciences and Biotechnology, Korea University, Seoul 02841, Korea, Crop Protection 85, 65e70,2016].

Molecular and microscopic studies on the *Potato mop-top virus – Spongospora subterranea* interaction. Potato mop-top virus (PMTV) is transmitted by *Spongospora subterranea* and both pathogens cause economically important diseases of potato tubers; however, the mechanism of transmission is not fully understood. The coat protein readthroug (CP-RT) of PMTV has two gene products: CP (90% of the expressed protein) and CP-RT (approx. 10%). A natural deletion mutation in the RT domain of the CP-RT protein abolishes transmission of PMTV by *S. subterranea*. Here, we investigated the subcellular localization and co-localisation of PMTV CP, CP-RT^{wt} and two CP-RT mutants, CP-RT^{fl} (produces 100% full-length CP-RT) and CPRT^{del} (produces 100% CP-RT which lacks the transmissible region in the RT domain).These four constructs were fused to Red fluorescent protein (RFP) and Green Fluorescent protein using gateway cloning, then monitored using Confocal Laser Scan Microscopy (CLSM). The GFP or RFP-CPRT^{wt}, RFP-CPRT^{fl} and RFP-CPRT^{del} proteins were seen in motile granules similar to granules of FP-CP and in the cytosol. Furthermore, FP of all constructs accumulated in the nucleoplasm, but not in the nucleolus. Additionally, the granules labelled with FP-CP and FP-CPRTs were associated with the endoplasmic reticulum network. However, they were not associated with microtubules or the plasma membrane of plant cells.. PMTV encodes three Triple Gene Block (TGB) proteins that are essential for cell-to-cell and systemic movement of the virus. They are part of the viral ribonucleoprotein complexes (vRNPs) that traffic through plasmodesmata, but TGB1

is also known to associate with microtubules. The interactions of the PMTV TGB1 protein with CP-RT^{fl} and CP-RT^{del} proteins were investigated using bimolecular fluorescence complementation. Two distinct cytoplasmic phenotypes were observed when the proteins were expressed. PMTV TGB1 and CP-RT^{fl} were found to interact and the complex was associated with microtubules, but the TGB1 and CP-RT^{del} interaction did not localize to microtubules. These results suggest that an interaction between the PMTV CP-RT and TGB1 proteins which occurs on plant microtubules may play a role in the transmission of PMTV by *S. subterranea*.[Adnan A. Lahuf (**Iraq**), Graham H. Cowan, Alison G. Roberts and Lesley Torrance. The British Society for Plant Pathology presidential meeting, in 1st -2nd of September 2014 at St. Andrews University, St. Andrews, Scotland, UK.]

Secretome analysis of virulent *Pyrenophora teres* f. *teres* isolates. *Pyrenophora teres* f. *teres* (*Ptt*) causes Net Form Net Blotch (NFNB) disease of barley, partially by producing necrosis-inducing proteins. The protein profiles of the culture filtrates of 28 virulent isolates were compared by a combination of 2DE and 1D-PAGE with 105 spots and 51 bands chosen for analysis by Liquid Chromatography Electrospray Ionisation Tandem Mass Spectrometry (LC-ESI-IT MS). A total of 259 individual proteins were identified with 63 of these proteins being common to the selected virulent isolates. *Ptt* secretes a broad spectrum of proteins including cell wall degradation enzymes; virulence factors and effectors; proteins associated with fungal pathogenesis and development; and; proteins related to oxidation-reduction processes. Potential virulence factors and effectors identified included proteins with glucosidase activity, A-like lectins ricin B and concanavalin, glucanases, spherulin, cutinase, lyase pectin, leucine rich repeat (LRR) protein and ceratoplatanin. Small proteins with unknown function but cysteine-rich, common to effectors were also identified. Differences in the secretion profile of the *Ptt* isolates have also provided important insight into the different mechanisms contributing to virulence and the development of NFNB symptoms.[Ismail Ahmed Ismai(Iraq), Amanda J. Able , Proteomics, www.proteomics-journal.com ,Impact factor 4.01, 2016].

❖ Some Plant Protection Activities of FAO and Other Organizations

DESERT LOCUST SITUATION

Situation level: Caution

General Situation of the Desert Locust during May 2016 and Forecast until mid-July 2016 provided by the FAO Emergency Centre for Desert Locust (ECLO).

The Desert Locust situation in Yemen continued to deteriorate during May as more hopper groups and bands formed in the interior as well as on the Aden coast. Insecurity and remoteness are hampering survey and control efforts. Consequently, swarms will form from early June onwards and are likely to stay in the interior where they could mature and lay eggs if conditions remain favorable until at least mid- July. Otherwise, swarms are likely to move south to the Gulf of Aden where strong monsoon winds could carry them across the Arabian Sea to the Indo-Pakistan summer breeding area. Some of the swarms may transit along the eastern coast of Oman. All efforts are required to increase survey and control operations in Yemen wherever possible and to remain vigilant in other countries.

Control operations continued against adult groups in the southern part of the Western Sahara in southern Morocco and adjacent areas of northern Mauritania. A limited number of groups are likely to reach the summer breeding areas in southern Mauritania and lay eggs with the onset of the seasonal rains. Control operations were carried out against locally-bred adult groups in central Algeria.

Western Region. Ground control operations declined during May in the southern portion of the Western Sahara in Morocco and in northern Mauritania, treating 218 ha and 762 ha respectively of adult groups as well as hopper groups in Mauritania. As vegetation dried out further, adults rapidly increased in density and several groups moved south within this area to oases in western Mauritania. This movement is expected to continue during the forecast period when adult groups are likely to reach the summer breeding areas in southern Mauritania and lay eggs with the onset of the rains. Hatching could commence by the end of the forecast period if early rains and egg-laying occur. In the central Sahara of Algeria, ground teams treated 651 ha of adult groups that formed from local breeding. Scattered adults were reported in southwest Libya, southern Algeria, northern Mali and in the Air Mountains of northern Niger.

Central Region. The situation deteriorated further in the interior of Yemen where more hopper groups and bands formed from local breeding throughout May. Although the full extent of infestations is not well known due to insecurity, it appears that breeding has occurred within a large portion of the interior from Marib to Thamud as well as on the Aden coastal plains. Only limited control operations could be carried out, some by burning hopper bands. Consequently, swarms will almost certainly form from early June onwards. If vegetation remains green, the swarms are expected to remain in the interior and mature with the possibility of another generation of egg laying by mid-July. On the other hand, if vegetation dries out, then the swarms are likely to move to the southern coast and be carried by strong south-westerly monsoon winds through coastal areas of Oman to the Indo-Pakistan summer breeding area. Elsewhere, the situation remained calm. Small-scale breeding continued in northeast Oman and occurred near crops in southern Egypt. Good rains fell on the plateau in northern Somalia and eastern Ethiopia.

Eastern Region. No locusts were reported and the situation remained calm in the region during May. There is a low to moderate risk that a few small swarms could arrive along the Indo-Pakistan border if vegetation dries out in the interior of Yemen.

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://crc-empres.org).

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

Activities of FAO Commission for Controlling the Desert Locust in the Central Region (CRC);

1. FAO Commission for Controlling the Desert Locust in the Central Region, organizing A Inter-Regional Desert Locust Information Officers training for nationally designated Locust Information Officer from frontline country in Cairo, Egypt from 22-26th May, 2016.

The workshop's objective is the strengthening of national early warning and reporting systems, improvement of the various tools used by the national locust information officers in their daily work; GIS (RAMSESv4) and eLocust3. Also in the workshop the Commission introduce the newly developed CRC data-base in addition to the new version of Assistance Tools of Contingency Planning (DeLCoPA).

21 nationally designated DLIOs from Seven countries in the Central Region; Egypt, Eretria, Ethiopia, Oman, Saudi Arabia Sudan and Yemen and two countries in the Eastern Region; India, I.R.Iran, and two participant from the Desert Locust Control Organization for Eastern Africa (DLCO-EA) attended the workshop (picture attached).

2. FAO Commission for Controlling the Desert Locust in the Central Region (CRC) organizing a National training course on Desert Locust survey and control operation in Amman, Jordan, from 29 June to 6 July 2016.

In total, 21 participants from different province attended the training course. The participants were plant protection officers and responsible person for control operations and implementing the

Desert Locust campaigns during emergencies.The program included Desert Locust biology, survey and control operation and use ultra low volume sprayers in Locust control.

THE FAO- IPPC-CIHEAM INTERNATIONAL WORKSHOP ON *XYLELLA FASTIDIOSA* HELD IN BARI, ITALY.

The FAO-IPPC-CIHEAM International Workshop on *Xylella fastidiosa* successfully held in Bari, Italy.

The FAO-IPPC-CIHEAM International Workshop on *Xylella fastidiosa* & the Olive Quick Decline Syndrome (OQDS) was successfully held from 19-22 April 2016, in Bari, Italy. The Workshop was organized by FAO, IPPC and CIHEAM (the International Centre for Advanced Mediterranean Agronomic Studies), with support of the Near East Plant Protection Organization (NEPPO) and the European Plant Protection Organization (EPPO). This is the first international workshop on *Xylella fastidiosa* since such destructive phytosanitary pest was reported on the olive trees in 2013, in Puglia, Italy. Over 140 participants attended the Workshop, who is from 36 countries as well as eight international and regional organizations. Mr Jingyuan Xia, the IPPC Secretary, delivered opening remarks on behalf of FAO and IPPfC as well as NEPPO and EPPO. Mr Orlando Sosa (the Leader of Implementation Facilitation Team), Ms Sarah Brunel (the Implementation Officer) and Ms Adriana Moreira (the Standards Officer) from the IPPC Secretariat, attended the Workshop.

The main objectives of the Workshop were a) to raise awareness of the issue of *Xylella fastidiosa*, its current and potential impact and management; b) to share information on and experience in legislation, communication, advocacy, education and technical actions for eradicating, containing and managing the pest; c) to discuss the strategies, tactics, and action for increasing the capacities in surveillance, diagnostic and management of the pest; and d) to promote a close cooperation at national, regional and global levels for fighting with this devastating phytosanitary pest.

The Workshop included three major activities: a) review and information sharing, such as status and impacts, international cooperation and projects, and legislation aspects; b) technical training and field observation on surveillance and diagnostic methods; and c) capacity development for management of *Xylella fastidiosa*. In particular, participants were well trained in recently developed methods and technical protocols for early surveillance, diagnosis and control, including sampling the vector and host plants through demonstrations of field data acquisition. The mobile application "XylApp" was introduced by the CIHEAM, which helps to gather and quickly transfer field data to a Central Webserver towards the production of report findings.

The Workshop concluded with a recap of capacity development activities on *Xylella fastidiosa* undertaken in the Mediterranean basin. Participants agreed that continued aggregation of information on the bacterium, its vector and host species were critical but equally important going forth would be the establishment of a network for sharing knowledge, raising awareness, and increasing the capacity of National Plant Protection Organizations (NPPOs) against the spread of this pathogen to other countries.

The workshop was covered by 15 local news channels, as well as news in print. A sample of TV coverage.

The first two days of the meeting were webcast and the recordings can be found at:https://cloud.iamb.it/index.php/s/UcblWBXyx7t8Xlu

https://www.ippc.int/en/news/the-fao-ippc-ciheam-international-workshop-on-xylella-fastidiosa-successfully-held-in-bari-italy/

ARAB SOCIETY FOR PLANT PROTECTION NEWS

A new dedicated website for the Arab Journal of Plant Protection

Starting in January 1, 2016, a dedicated website for the Arab Journal of Plant Protection was launched. All society members and others are invited to visit the site www.ajpp.asplantprotection.org, and the journal editorial board welcomes any comments that aims to improve the site and makes it more user friendly. This step was implemented in response to the request of a variety of international scientific journals indexing institutions. At present, the Arab Journal of Plant Protection is indexed by the Arab Impact Factor in Egypt and received an impact factor (IF) in 2015 of 1.6, and also by the Scientific Indexing services (SIS), USA, and received an IF for 2015 of 0.832. The journal is now also being indexed by SCOPUS ELSEVIR, The Netherlands, and by the Institute for Information Resources-Global Impact Factor, Australia. The Arab Society for Plant protection aims from this multi-institutional indexing to establish its excellence status among respected scientific journals in the region and globally.

Welcome to the 12th International Arab Congress of Plant Protection 5 – 9 November, 2017 Hurghada – Egypt (Towards Future Secure Agricultural Production)

Invitation

The Arab Society for Plant Protection (ASPP) in collaboration with the Agricultural Research Center (ARC), Ministry of Agriculture and Land Reclamation, Egypt, represented by the Plant Protection Research Institute and the Plant Pathology Research Institute, has the pleasure to welcome and invite scientists, researchers, academicians, and those who are involved with various aspects of the field of plant protection of pests from government agencies, universities, research and extension institutions, and international agencies to present and exchange regional expertise of all aspects of plant protection, including recent developments related to integrated pest management strategies.

Congress Topics

1. Economic insect and animal pests ،2. Integrated management of Phytopathogens
3. Etiology and epidemiology of plant diseases، 4. Natural enemies and their role in pest management
5. Post-harvest pests ،6. Effect of environmental changes on insect pests, plant pathogens and natural enemies
7. Date palm pests ،8. Bio-pesticides ،9. Nano-technology for pests and Plant diseases control
10. Safe use of agrochemicals ،11. Quarantine regulations and phytosanitary measures
12. Integrated pest management، 13. Genetic engineering and pest control
14. Integrated control of weeds ،15. Apiculture and Sericulture

Congress Language

Arabic (Official) for papers presentation and **English** for symposia presentations.

Registration Fees (Hotels NOT included):

Participation Type	Egyptians (US $) or equivalent	Non-Egyptians (US $)
ASPP members	**100**	**150**
Graduate Students	60	**60**

- The registration fee covers participation in the congress + the conference publications.
- Graduate students, applying for registration, should present a certificate in support of their current studentship status from their college/university/institution.

Accommodation (Full board in double-bed room):

Participation Type	Egyptians (Egyptian pounds)	Non-Egyptians (US $)
ASPP members	**1100**	**400**
Graduate Students	1100	**400**
Accompanying persons (No congress fees)	1500	**450**

Important Dates

Registration	**30th January, 2016**
Last date for submission of abstracts	31st May, 2017
Second Announcement with accommodation and other details	1st March 2017
Announcement regarding acceptance of abstracts	1st July, 2017
Last date for full paper submission (optional)	1st July, 2017

Contacts

ACPP2017 Secretariat: Please contact us if you have any question or suggestion via:
Post Address: 7 Nadi El-Said Street, Dokki, Giza, Egypt.
E-mail: acpp2017@arc.sci.eg
Phone/ Fax: +202-33372193 **acpp2017**

Congress Board

Prof. Dr. Abdel Monem El-Banna Congress Chairman
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Prof. Dr. Mohamed E. El-Zemaity President of ASPP

Registration Guidelines:

- On-line registration by uploading the registration form through the congress website **www.acpp2017.sci.eg** is recommended.
- Registration can also be submitted directly by hand or as an attachment via e-mail to the congress secretariat: **acpp2017@arc.sci.eg**

Symposia Program- 12th Arab Congress of Plant Protection (12th ACPP) Hurghada, Egypt, 5-9 November 2017

Below please find the complete symposia program (titles of presentations and names of invited speakers) which is part of the 12th Arab Congress of Plant Protection Organized by the Arab Society of Plant Protection (ASPP) in collaboration with the Agriculture Research Center, Ministry of Agriculture and Land Reclamation of Egypt, that will be held in Hurghada, Egypt, 5-9 November 2017.

Keynote address in the opening session of the congress

- **Building bridges between plant protection disciplines for sustainable management of crop pests.** *By Dr. Rangaswamy Muniappan, International Association of Plant Protection sciences (IAPPS), Virginia Tech, USA.*

Symposium I. Implications of disease and insect pest's biology and ecology on designing pest management strategies

1. **IPM against soil-borne pests: the basic strategy and some successful case studies**. *By Dr. Richard Sikora, University of Bonn, Germany.*
2. **Risk analysis and its impact on prevention and control measures of economically important pests.** *By Dr. Martin Ward, EPPO, France.*
3. **Effects of insect vector movement in developing and deploying integrated disease management strategies for whitefly-transmitted viruses.** *By Dr. Judith K. Brown, University of Arizona, USA.*

4. **Cereal root disease complexes and sustainable production in dry areas.** *By Dr. Amer Dababat, CIMMYT, Turkey.*

Symposium II.Precision farming and plant protection

1. **Use of remote sensing and GIS for developing improved crops IPM strategies.** *By Dr. Burkhard Golla, Julius Kuhn-Institut, Germany.*
2. **Development of integrated fine scale systems for informed decision making in sustainable crop protection.** *By Dr. Vittorio Rossi, Universita Cattolica, Italy.*
3. **Overview on novel techniques for sustainable pest management in protected and open field agriculture.** *By Dr. J. Meyer, Bayer AG, Monheim, Germany.*

Symposium III. Impact of climate change on plant protection under Mediterranean and oasis conditions

1. **Climate change and plant health.** *By Dr. Jingyuan Xia, FAO, Rome, Italy.*
2. **Role of Information packages for potential effects of climate change on crop pests dynamics.** *By Dr. Mahmoud Medany, Ministry of Agriculture and Land Reclamation, Egypt.*
3. **Influence of climate change on virus disease epidemics under Mediterranean conditions and strategies to cope with it.** *By Dr. Roger Jones, Western Australia Agriculture, Australia.*

Symposium IV. Management of newly emerging and serious pests: the case of olive decline caused by Xylella fastidiosa, a threatening disease to olive production in the Mediterranean basin

1. **Research progress on *X. fastidiosa*: biology, genetics and control.** *By Dr. Giovani Martelli, University of Bari, Italy.*
2. **Experience gained from efforts to contain olive decline in southern Italy and research needs to manage it in the Mediterranean region.** *By Dr. Anna Maria D'Onghia, IAM-B, Italy.*
3. **Status of olive decline in the Arab countries and the urgent need for an effective monitoring system.** *By Dr. Khaled Djelouah, IAM-B, Italy.*
4. **The status of *X. fastidiosa* in the Arab region and efforts underway to contain it.** *By Mr. Shoki Al-Dobai, FAO-RNE, Cairo, Egypt.*

The 19th Workshop of Smuts and Bunts in Turkey.

The Arab Plant Protection Society member Dr. Emad Mahmoud Al-Maaroof participated in the activities of the 19th International workshop on smuts and bunts organized by the International Center for maize and wheat Research (CIMMYT) in collaboration with the International Center for Agricultural Research in the Dry Areas (ICARDA) and the Food and Agriculture Organization (FAO) and the Turkish Ministry of Food, Agriculture and Livestock. The workshop was held in Izmir city, Turkey for the period of 3-6/5/2016. More than 120 Scientist attended the workshop from 25 countries. The workshop scientific program included 24 oral presentation and 22 posters. Dr. Emad Al-Maaroof submitted two presentations in the workshop. Many well-known experts were attended from different international authorities such as Dr. Hans Braun Director of the international program for wheat, Dr. Alex Morkanov Head of the international program of winter wheat development , Dr. Surin Rasemson, Copenhagen University and Dr. David Hall of the University of Ohtaha, USA, Dr. Pawan Singh , CIMMYT and Dr. Fabio Mazjr of Acroscob in Switzerland and many others. The presence of such distinguished scientists facilitate the development prospects of cooperation in field of wheat diseases. The program also include a scientific visit to the Aegean Agricultural Research Institute to learn about the international and local wheat breeding programs, Wheat diseases, Rust center and Gen Bank.

GENERAL NEWS

Khalifa International Award for Date Palm and Agricultural Innovation / 2017

Applicants wishing to participate in Khalifa International Award for Date Palm and Agricultural Innovation / 2017 are advised to apply from the 08th of May until 31thof October 2016, announced General Secretariat of the Award. Interested candidates can apply to any of the following five categories, which are:

1. First category: Distinguished Innovative Studies and Modern Technology
2. Second Category: Pioneering Development & Productive Projects
3. Third Category: Distinguished Producers in Date Palm Sector.
4. Fourth Category: Pioneering and Sophisticated Innovations Serving the Agricultural Sector.
5. Fifth Category: Influential Figure in the Field of Date Palm and Agricultural Innovation.

The administrative office of the award will coordinate with the candidates to ensure the completion of all necessary paperwork. For more information, the General Secretariat of the Award welcomes all participants to apply and to visit the award website: www.kiaai.ae.
Khalifa International Award for Date Palm and Agricultural Innovation
P.O. Box: 82872 Al Ain, UAE.,Email: info@kiaai.ae. Dr. Abdelouahhab Zaid, Prof, Secretary General
Khalifa International Award for Date Palm and Agricultural Innovation.

Barley Technical Symposium in Sydney: Ismail Ahmed Ismail (PhD) (Iraqi), from the School of Agriculture, The University of Adelaide, and Waite Campus Sydney giving 2 presentations:

1-Genetic Basis of Sensitivity of Barley to the **Secretome of *Pyrenophora teres* f. *teres*.** Presented at 17th Australian Barley Technical Symposium (ABTS), Manly, Sydney, Australia; 13th – 16th September 2015. **Source: APPS April 2016 Vol 29 No. 1.**

2-Proteomics of the filtrates from barley and barley grass isolates of *Pyrenophora teres f. teres*. Stromlo meeting (Annual Meeting for Molecular Plant-Pathogen Interaction) Dec. 2015 Canberra, Australia. **Source: APPS April 2016 Vol 29 No. 1.**

NISA Award for Outstanding Iraqi Research

Vision: To recognize the best Iraqi scientific research work.
Objective: The Award aims to reward excellence in scientific research in Iraq, and raise the spirit of competition and innovation in the field of scientific research. It is an independent prize awarded each year to researchers and innovators, for their contributions in the areas of human knowledge that have a clear impact in enriching the scientific and academic life in Iraq, according to a scientific and objective criteria. More than 200 scientific papers published in 2015 were submitted to the Network of Iraqi Scientists Abroad (NISA) in the humanitarian, medical, engineering, agricultural and pure science to compete for one of the dedicated awards. The panel of selection were NISA members in the US, European and Australian universities. The best papers were selected based on quality and originality of the overall research, the practical and/or theoretical value, creativity and impact of research results, in addition to the quality of the journal and its impact factor. Based on the above criteria seven research papers are declared the winners for 2015 award among them one was submitted by the ASPP members Mohamed W. Khudhair, Mohamed Zeadan Khalaf, Hussein Fadil Alrubeai, A. K. Shbar, Bassem Shehab Hamad,and H. S. Khalaf ,titled **Evaluating the virulence of *Beaveria bassiana* and *Metarhizium anisopliae* isolates to Arabian rhinoceros beetle.**
The Network of Iraqi Scientists Abroad was established to provide expertise and support in sciences, technology and other disciplines of knowledge as a vital part of progress and development in Iraq. It also supports exchange of knowledge; training scientists and technicians; discussions in education and innovation and transfer of technology. The Network of Iraqi Scientists Abroad is an international, independent, non-government, not-for-profit organization established by scientists who work in international universities in Europe, America and Australia. The Network does not have a specific location so that its members can meet anywhere in the world, considering Baghdad is as the basic meeting place. Communications among members are maintained through the Internet and other electronic facilities. Members of the Network are distinguished Iraqi scientists working in Western universities in the position of professor, senior researcher, director of a scientific centre or a higher position. They present basic scientific

contributions in developing various scientific, industrial and economic disciplines. The Network aims to provide advice, assistance and support to Iraqi academic, research, industrial, agricultural, medical, administrative and economic institutions to promote development activity and participate in academic and scientific research activities undertaken by Iraqi universities. The Network also enhances the capacities of Iraqi academics, technicians and experts by giving courses and holding workshops in their universities and scientific institutions. NISA also seeks to become a centre for evaluating performance in implemented scientific programs and an Iraqi body of international influence for defending Iraqi interests and Iraqis towards achieving progress in scientific and technological fields. www.nisairaq.com

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Conference of Mycologie and Host-Pathogen Interactions is an annual meeting organised by German Phytomedicine Society (German: Deutsche Phytomedizinische Gesellschaft or DPG). One university in Germany take the responsibility to host the event every year. 17-18th March 2016 I participated in this conference with an oral presentation: *"Impact of the site of primary ear infection and of environmental conditions on Fusarium head blight development" a*s Speaker from the University of Bonn. In this event, there have been participants who are members of ASPP from Syria:
1- Dr. Abbas Alhassan: he participated with his team from Hohenheim University, Germany, 2-Elias Alisaac: Ph.D student at the University of Bonn.

Some observations on the cochineal scale insect of cactus (*Dactylopius opuntiae*) (Hemiptera: Dactylopiidae) in Morocco. The cochineal scale insect appears in Morocco for the first time in Saniet Bergig (Morocco) by the end of 2014. It attacks only cactus plants *Opuntia* sp. It is characterized by its red color because of the carmine secretion. The origin of these insects is tropical and subtropical forest of America and Mexico. It is soft insect with oval form. The males are winged in contrary of females, which are covered by white wax substance. The females lay eggs after copulation hatched in to small larvae secreting white waxy substance to protect themselves from loss of water and heavy sunrays. The scale insect appears as white cotton-like piles, it moves into the marginal cactus pads, the wind carries the filament waxy substance into new cactus plants. The winged males are disturbing the human populations around the cactus fields. The food national office of Morocco confirms that the cactus fruits consumption do not have any health effect neither for human nor for animals. This scale insect affects cactus yields and causes enormous losses to the plants by sucking their sap lead to pad drought. The cactus plants die when the infestation is heavy. The prevention methods are the best solution to avoid insect transmission and reducing damage. The transport of infested cactus pads and fruits should be prohibited. The plastic boxes are recommended to use instead of woody after washing and disinfecting. Controlling the vehicles are also playing a roll in insect transmission. The control measures should be applied for the disposal of infected plants and using the recommended chemical control by ONSSA.[Abdelmoughit Ait Friha ,Provincial Service of Control and Plant Protection of Boulemane, www.onssa.gov.ma , 2016].

SELECTED RESEARCH PAPERS

- **Characterization of Resistance to the Cereal Cyst Nematode in the Soft White Winter Wheat 'Madsen'.** Longfei Wu, Lei Cui, Honglian Li, Lei Sun, Xiu Gao, Dan Qiu, Yanling Sun , Xiaoming Wang, T. D.Murray, Hongjie Li. Plant disease, 100 (4): 679-685,2016.

- **The Use of Random amplified polymorphic DNA to finger print defferent Iraqi varieties of date palms (*Phoenix dactylifera* L.).** Mohannad Rasheed Al-Zaydi, Shatha Ayed Yousif, Najem A. AlZubaidi. Diyala journal for pure sciences. 12: (1), 2016.

- **Evaluation of a diagnostic microarray for the detection of major bacterial pathogens of potato from tuber samples**. Y. Degefu, P. Somervuo, M. Aittamaa, E. Virtanen and J. P. T. Valkonen. Bulletin OEPP/EPPO Bulletin, 46 (1), 103–111, 2016.

- **Scent detection dogs for the Asian longhorn beetle, *Anoplophora Glabripennis***. U. Hoyer-Tomiczek, G. Sauseng and G. Hoch. Bulletin OEPP/EPPO Bulletin, 46 (1), 148–155, 2016.

- **Incidence and spread of knockdown resistance (*kdr*) in German Colorado potato beetle (*Leptinotarsa decemlineata* Say) populations.** C. Tebbe, B. Breckheimer, P. Racca, C. Schorn, B. Kleinhenz and R. Nauen, Bulletin OEPP/EPPO Bulletin ,46(1):129–138, 2016.

- **Synergism of Entomopathogenic Fungus, *Metarhizium anisopliae* Incorporated with Fipronil against Oil Palm Pest Subterranean Termite, *Coptotermes curvignathus*.** Jing Ee Yii , Choon Fah Joseph Bong, Jie Hung Patricia King and Jugah Kadir. Plant Protect. Sci. 52 (1): 35–44, 2016.

- **Acaricidal Properties of Extracts of Some Medicinal and Culinary Plants against *Tetranychus urticae* Koch.** Roman Pavela. Plant Protect. Sci. 52(1): 54–63, 2016.

- **Medicinal Plant Extracts and Protein Kinase C Inhibitor Suppress Zoosporogenesis and Impair Motility of *Phytophthora capsici* Zoospores.** Most Waheda Rahman ANSARY , Effi HAQUE , M. Helen WEST , Mahbubur M. RAHMAN, Abdul Mannan AKANDA, Yuanchao Wan g and M. Tofazzal ISLAM. Plant Protect. Sci. (52) 2: 113–122, 2016.

- **Egg parasitoid attraction to ward induced plant volatiles is disrupted by anon host herbivore attacking above or below groundplant organs.** Rihem Moujahed, Francesca Frati , Antonino Cusumano, Gianandrea Salerno , Eric Conti , Ezio Peri and Stefano Colazza. Frontiers in Plant Science, Article Volume 5, Article 601, 2014.

- **Potential Study of Biological Control Agents and Pheromone Traps for the Control of *Ephestia* Spp. In Date Warehouses of Two Provinces in Iraq.** Asaad Hameed, Ayad Al-Taweel, cIbrahim Al-Jboory, Bassem Hamad, Ali Yass, Hutham Balasim, Rasha Alrubeai, Warid Abdalla, Fathi Rajaa. Int. J. Entomol. Res. 04 (01).01-07, 2016. ISSN: 2310-3906 (Online), 2310-5119.

- **Secretome analysis of virulent Pyrenophora teres f. teres isolates. Proteomics.** Ismail Ahmed Ismail, 2016. **http://onlinelibrary.wiley.com/wol1/doi/10.1002/pmic.201500498/abstract**

- **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, Ki Deok Kim. Genome Announc 4(2):e00301-16. doi:10.1128/genomeA.00301-16.Published 21 April 2016.

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EPIDEMIOLOGY

- **Determination of some virulent and epidemic factors related to wheat Septoria leaf blotch.** A. Abdel Ghani, M. Abou Shaar and M. Kasem (SYRIA) (Pages 1-9).

SURVEY

- **A survey for some viruses affecting potato in Syria, and serological detection of main strains of *Potato virus Y*.** S. Al-Chaabi, A. R. Darwesh, F. Ismaeil, J. Mando and T. Abu-Fadel (SYRIA) (Pages 10-22).

LOSS ASSESSMENT

- **Effect of time of inoculation with *Cucumber mosaic virus* on plant height and specifications of pepper fruits under field conditions in Lattakia, Syria.** H.A. Al-Ajourya, I.D. Ismail and B.M. Samra (SYRIA) (Pages 23-29).

CONTROL

- **Efficiency of some chemical and bio-pesticides in controlling the pistachio twig borer, *Kermania pistaciella* Amsel.** S. Khoja, M. Alkhalaf, A. Arab, J. Mohamed and S. Kudsiyeh (SYRIA) (Pages 30-35).
- **Preliminary evaluation of releasing *Phytomyza orobanchia* Kalt. for controlling *Orobanche ramosa* under muslin cages in tomato fields.** M. Ahmad, H. Habak and B. El-Rahban (SYRIA) (Pages 36-41).

BIOLOGICAL CONTROL

- **Efficacy of some Syrian isolates of *Verticillium chlamydosporium* and two species of *Paecilomyces* in controlling the sugar beet cyst nematode (*Heterodera schachtii*).** A.M. Haidar, Kh.M.Kh. Al-Assas and A.A.M. Dawabah (SYRIA & SAUDI ARABIA) (Pages 42-51).

BIODIVERSITY

- **Genetic diversity of some isolates of entomopathogenic fungi collected from different regions.** F. Khatib, A. Karkoukly, A.N. Trisi and M. El-Bouhssini (SYRIA & MOROCCO) (Pages 52-61).
- **Using Sequence Tagged Site (STS) marker and Cleaved Amplified Polymorphic Sequence (CAPS) to study the genetic variation of sunn pest populations collected from six countries (Iraq, Iran, Uzbekistan, Kazakhstan, Turkey and Syria).** L. Ali, M. El-Bouhssini and M.N. Al-Salty (SYRIA & MOROCCO) (Pages 62-70).

PAPERS, WHICH WILL BE PUBLISHED IN THE ARAB JOURNAL OF PLANT PROTECTION (AJPP), VOLUME 34, ISSUE 2, AUGUEST 2016

- **Influence of host fruit species of medfly *Ceratitis capitata* on the parasitism level of *Aganaspis daci*.** Ahmed A. Ali, Jafar Amar and R. Darwish (Syria).
- **Evaluation of aflatoxin contamination in different *P. vera* genotypes using methanol-water method by HPLC.** N.M. Alhajjar and B.M. Muzher (Syria).
- **Evaluation efficiency of some physical means in destruction of Aflatoxin B_1 on some dry fruits.** A.A. Al-Haddad, H. Zugair Hussain and M.A. Fayyadh (Iraq).
- **Field studies on the black-veined white butterfly, *Aporia crataegi* (L.) infesting almonds in Syria.** A. Shlalo and W. Kassis (Syria).
- **Entomopathogenic viruses: A general review.** A. Basheer, G. Mouhammad, A. Khadam and M. Al-Salahi (Syria).
- **Detection of *Polymyxa betae* using Scanning Electron Microscopy and Soil borne Viruses in sugar beet by multiplex RT-PCR in Syria and Lebanon.** A.M. Mouhanna, L. Suheil Dibeh and E. Choueiri (Syria & Lebanon).

- **The spatial distribution pattern of red palm weevil (*Rhynchophorus ferrugineus* Oliv.) in date palm plantations in the Kingdom of Bahrain.** A.A. Asfour, A.M. Abdelkarim, A.A. Saleh and A. Al-Ajami (Bahrain & Oman).
- **Effect of recurrent releasing of *Trichogramma cacocae* Maeshal on the population of codling moth *Cydia pomonella* (L.) at the district of Sweida, Syria.** M. Bou-Faour, S. Rashid, F. Abou-Ammar and H. Abou shdid (Syria).
- **Effect of *Rhizobium leguminosarum* on growth of *Fusarium oxysporum* f.sp. *lycopersici* in vitro.** S. Al-Maghribi, Y. Hammad and B. Rezk (Syria).
- **Biological study of almond butterfly *Aporia crataegi* in central Syria.** A. Shlalo and W. Kassis (Syria).

EVENTS OF INTEREST

2016 - 2018

28 Aug. – 1Sep. 2016	32nd International Symposium of Nematology University of Minho, Braga, Portugal. http://synergy4science.com/esn2016/
12-15 September, 2016	XIV Meeting of The IOBC-WPRS Working Group Biological Control of Fungal and Bacterial Plant Pathogens Biocontrol and Microbial Ecology Humboldt University, Berlin. http://www.iobc-wprsberlin2016.de
25-30 September, 2016	The XXV International Congress of Entomology, Orlando, Florida, USA. http://ice2016orlando.org/, www.spongospora.ethz.ch/workshops.html#CH
6-9 October, 2016	7th International Scientific Agriculture Symposium "Agrosym 2016" Jahorina, Bosnia and Herzegovina.www.agrosym.rs.ba
10-12 October, 2016	The 2nd International Conference for date palm (ICDP 2016) at College of Agriculture and Veterinary Medicine, Qassim University, Kingdom of Saudi Arabia, from 10-12 October 2016 .www.cavm.qu.edu.sa/en/ICDP2016/Pages/Home1.aspx
10-15 October, 2016	3rd African Congress for conservation Biology.(Conservation Biology in Africa: Challenges of Globalization) Faculty of Science El Jadida – Morocco. www.fs.ucd.ac.ma/accb2016
19 - 22 October, 2016	6th European Congress of Virology Congress Center Hamburg, Germany. www.eurovirology2016.eu/
14-18 November, 2016	9th Australasian Soil-borne Diseases Symposium Heritage Hanmer Springs, Canterbury, New Zealand.www.appsnet.org/Interest_Groups/ASDS/asds.aspx
16 - 19 November, 2016	The 8th International Zoological Congress of "Grigore Antipa" Museum, Bucharest – Romania. www.czga.ro
10-12 December,2016	3rd International Symposium on Coconut Research and Development, ISOCRAD 3, ICAR-CPCRI Kasaragod, Kerala, India.
18-21 December,2016	***13th International*** Conference on "Future Horizon of Sustainable Environmental Development In Arab Countries and Facing the Challenges"Sharm El-Sheikh.
11-15 September,2017	The 5th International Symposium on Biological Control of Arthropods, Langkawi, Malaysia. http://www.isbca-2017.org
12-15 September, 2017	Asian Conference on Plant Pathology 2017 Jeju Island, South Korea. acpp2017.org/
25-27 September 2017	The 21st Australasian Plant Pathology Society conference., Brisbane, Queensland, www.apps2017.com.au/
5-9 November, 2017	12th Arab Congress of Plant Protection, ACPP 2017, Hurghada, Egypt. www.acpp2017.sci.eg
29 July – 03 Aug, 2018	11th International Congress of Plant Pathology (ICPP2018), Boston, Massachusetts, USA. www.icpp2018.org

SELECTED PESTS FROM ARAB AND NEAR EAST COUNTRIES

Larva pupa, female and male of Arabicus date palm borer *Oryctes agamemnon arabicus* Fairmaire

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FROM THE ARCHIVE OF THE 11TH ARAB CONFERENCE OF PLANT PROTECTION 2014, AMMAN, JORDA

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

Mohammed Besri(Morocco), Raied Abou Kubaa (Italia), Ziad barbar, (Syria), Mahmoud Mohamed Youssef (Egypt), Shatha Yousif (Iraq), Mayyada haj ali (Syria), Rihem Moujahed (Tunisia), Ali Al-Masri (Egypt), Jamal Mando(Syria), Mohammed Z. Khalaf (Iraq), Mohamed Al-Rubeai (Iraq), Hussain Alrubeai (Iraq), Mohamed Manaa(Korea), Anne Sophie Roy (France), Aziz Ajlan (Saudia Arabia), Mamoon Al-Alawi(FAO), Thaer Yaseen (Italy), Abdul-Sattar A. Ali, (Iraq), Nazar N. Hama (Iraq), Magdy Kinawy(Oman), Iman Bibi (Morocco), Fatma Mahmoud Al Sabawi (Palestine), Mokhtar Abdulsattar Arif(Iraq), Saleh Falih Fenjan(Iraq), Naziha Boukhili (Tunisia), Asmae Jlilat (Morocco), Meriem Laidani (Algeria), Malek Robert Nehme (Lebanon), Adil MRICH (Morocco), Imen Belgacem (Tunisia), Inas Al-Zuhairi(Iraq), Magdi El-Hawagry(Egypt),Nadia Thligene(Tunisia), Luaay Khalaf (Iraq-USA). Ismail Ahmed Ismail (Iraq-Australia), Abdelmoughit Ait Friha (Morocco).

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.